

Northern Ireland Forum for Political Dialogue

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## **WILLOW BIOMASS AND RENEWABLE ENERGY**

**A REPORT  
PREPARED BY STANDING COMMITTEE D  
(AGRICULTURE & FISHERIES ISSUES)**

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*Presented to the Northern Ireland Forum for Political Dialogue
on 24 April 1998*

Note

DRAFT REPORTS

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CONTENTS

<u>Section</u>	<u>Page</u>
1. INTRODUCTION	1
2. RENEWABLE ENERGY	4
3. WILLOW BIOMASS	11
4. CONCLUSIONS AND RECOMMENDATIONS	15
Annex A - Membership of Standing Committee D	
Annex B - Minutes of Proceedings	
Annex C - Oral Evidence - Northern Ireland Agricultural Producers' Association	
Annex D - Oral Evidence - Ulster Farmers' Union	
Annex E - Oral and Written Evidence - Mr J Gilliland, Brook Hall Estate	
Annex F - Oral and Written Evidence - Director General of Electricity Supply for Northern Ireland	
Annex G - Oral and Written Evidence - Energy Division, Department of Economic Development	
Annex H - Oral and Written Evidence - Department of Agriculture for Northern Ireland	
Annex J - Oral and Written Evidence - Viridian plc	

WILLOW BIOMASS

AND RENEWABLE ENERGY

1. INTRODUCTION

- 1.1 At the outset, the Committee acknowledges that over the years, many of the available renewable energy technologies have been adopted by the agriculture industry. That the Committee has chosen to address willow biomass - one type of energy crop within one of many technologies (biofuel) - should not be seen as undervaluing any of the remaining technologies. The Committee's selection of willow biomass as the topic for this report is based on its importance as an alternative land use for farmers.
- 1.2 The interest of Standing Committee D in the potential for energy production from willow biomass was sparked in the course of a visit to the Northern Ireland Horticulture and Plant Breeding Station at Loughgall in early 1997. As a result of this visit, the Committee decided to examine this topic in greater detail on its return to business after the summer recess of the Forum in 1997.
- 1.3 Because of other pressures, it was not possible to commence this examination until October 1997, when the Committee made a second visit to Loughgall. In the course of this visit, the Chief Scientific Officer of the Department of Agriculture for Northern Ireland, Dr Cecil McMurray and his staff showed the Committee the

advantages of agroforestry (sheep grazing within a specially prepared and planted ash plantation), poplar plantations and willow coppice. The Committee was also taken to Castlearchdale to see standing crops of willow coppice, to hear about the cultivation and harvesting of willow coppice and to be informed about the diseases which affect the willow plants.

- 1.4 Also in late October 1997, the Chairman of the Committee was invited to the commissioning of a gasifier and combined heat and power system at the Brook Hall Estate Biomass Project of Mr John Gilliland in Londonderry. The aim of this project, the first of its kind in Europe, is to demonstrate small scale combined heat and power technology through the gasification of biomass, willow woodchip, sourced from the first commercial willow coppice in Ireland. Background information on this project is included in Annex E.
- 1.5 In the course of a visit to Enniskillen College of Agriculture on 12 November 1997 the Committee was given a demonstration of the prototype gasifier which uses willow biomass to provide heat and power to the College.
- 1.6 The Committee then decided to obtain further evidence from a number of sources and the following oral evidence sessions were arranged.

- 13 November 1997 - Northern Ireland Agricultural Producers' Association
- 27 November 1997 - Ulster Farmers' Union
- 9 December 1997 - Mr John Gilliland, Brook Hall Estate
- 18 December 1997 - Office of Electricity Regulation for Northern Ireland
- 2 February 1998 - Department of Economic Development - Energy Division
- 5 March 1998 - Viridian plc (ex-Northern Ireland Electricity)

1.7 In presenting this report, the Committee first examined the evidence obtained on the wider issue of renewable energy before covering the development of willow biomass since the early 1970s, and then proceeding to deal with its conclusions and recommendations.

1.8 The Committee wishes to thank all those who assisted in and contributed to this report, in particular those who took time to prepare and present written and oral evidence.

2.

RENEWABLE ENERGY

2.1 In its memorandum on renewal energy in Northern Ireland, (see Annex G) the Department of Economic Development (DED) explains that renewable energy has an important role to play in helping to tackle the serious threat of climate change, primarily by reducing carbon dioxide emissions. By comparison with fossil fuels, it is pointed out that renewable sources of energy produce much lower quantities of greenhouse and acid gas emissions - some renewal technologies producing none.

2.2 Renewable energy sources - those which are renewed and replaced within a short timescale - have been in use in Northern Ireland for hundreds of years eg windmills and watermills. Present day renewable technologies such as those based on wind, waste, solar power, hydro-electric power, wave energy, geothermal energy, tidal power and biofuels, are much more sophisticated - and some are now producing electricity for the grid. On Slievenahanaghan Mountain, Co Antrim, there is a 40 metre tall wind turbine which delivers 300 Kw of power into the grid. A wind-diesel scheme has recently been installed on Rathlin Island. Newmills Hydro Generation Ltd has installed a 22 Kw hydro electric turbine at Inver Mill, Larne, Co Antrim. At Templepatrick, along the Clady River, Portmore Engineering has installed a cross-flow turbine which provides 25 Kw of power during about 200 days of the year. Northern Ireland Industry is involved in active and passive solar devices - Thermomax of Bangor, Co Down, being one of the major

manufacturers of solar equipment in Europe. At Bangor and Newtownards, Co Down, Richmond Reproduction Manufacturers and W L Doggart and Sons have installed wood burning boilers to heat their premises, supply hot water and at the same time eliminate the problem of the disposal of wood waste. Larger schemes burning wood waste for process purposes are to be found at J P Corry (for timber curing) and at Spanboard, Coleraine (for heat-setting chipboard). Larger schemes for power generation from municipal solid waste are being considered for Belfast. The Department of Agriculture for Northern Ireland leads Europe in the research and development of willow and poplar coppice. Pioneering work on the digestion of farm slurries has been conducted at Our Lady of Bethlehem Abbey at Portglenone, where the methane gas produced is used to heat both the monastery and the digester. A pig slurry digester has been installed at McGuckian's Farm near Cloughmills, Co Antrim. At Lyttle's Farm, near Waringstown, electricity is being generated from farm slurry digester biogas for on-site consumption. It should be noted that the above projects are only consuming a small proportion of what is available for exploitation in Northern Ireland.

- 2.3 To encourage the stimulation of new and renewal forms of energy in Northern Ireland, the Electricity (Northern Ireland) Order 1992 (which mirrored GB legislation) was enacted, empowering DED to place a non-fossil fuel obligation on Northern Ireland Electricity (now Viridian plc), requiring it to contract through non-Fossil Fuel Orders (NFFOs) with generators for the supply of power from non-fossil fuel sources. In the same year, a collaborative study was

commissioned - "Prospects for Renewable Energy in Northern Ireland" - a copy of which is attached at Annex G.

- 2.4 To date, two NFFO Orders have been made, in March 1994 for 16 Mw and in September 1996, also for 16 Mw. NFFO contracts are awarded after open competition, are subject to necessary planning and other statutory consents, and last for 15 years. NFFO developers receive varying premium prices for their electricity, however it is indicated that bid prices will converge with each succeeding NFFO competition towards the costs of traditional fossil fuel power generation.
- 2.5 DED pointed out that to date, Northern Ireland has secured 32% of its NFFO target (45 Mw by the year 2005).
- 2.6 DED also explained that in addition to the NFFO regime, two other measures have been used to stimulate development of renewable potential - the Energy Demonstration Scheme and the EU INTERREG programme - both of which are explained in detail in the DED memorandum.
- 2.7 The Committee also noted that DED is participating in an ongoing wide review of new and renewable energy policy which is being led by the Department of Trade and Industry - a review which aims to examine how the United Kingdom might achieve a target of 20% electricity from renewable sources by 2010.

2.8 When representatives of DED met with the Committee to discuss renewable energy, it was explained that since preparing the memorandum, significant developments had occurred. A review of renewable energy is presently being conducted by the Government - a review which could lead to a new renewable energy strategy or policy for the United Kingdom and in addition, a Government review of energy policy in its totality is under way. Further, it was also indicated that the European Union had produced a White Paper on renewable energy, the thrust and direction of which will have to be reflected by Government in any new energy policy for the United Kingdom.

2.9 The Director General of Electricity Supply for Northern Ireland, Mr Douglas McIlldoon, indicated that his role as regulator has permitted him to act as a catalyst and as an energy policy instigator in relation to the renewable energy market, taking action such as

- highlighting the opportunity which exists for Viridian plc to develop a 'green' tariff;
- pushing for regulations which will allow the transmission of electricity across the Viridian transmission and distribution system, and in particular, will permit renewable generators to sell electricity to third parties using the Viridian system - a situation which will uniquely advantage renewable generators whereas fossil fuel generators will be restricted to transmitting their surplus electricity to remote sites of the same company or organisation.

2.10 Mr McIlldoon supported the development and expansion of renewable energy sources in Northern Ireland and the extension to customers of the right to choose electricity from a renewable source should that be their preference. He also pointed to the substantial benefits to be gained from agriculture based renewable energy - eg increased income and jobs in the rural areas, reduction in carbon dioxide emissions, environmental sustainability (the ability always to grow willows or to turn manure into energy), fuel diversity and the improvement of social structures in rural areas. However he also listed the problems - eg a demand is needed before a supply can be provided, the high cost of renewable energy installation and the lack of market enablement mechanisms. In examining the opportunities which exist for renewable energy, he indicated that a niche market existed for self-generation, that customers who wish to purchase 'green' electricity should be able to do so and that trading at peak demand - ie selling electricity at peak times at a high price - should be introduced.

2.11 Mr McIlldoon called for a comprehensive cost benefit study to examine the benefits to be gained from renewable energy - particularly those which have little or nothing to do with the price factor - eg rural development and social factors. He also explained that Viridian is permitted to own 5 megawatts of renewable generation (they own the renewable energy production on Rathlin Island). However, he pointed out that he would be happy to increase the present limit of 5 megawatts of owned renewable generation should Viridian show any interest. In addition, he said

".....But they (Viridian) will not get involved in supporting these kind of village schemes. If they came to me and said 'We would like to develop renewables. Some of this is a bit risky, but we believe that it is in the long-term interests of the community. Will you make an allowance for us in the price control? Perhaps 30p to 40p per customer could be added into a fund to develop renewables.' I would have to look at that seriously. It is certainly not a proposal that I could reject out of hand."

Mr McIlldoon went on to say that if Viridian is to be persuaded to move in the direction of the development of community projects, then the Board must be persuaded.

2.12 The Committee noted that Viridian in examining renewable energy, applies four main criteria:

- environmental impact;
- customer demand;
- community input;
- cost effectiveness.

The Committee was interested to learn that an environmental tariff will be launched shortly which will for the first time give customers the opportunity of indicating that they want renewable 'green' energy.

2.13 With regard to biomass, the Committee also noted that Viridian has concluded that willow is worthy of further examination and support through the development phase. Mr McCrea, in his evidence to the Committee stated:

"We are looking at the willow now and it looks as though it is a technology which is very appropriate for Northern Ireland. It is getting over its teething problems and we might invest some capital in its development. So far we have made no R&D investments in such projects."

2.14 The Committee welcomes the commitment shown by Viridian to renewable energy generation in the future. Mr Gaston of Viridian indicated that while Government and European bodies play a major role in providing assistance to develop research and development capacity, Viridian

"intend to increase our profile and take more of a leading role in that regard"

3.

WILLOW BIOMASS

- 3.1 As explained by the Chief Scientific Officer of the Department of Agriculture for Northern Ireland (DANI), interest in growing short rotation willow coppice in Northern Ireland began in the 1970s as a response to a projected world shortage of cellulose for paper manufacture. Subsequently the Middle East oil crisis of the middle-1970s led to a change of emphasis. Willow biomass was then seen as a potential energy source both in terms of diversification of supply and as a response to escalating prices. This oil crisis was however, resolved and the foreseen problems did not materialise.
- 3.2 Since then, DANI has continued the research and development of willow and is now leading the United Kingdom and Europe (with the possible exception of Sweden) in this field.
- 3.3 The detailed research and development activities of DANI, past present and future are set out in the paper prepared by the Chief Scientific Officer which is attached at Annex H.
- 3.4 In addition to the research and development efforts on the horticulture and plant breeding aspects of willow biomass, the Department has devoted considerable time and resources since the early 1990s to the use of the willow biomass crop for gasification and combined heat and power. A prototype unit was built and installed at Enniskillen Agricultural College to generate electricity

which can be fed into the grid, using the waste heat to heat the intake water for the College. This was the first ever integrated facility of its kind in the world.

3.5 Having proved the concept DANI has now transferred all the technology of generation to Rural Generation Limited who are taking the system forward as a commercial enterprise and who are hoping to market it in the future on a world-wide basis.

3.6 The Committee was most interested in the evidence given by the Chief Scientific Officer about the detailed research and development which has been devoted to willow biomass over a long period, and the future activities in this area which will be required. The Committee noted that DANI sees rural renewable energy generation being applied in future to small, integrated projects - although larger projects could be considered. With regard to the economics of short rotation coppice, it was explained that farmers should not enter coppice production on a short-term basis - a long-term commitment is required to obtain a positive response. Dr McMurray stated

"Short rotation is only viable on a significant scale if planted on grassland in Northern Ireland. You are probably aware that there is a very limited amount of set aside with respect to cereal crops, so if we have to put it only on to arable ground, it is not going to make a very big impact. We really have to be thinking that if it is going to make a significant impact here, it is going to have to go on to grassland. The

establishment costs are likely to drop significantly as the scale increases. Benefits are expected in terms of maintaining rural employment with an integrated production/utilization chain"

Dr McMurray also pointed out that if the national carbon dioxide target reduction of 20% by 2010 is to be reached, short rotation coppice will be required as the target cannot be met solely by other means. It is for this reason that Dr McMurray stressed the importance of a national strategy for biomass which is capable of being adapted for Northern Ireland use.

3.7 The Committee was also very impressed with the vision, enthusiasm, expertise and persistence of Mr John Gilliland of Brook Hall Estate. Mr Gilliland has been a trail-blazer with regard to the development of renewable energy generation using willow biomass, being the first person to produce willow biomass as a commercial crop and the first person to generate electricity using willow wood chip and sell it on the grid. Rural Generation Ltd, of which Mr Gilliland is Chairman, won the contract from the Department of Agriculture to commercialise the biomass generation technology. Indeed, Mr Gilliland indicated that a multi-national oil company has approached Rural Generation Ltd, wishing to sell 100 power plants per year, as from mid-1999, to developing countries such as Ethiopia, Morocco, Guatemala and Uruguay.

3.8 In the course of his evidence to the Committee, Mr Gilliland stated that he was lobbying very hard for energy crops to be recognised as

a bona fide land use so that when the Agenda 2000 package is eventually agreed, such crops will be on the same level playing field as other agricultural commodities. He also pointed to the advantages for borough or district councils using willow biomass, indicating that there is room for partnerships between councils and farmers, and explaining that his local council is to commence a project in the near future.

3.9 The Committee, being aware of the benefits to the rural community of projects such as willow biomass, was disappointed to hear of the lack of co-operation extended to Mr Gilliland by the Rural Development Branch of DANI. The Committee was, however, pleased to note that the Chief Scientific Officer of DANI and the head of the relevant DANI policy division did show interest - and was particularly pleased to hear that the Permanent Secretary of DANI made a personal visit to see the Brook Hall Estate project.

3.10 The Committee was also interested to hear from Mr Gilliland that the Energy Directorate of the European Commission has supported the need for energy crops and industrial crops and alternative land use to be included in the Agenda 2000 proposals.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 When the Committee commenced this examination of willow biomass, it did not anticipate that its interest in the research and development aspects being undertaken by DANI would lead to such a wide-ranging report.

4.2 The Committee was very impressed with the detailed research and development pioneered by Malcolm Dawson of DANI into willow biomass since the early 1970s and having seen and discussed it with the Chief Scientific Officer of DANI, Dr Cecil McMurray and with Mr Dawson, can understand why the Department is leading the way nationally and internationally in this area. The enthusiasm and expertise generated by the DANI staff is most commendable. The Committee acknowledges that while some 25 years have been devoted to the research and development of willow biomass, more effort is needed and therefore **recommends** that DANI should continue to devote resources to this particular topic to ensure that the prime position enjoyed by Northern Ireland with regard to willow biomass research and development is maintained in the future.

4.3 The Committee regards research and development is a most important sector of work in the Department. However, the Committee recognises that when times are hard and resources are needed elsewhere, it is easy to stop research and development projects, using the money saved in what are seen as more important

areas of work. The Committee regards such action, if taken, as short-sighted and **recommends** that DANI should sustain the research and development budget as an important contributor to its overall operations.

4.4 The Committee notes that at present, the Government is not only conducting a review of renewable energy, but also a review of energy policy in its totality, and that the European Union White Paper on renewable energy will influence the content of both reviews. The Committee awaits both reviews with interest. The Committee **recommends** that in finalising these reviews, Government should ensure that the development and expansion of renewable energy sources is given top priority and that, in particular, a national strategy for biomass is developed - otherwise there will be no chance of meeting the stated national carbon dioxide target reduction of 20% by 2010.

4.5 The Committee was most interested in the evidence of the Director General of Electricity Supply for Northern Ireland, in particular his conviction that a niche market exists for self-generation of electricity, his belief that customers who wish to purchase 'green' energy should be able to do so, and his suggestion that renewable energy generators should be permitted to trade at peak demand times. The Committee also noted the Director General's call for a comprehensive cost benefit study to be conducted to examine the benefits to be gained from renewable energy - particularly those to be gained from rural development and social factors. The

Committee therefore **recommends** that the Energy Division of the Department of Economic Development should ensure that these matters are given attention in the reviews of energy being conducted by Government, and that the Department should conduct the comprehensive cost benefit study without delay.

- 4.6 In his evidence to the Committee, the Director General also explained that Viridian are presently permitted to own 5 megawatts of renewable generation (they are the renewable energy production on Rathlin Island) and that he would be happy to increase this limit should Viridian show any interest. He went on to indicate that Viridian had shown no inclination to become involved in supporting and developing small renewable energy schemes. However, when Viridian representatives gave evidence to the Committee, it was stated that they were now convinced that willow was worthy of further examination and support through the development phase, being a technology which is very appropriate for Northern Ireland. The Committee was also pleased to hear that Viridian "intend to increase our profile and take more of a leading role" with regard to the development of research and development capacity. The Committee therefore **recommends** that Viridian should without any further delay put its stated plans for involvement in the development of willow biomass into effect. The Committee wishes in particular to see the Board of Viridian endorsing and aiding the development of community based renewable energy projects, particularly those using willow biomass. The Committee further **recommends** that Viridian should without any further delay

introduce a voluntary environmental tariff to give customers the opportunity of indicating that they want renewable 'green' energy.

4.7 In its report 'Northern Ireland Agriculture - Preparing for the Future', the Committee addressed the proposals contained in the European Commission's Agenda 2000 document. With regard to rural development, the Committee identified the need to address renewable energy generation in the rural community. The Community endorses the view expressed by Mr Gilliland that energy crops should be recognised as a bona fide land use. The Committee therefore **recommends** that in putting forward its proposals to the European Union on Agenda 2000, the Government should stress the need for financial incentives such as subsidies and capital grants to be given to encourage the provision of environmentally sensitive systems, including the growing of energy crops.

4.8 Having earlier in this report expressed its disappointment at the lack of co-operation extended to Mr Gilliland of Brook Hall Estate by the Rural Development Branch of DANI, the Committee acknowledging the fact that rural renewable energy projects could play in maintaining the social and other structures of the rural community, **recommends** that DANI should ensure that projects such as those involving willow biomass are given priority within its rural development policy.

4.9

The Committee, recognising the benefits to be gained by local government authorities, statutory Boards, industrial companies and other large firms from the use of the willow biomass technology, **recommends** that they should give serious consideration to the feasibility of installation of gasifiers at their sites, contracting local farmers to grow the willow biomass fuel. Further, the Committee **recommends** that local government authorities should examine the benefits of growing willow biomass on Council owned land as fuel for gasifiers which could be installed at facilities such as swimming pools and leisure centres. In addition the Committee, **recommends** that local government authorities should investigate the advantages of using the willow plant's ability to absorb materials which are not regarded as environmentally friendly - eg toxic materials and leachate at landfill sites and sewage sludge. The Committee also **recommends** that local authorities and others involved in waste management should investigate the advantages of segmenting and stockpiling burnable waste which could be used for generation purposes.

MEMBERSHIP OF
STANDING COMMITTEE D
(AGRICULTURE AND FISHERIES ISSUES)

MINUTES OF PROCEEDINGS

ORAL EVIDENCE

NORTHERN IRELAND

AGRICULTURAL PRODUCERS' ASSOCIATION

NORTHERN IRELAND FORUM FOR POLITICAL DIALOGUE

STANDING COMMITTEE D

MINUTES OF EVIDENCE

**(Mr L Craig, Mr J Carmichael and Mr N McLaughlin
Northern Ireland Agricultural Producers' Association))**

on

**EFFECTS OF A NORTHERN IRELAND FOOD STANDARDS AGENCY ON
FARMERS AND THE DEPARTMENT OF AGRICULTURE (p 1)**

**YOUNG PEOPLE IN FARMING/RETIREMENT SCHEME FOR
FARMERS (p 4)**

WILLOW BIOMASS (p 8)

POTATO INDUSTRY (p 10)

**SOURCING POLICY OF MAJOR NATIONAL SUPERMARKETS IN
NORTHERN IRELAND (p 14)**

AGENDA 2000 (p 19)

BSE (p 23)

Thursday 13 November 1997

The Chairman: We are hoping to produce a small report fairly soon on the alternative-energy crops, particularly **willow biomass**. Mr Craig and I discussed this at John Gilliland's farm on the day that his project was being launched. What is your organization's attitude to this diversification?

Mr Craig: We are supportive. Certainly John Gilliland has been out there in the front.

We have quite recently, through our associations in Europe, had a visit from farmers from the Basque region of northern Spain and John Gilliland's was one of the farms that we went to. We thought it was important that they saw the diversity of agriculture in Northern Ireland. What Mr Gilliland is doing is very simple; instead of producing food, he is producing energy, which is quite a leap of imagination for the conventional farmer, although he would be the first to point out, and has, indeed, said to us "Look, I can afford to do it." Having said that, he did receive some grant-aid, but he is certainly very radical and on the leading edge there. However, I wonder just how applicable it is to all the farms that need to consider diversification.

Mr Carmichael: We looked at this about three or four years ago from the point of view of what one of these units could do, and one of the ideas that came up then was building a meat plant — a lamb plant. We were looking at the Strabane/Lifford area and there was talk about its being funded as a cross-border initiative. A report was done on the feasibility of such a plant — it was almost organic lamb, and it was felt that one of the by-products, the hot water, would be quite useful for producing the energy for such a plant.

Mr Gilliland's plant is being subsidized under the non-fossil-fuel scheme, but his advice is that people should not go along the non-fossil-fuel way. He is also getting set-aside for land and he has plant on that land, but most of the farmers up here are not in that position — I am thinking particularly of the livestock producers. He has also discussed the possibilities of producing — if he was allowed to — electricity in the winter time only. He is getting 6.95 pence for selling to the grid. Biomass is one of the dearest means of energy production. That is a good concept in rural areas. Mr Gilliland has already discussed it with Fruit of the Loom, Desmonds, and so on, and we have been talking about the areas where these people have their factories. It would be a good idea to produce energy in those areas and give an additional source of income to small producers who could produce the willow and whatever. It takes 500 tonnes a year to produce the energy that he needs up there, and that is on about 100 acres — 35 or 40 hectares.

From the point of view of the small producers in rural areas, it would be a source of income, but if there were no grant-aid through the non-fossil-fuel scheme and no set-aside for the land, the return per hectare would be much less — Mr Gilliland's return is £440 per hectare, or something like that. An idea is being floated that you could, perhaps, supply more to the business in rural areas, but that is something that has to be thought through. At the minute it is a demonstration project — a good project and one that Enniskillen has been working on for the last couple of years. It is a development of that, but the value of the business and the cost of production have to be looked at from the point of view of smaller units in rural areas. As Mr Craig said, he can afford it — he is getting a demonstration grant and he reckons there would be much less paper work if he were not on a non-fossil-fuel scheme. The other problem is, as I said before, that there is not the set-aside land.

Mr Craig: He is going the whole way; he is creating the electricity and selling it. If you were just producing the woodchip and selling it to Mr Gilliland, or somebody else, your returns would be down. The land is undoubtedly suitable and, perhaps, there is land even more suitable than Mr Gilliland's — they like to think that he is in a good dry area there — but the willow might grow better on much of the land we recognize. The question is how to translate that into profit per hectare or per acre.

The Chairman: I talked to the Ministry of Agriculture, Fisheries and Food representative who was there that day and I think they are giving serious consideration to pushing for a willow subsidy.

Mr Craig: It is certainly the type of thing that the Government favour at the minute — the clean-and-green image and non-fossil fuel. It has merit.

Mr Carmichael: Europe is talking about going from 4% or 4.5% to three times that by the year 2010 so they should be subsidizing and subsidy should be being sought for that. It is expensive; it is the most expensive form of energy production at the minute. I know that by the year 2010, about 13% or 14% of energy is expected to be produced by other means.

ORAL EVIDENCE

ULSTER FARMERS' UNION

NORTHERN IRELAND FORUM FOR POLITICAL DIALOGUE

STANDING COMMITTEE D

MINUTES OF EVIDENCE

**(Mr A MacLaughlin and Mr W Aston
(Ulster Farmers' Union))**

on

AGENDA 2000 (p2)

WILLOW BIOMASS (p5)

FOOD STANDARDS AGENCY (p6)

YOUNG PEOPLE IN FARMING/RETIREMENT SCHEME (p9)

APPLE INDUSTRY (p11)

NATIONAL SUPERMARKETS: SOURCING OF PRODUCTS (p12)

ORGANOPHOSPHEROUS DIPS (p15)

Thursday 27 November 1997

The Vice-Chairman: The second issue we want to address is the production of willow biomass.

Mr Shannon: Willow biomass is a fairly new innovation into farming. I only became aware of willow biomass through serving on this Committee and following our visit to Enniskillen. You may have read about it in the 'Farming Life' about five months ago, and that was my first introduction to it. Do you see it as being a potential alternative for farmers?

Mr MacLaughlin: That is an interesting one. There is a tendency for farmers to say "I have enough to think about." but one farmer, who is very much involved with the Ulster Farmers' Union, has gone into this. Mr John Gilliland is a young farmer — an unusual chap — who is a cereal producer fundamentally. He is getting involved, not just in the growing side of it, but in following it through to an end product, which in this particular case, as I am sure you know, is the production of electricity. He also produces heat from it in that he dries his grain using this mechanism.

It seems that it can be done, but bear in mind that he is doing special projects and is therefore getting support from external agencies of one sort or another to make it a viable proposition. But he is now producing electricity, near Muff on the outskirts of Derry, and feeding it into the grid and/or using it himself. He is growing the willow right from the beginning and it is well worth taking the opportunity to see his operation. He has now willows at all stages, and while I do not know that he is finally harvesting yet, they are very close to that level.

Those who have studied what he is doing are saying that the present economics of it mean that he is £70 shy per acre. Therefore it will be the cost of making up that level of shortfall which the Government will have to meet if they are interested in investing in an alternative form of energy production to the traditional methods. If that differential can be met then this might well be a viable possibility. That of course is in the context of simply producing the willows and it excludes all the other adjunct costs in investment terms but it nonetheless still looks to be feasible.

I understand that the reason that prompted Mr Gilliland was the set-aside because at one stage it was 15% compulsory, so that he had good land sitting there doing nothing. He therefore found a way to use that land which was acceptable within the rules — the willow-biomass scheme. The economics of this may change slightly because we are moving towards what looks like a voluntary set-aside situation Agenda 2000. The difficulty with this process is that it will take between five and six years before you reach the stage where you can harvest it. After that, you can produce energy every year because the root stock is already there. But it is quite astonishing to see the rates of growth of the willow. So it would seem that there is still a lot of work to be done before we get to the point where the ordinary farmer can take that on, and, furthermore, the Government will have to make a policy decision on the generation of power and electricity.

Mr Shannon: The green environmental politics are obviously coming more to the fore now, and willow biomass is one method of pursuing what the Government directly, and Europe behind them, want farmers to do. Do you see the Government providing some sort of grant-aid or assistance? — for example, you are saying that there is a £70 per acre shortfall

presently. Is the thrust to push for Government assistance by promoting willow biomass as a green environmentally-friendly crop?

Mr MacLaughlin: What we are saying — and this is confirmed all round — is that the scheme cannot go ahead without that assistance, because it is not economically viable for the farmer.

Mr Aston: It must be remembered as well that if you are not actually using that land to produce something else then you are saving on those costs in terms of subsidies from Europe or whatever. So the cost is not the £70 itself, but the difference between the £70 and what you would otherwise have had to pay.

ORAL
AND
WRITTEN EVIDENCE

MR J GILLILAND
BROOK HALL ESTATE

NORTHERN IRELAND FORUM FOR POLITICAL DIALOGUE

STANDING COMMITTEE D

Tuesday 9 December 1997

MINUTES OF EVIDENCE

(Mr J Gilliland
(Brook Hall Estate))

on

WILLOW BIOMASS

The Chairman: I welcome you very warmly, Mr Gilliland, and ask you to give your presentation and take questions.

Mr Gilliland: Thank you very much for giving me the opportunity to come along. What I want to do is show you some slides. I am also passing around a paper which I presented to the International Wood Field Conference in Kenilworth a month ago. Please accept my apologies that others have already seen this paper, but I hope you will find it worthwhile.

A lot of you will probably never have heard of me, but I am the managing partner at Brook Hall Estate, which is a family-run business. My father is a lawyer and I came back from university nine years ago to set up the business. This coming year we will be farming very nearly 1,000 acres, whereas nine years ago the whole farm was let out to conacre. We have also brought a lot of new ideas into what we have done.

In 1992, I was the first Northern Irish farmer to be awarded the title of "Tillage Farmer of the Year". Quite a lot of my predecessors from the North had been runners-up, but I was the first person from Northern Ireland to win it. That was an acknowledgement of my costs of production — I was never the highest yielder, but I had the lowest cost per tonne of production. I currently chair the Ulster Farmers' Union's Seeds and Cereals Committee; I represent Northern Ireland's grain industry on the Homegrown Cereal Authority; and I am a member of the European network called the AFB-NETT, which stands for the Agricultural Forestry Biomass Network, and is based in Dublin. It is looking specifically at barriers to the development of short rotation coppice-willow, the idea of which I am trying to promote in my own work. I am also an executive member of British Biogen, which would be the equivalent of a farmers' union of biomass, and my aim is to persuade the United Kingdom Government that short rotation coppice is a *bona fide* means of land use. I am the chairman of Rural Generation Ltd, and I was the first United Kingdom farmer to secure a willow biomass NFFO contract. I should say that NFFO stands for Non-Fossil Fuel Obligation Contract, and it is a 15-year contract to sell renewable electricity to national grids. I am delighted, as a farmer

from Northern Ireland, to be the first person to get into the grid. It is a first for Northern Ireland, and that is the way I would like to see this industry continuing — with Northern Ireland leading it.

At Brook Hall Estate we own 650 acres and four farms in an area 25 miles around Londonderry. I would like to give you an idea of what is happening in the cereal industry and what I have had to do in response to it. In 1996, I grew 450 acres of combinable crops. Last year, in light of the way grain prices were dropping quite dramatically, we increased it to 650 acres and this coming year we are going up to 850 acres. We will probably have the largest acreage of cereals in the ground anywhere in Northern Ireland. We are doing this, not because we are greedy, but because we cannot afford to stand still. Grain prices have dropped from £135 per tonne two years ago, to £85 per tonne today. The only way I can survive is to take more land and try to spread the fixed costs in my business as thinly as possible.

We also have 85 acres of flexible set-aside. Set-aside is just a hyperclassification term, and 75 acres of this is currently planted in willows. We also have 35 acres of permanent grass and 35 acres of young forestry on the farm. One of the first things I did was develop an environmental policy on the farm. I am also very keen to make sure that every acre earns a return, so anything that was not very productive was put into forestry, that is if I could not do anything else with it. In that 35 acres, we have 12 acres of deciduous hardwoods — beeches and oaks planted in key areas across the estate, which will have key environmental benefits; five acres of hybrid poplar trees — and that is an experiment with the Department of Agriculture and the now defunct Lee Sawmill; and 15 acres of spruce, which is my pension — I have to look after that.

The actual project is the willow biomass and the combined heat and power plant project. We started by planting five acres of trial willows in 1995, basically to learn how to grow them. I had been to Loughgall and Enniskillen and had seen the great work that Malcolm Dawson was doing, but only as a farmer, not as a researcher. I wanted to know whether it would work on a farm. So I planted five acres, and it was done in two different blocks — a two and a half acre block beside my house and two and a half acres on a far-away block. The two and a half acres beside my house was a tremendous success, but the two and a half acres on the far-away block was an absolute disaster, and I think I learned more from that disaster. It was my quickest learning curve. The soil was organic and peaty, the weedkillers did not work properly, we had weed infestation and we spot-sprayed, we killed more willows than we did weeds. Also, we did not rabbit-fence it quickly enough and the rabbits ate the rest of them. So we did everything wrong, but that helped us to get it right afterwards.

With that sort of experience, undaunted, we planted the first commercial acreage in 1996 — 35 acres. That was repeated again in the spring of this year when we planted another 35 acres, and the last 35 acres goes in next year. Short rotation coppice is a three-year crop, and the reason we have planted them over a few years is to give continuity to the power plant — we need a harvest each year. So, to get that, we have to plant a third each year.

On the power-plant side it was one thing to be planting willows, but it was another thing to decide what to do with the woodchip. It was of key importance to get funding, so I spent the whole of 1995 trying to find someone to support me in putting up the hardware — the woodchip storage, the grid connection, the combined heat and power plant and the district

heating system. In September 1995, I was successful in that I got 50% funding from the Department of Economic Development under the energy demonstration scheme, which is part of the INTERREG II programme. That was my anchor grant, and it was the key to putting the whole project together.

With that grant, and with the first 35 acres of willows in, we put together a bid under the second round of the NFFO competition in Northern Ireland, which was opened in September 1995. Bidding for a NFFO contract is quite a horrendous ordeal — there were 129 tenders for contracts to supply electricity to the national grid, but only 11 of them were successful. The failure rate is 92%. I was very fortunate in that I was one of those 11. It was quite obvious to me that other farmers coming behind me should not have to go through the hassle that I endured in making that NFFO bid.

But the security of having a NFFO contract is that I now have a 15-year contract guaranteeing the sale of my electricity at a price of 6.95p, while the buy-in price at the moment is about 3.5p, so it is nearly twice the buy-in price. That is the level of support because it is renewable energy. It is also linked to the rate of inflation, and all that has given me the security to go to the bank to look for the rest of the funding.

Therefore, once we had the contract and the grant we started the construction of the facility. In late 1996, we started to erect the woodchip storage for the 500 tonnes of willow woodchip we expected to harvest each year. To give you an idea of scale: I have a grain store that holds 500 tonnes of wheat, yet it will only hold 150 tonnes of woodchip — woodchip is very bulky. So we have had to put a lot of storage up, and that is where most of my project costs have gone.

In spring 1997, we started to erect the building for the combined heat and power plant and we constructed the district heating system. We now use the energy to heat my father's house, my house and to dry all the grain and woodchip. That is on a big district heating system running 400 metres both ways.

In the summer of 1997, we started to assemble the combined heat and power plant, which coincided with the organization of the fuel supply. We are still planting willows, and our first proper harvest will not be for another year, so, in the meantime, we are sourcing commercial hardwood toppings. We are bringing them in as logs, processing, chipping and drying them. That started in spring 1997 and it meant that for a period of two months I had to bring in three extra people to help me with that process. We have now brought in 300 tonnes of hardwood, chipped and dried them on our existing grain ventilating floor.

At the end of October 1997, we commissioned and generated the power plant. This produces roughly 100 kilowatts of electricity for export (enough for 25 to 30 houses), 140 kilowatts for hot water and 50 kilowatts for space heat, which we use in the drying facility. All this heat is used on the estate.

The expected yield is based on data from Loughgall and Castle Archdale. We hope to get nine oven-dried tonnes per hectare in the first rotation, and as the roots will be better established by the second rotation, we hope to increase the yield to 12 oven-dried tonnes per hectare at that stage.

My objective was to diversify out of mainstream agricultural commodities which are manipulated by the common agricultural policy. At the moment, the agriculture industry is in total crisis. We need alternative land uses. I wanted to create a new enterprise using my set-aside land. As a cereal producer, 18% of my land was not producing anything. That has cost me a lot of money, and I wanted to try to regain that earning potential, to balance the business's existing fixed costs. I wanted to make use of the experience gained from the estate's straw boilers. Up until now we have used two large straw-fired boilers to heat my father's house and my house and to dry the grain. It has been a tremendous success, but this is moving us one step further. I wanted to make the estate more sustainable. We are now totally self-sufficient in energy except for the fuel that we put in our vehicles. That is quite a claim to be able to make.

I want to mention briefly Rural Generation Ltd. This new company was set up to commercialize, fabricate and market small-scale biomass gasification in combined heat and power plants. The prototype in Enniskillen runs on dried woodchip taken directly from a willow harvester. These plants were to be based on the prototype developed by the Department of Agriculture at the Enniskillen College of Agriculture. You are probably aware that the Department had the foresight, 18 years ago, to start looking at biomass as an alternative land use. They lead the United Kingdom in research — in fact, they lead all of Europe with the exception of Sweden in this technology.

Two years ago Department of Agriculture decided that they had taken the prototype plant in Enniskillen as far as they could and put it out to tender. There were two tenders — I was involved in one and the windfarm company, Benine Energy, were involved in the other. We won the contract to commercialize the plant, and the plant that I have now installed is the first commercial model of the system designed in Enniskillen. Benine are bringing a plant in from Sweden. They hope, within the next two or three months, to be up and running in Benburb in County Tyrone. I am a bit disappointed that they are using Swedish technology; I would prefer to see them using Northern Irish technology.

The company has won the contract from the Department of Agriculture to commercialize this technology. We have six shareholders with farming, engineering and manufacturing backgrounds. In setting up this company, what I wanted to do was put together a team of people with expertise in every part of the field. There are three farmers, including myself and the first client for the company, and another is a gentleman from Yorkshire, Murray Carter, who is the main plant breeder of willows in the United Kingdom. He had a vested interest in getting involved to try to get an end product for willows because he is very interested in selling his willow cuttings. We also have one of our leading textiles firms, Desmonds and Sons Ltd, up in the north west, and they are very interested in buying the technology to install these plants at their factories to give an alternative source of energy. We have two engineering firms, one from Lancaster, who had the original licence for the technology and were involved in all the work in Enniskillen, and another from Carryduff, Facility Design and Integration, who are bioengineers. Basically, they do the work of taking it from a commercial pre-production model to a production model.

Our mission statement — and we are very proud to promote it — is that we want “To assist and stimulate where possible, through the use of this technology, sustainable, environmental, rural and urban development.” We believe that this technology has a significant potential to sustain jobs in the rural economy.

The last part of the paper sets out the way in which I see things developing. “Bioenergy in the Rural Economy of the Border Areas” looks at how this project can be repeated with other farmers getting involved. The vision is to promote the planting of willows, to create economies of scale and to determine the true cost of biomass. Currently, it is costing me £1,850 to establish a hectare of willows — in Sweden the cost is £600 a hectare. The reason there is such a large difference is that my 75 acres is the first commercial acreage established in Northern Ireland; no one else is doing it at the moment. In Sweden 15,000 hectares are already established, so they have created economies of scale and have got costs down by over 60%.

The second objective is to promote community rural development, sustain the rural economy and build a project on co-operation from the bottom up. It is we, as farmers, getting a grasp of the technology, and instead of just selling woodchip at the farm gate, getting involved in the value added, in selling heat and electricity — in other words, a group of provincials coming together and working upwards.

To do this, I put a partnership together of myself and Brook Hall Estate, the willow grower, and brought in Malcolm Dawson, who, as I already mentioned, leads the research and development work for the Department of Agriculture. We also brought in two rural energy consumers, Desmonds and Sons Ltd and Fruit of the Loom International Ltd. Between them they had 19 rural factories, all energy users in the rural economy. And we brought in a European energy agency based in Enniskillen, County Fermanagh called WREAN (the Western Regional Energy Agency Network), who supplied the community and social know-how.

We entered what is called the “Energy Challenge Competition” on the INTERREG II programme and we got 50% funding, £20,000, to commission a feasibility study. The other 50% of the funding came from myself, Desmonds and Fruit of the Loom. Basically the study examined the feasibility of farmers growing willows; growers forming small businesses and co-operatives; these businesses negotiating energy-supply contracts and purchasing combined heat and power plants. So instead of Desmonds buying a plant and facilitating us, the growers own the plant and therefore get increased returns through the value added. We looked at the comparative displacement of fossil-fuel energy by biomass energy without the aid of a NFFO contract, and we looked at adding value to the woodchip to increase growers’ returns and, therefore, to give them a better incentive.

This feasibility study concluded that it is technically feasible to supply rural energy consumers with biomass energy. Of the 18 factories we audited, eight were feasible with the current set-aside support. But bearing in mind that there is very little set-aside in Northern Ireland, and taking the set-aside payment out of the scenario, only two factories were feasible, and this highlights the biggest problem with this idea. Currently, short-rotation coppice is an unsubsidized crop trying to compete against the rest of agriculture, and without some kind of level playing-field, it is going to be very difficult.

The conclusions also show that there is an ideal size for the consumer, somewhere between 120 and 250 kilowatts per base load, and that energy generation from willow biomass has a net positive impact on both the rural economy and our environment. Just to give you an idea of loads and cost, this is a summary of the more expensive prices. You can

see there in Drumahoe, where they have an average dayload of 201 kilowatts, that they are paying 9.91p per kilowatt per hour for their electricity. That is horrendously high, and you can see that it is the same all the way down to Swatragh. It is not until you get to Irvinestown and Dungannon that it starts to drop. Also, it is quite interesting that the report showed no consistency in electricity prices. The price you pay depends on how good you are at negotiating with NIE. We could not see any consistency whatsoever, and it was only when we looked at some of the Fruit of the Loom's factories, which are quite big, that we found that they were getting it really cheaply. One of their factories was paying 3.3p per kilowatt per hour, but they were using three megawatts of electricity per day, maybe 100 times more electricity than anyone else was using. And that goes on down to Buncrana. There are some places in the Republic of Ireland, Raphoe, Milford, Malin, that have high electricity prices as well. So that gives you an idea of the cost.

This gives you an idea of the feasibility. We have worked it right down to a net margin per hectare because I wanted this in layman's terms so that farmers could understand what they are going to make out of it. If you look along the top, you will see that what we are saying is that it would mean a reduction in current electricity costs of 5% or 10%. In other words, give them a 5% or 10% discount, give them an incentive to buy your heat and your electricity. We then factored in a poor yield, an average yield and a good yield to bring in a bit of variability. Then down here we put in the different basic grant-aid —Northern Ireland non-set-aside, Northern Ireland set-aside, Republic of Ireland non-set-aside and Republic of Ireland set-aside. Just to give you an idea of the difference, if you want to plant willows on Northern Ireland non-set-aside, you get a one-off payment of £600 per hectare, end of story. If you plant in Northern Ireland set-aside, you get a one-off payment of £400 plus five set-aside payments of £300 a hectare, so you get another £1,500 on top. You can see right the way across that anything in set-aside gives you a better net margin.

In the Republic of Ireland non-set-aside they get no grant-aid whatsoever. In set-aside they get five set-aside payments but no one-off grant. The reason we put all those things in is that it gives you variability and shows you how the different grant regimes affects the margin. But what we could show here — this is in pounds per hectare per year — and what I am basically saying is that unless you can show a producer a net return of £300 hectare, or £120 an acre, you are wasting your time trying to get farmers to grow it. At £120 per acre I will have a go at it, because I can tell you now that there is nothing on my farm doing £120 an acre at this time. Basically, we are looking for £300 per hectare. In the set-aside situation, a farmer can make a very good return and still give 5% discount. In the non-set-aside situation it is only in the higher yielding areas that you are giving a farmer a good enough return. Even with a 10% discount in the set-aside situation you are still giving a farmer a good return. So in certain sites there is definitely room for this technology even at the present high costs.

We have an application with INTERREG to try to take two or three of the more favourable sites we have highlighted here to fruition. If we are fortunate enough to win support for that, we hope, in the next six or eight months, to go out and look for farmers who are willing to take on what we are trying to do.

Just to set this in a European context, last November DG17, which is the energy Directorate for the Commission, published a Green Paper on the future of renewable energy in Europe. It was quite a far-reaching document. Currently, 5.5% of all energy produced in Europe is from renewable sources — in the United Kingdom and the Republic of Ireland it is

1%. We were very keen to support the Commission's ideas. There was consultation and last month the Commission produced their White Paper on the future of renewable energy. This is quite a dramatic document. It went before the Council of Ministers at the end of November and has now been accepted. They want to double the amount of energy, currently 5.5%, to 12% by 2010. They feel that biomass has a very large role to play in this. They have specifically said that they want to target 10,000 megawatts of new energy capacity from biomass. To achieve this they reckon that they will need to have 10 million hectares of energy crops planted in Europe by 2010. Now, to put that into context, that is 8% of the agricultural land mass in Europe. That is what is in the White Paper that has just been accepted.

This has a large potential for Northern Ireland and we should try to rise to the challenge and get a hold on this. If we rise to the challenge now, Northern Ireland will become a centre of excellence for this small-scale, rural technology. If you want to buy a windfarm today, you go to Denmark — that is where the experience is. You buy your wind turbine in Denmark and you bring it in. All the jobs created by the manufacture of that go to Denmark, not Northern Ireland.

We want a technology that creates jobs here. But we also want to have all the manufacturing here and to export to the rest of the world from here. And I can just tell you that Rural Generation has been approached by a multi-national oil company that wants to sell 100 power plants per year, as from the middle of 1999, to developing countries such as Ethiopia, Morocco, Guatemala and Uruguay.

We have not won the contract but are working very hard to do so. We will not know until the beginning of 1999 whether we have or not. They have placed an order to buy one of our first bio-engineered plants which is to go to them in June. They will put it through commercial trials, and if it is successful, Rural Generation will be given the contract to supply this company with 100 power plants per year. To achieve that would be absolutely tremendous; it would be a real Northern Ireland success story from the development of the technology to the setting up of a new company to deal with the export of our technology hardware — not know-how.

That is our aim; we want to try to promote the whole concept, and to fulfill that aim, we are involved in one other project with the Department of Agriculture, Londonderry City Council and the Water Service. Just down the road from where I live — at Culmore — is a reclaimed landfill site which is adjacent to the main sewage-works for the City of Londonderry. We are going to plant that landfill site with willows and irrigate it with the dirty water that comes out of the sewage-works. Willows have a remarkable capacity for soaking up dirty water; the nutrients, phosphates, nitrates and heavy metals are soaked up from water into the plants.

With the help of Malcolm Dawson and various other members of the team, we want to demonstrate that Northern Ireland is a centre of excellence; we want visitors to these shores to see every aspect of the technology. Currently, we are having three visits a week — I have to say that I am nearly worn out by them. People from every continent have been through our site in the last six months. Gentlemen, thank you very much.

Mr Poots: As you are probably aware, sewage will no longer be able to be dumped at sea, and it will be necessary to dump it on the land. If this industrial waste — this sewage — could be utilized in some way, do you see it as a means of making more money?

Mr Gilliland: I am interested in this project because, at the moment, as I have already said, my energy is expensive compared to fossil-fuel energy. If this industry is ever to take off, the costs must be equivalent to the cost of fossil fuels. You could do that by cutting your willow costs down, but you could also do it by getting another income from your willows. You could charge the water authority X pounds per tonne, or X pounds per thousand gallons, or whatever, for putting the effluent on the willows. That would be another way of taking less for your energy; the farmer would still be getting his margin and he could take less. I am very interested in this whole project and that is why I have been keen to try to bring together all those who are involved.

I believe there is significant potential. I would even go so far as to say that in the short term, you could see the pollution aspect overtaking the desire for renewable energy as the driving force behind the planting of willows. But, with regard to carbon dioxide emissions, we are in the middle of Kyoto at the moment; it is not necessarily going as well as we would like because of the Americans, but I believe that the renewable energy saga will come along in time as well.

The project contains an element of both, and that is why we are very keen to make sure that it goes ahead.

Mr Poots: What sort of land is most suited to growing willows? The soil in Londonderry is fairly light and loamy. What about the upland areas and the boggy land that you get in Fermanagh and Tyrone?

Mr Gilliland: Willows are like any other crop, the better the land you put them on, the better the yield, and, therefore, the better the margin. I was demonstrating that to you when I factored in what was a poor yield, an average yield and a good yield.

A lot of the work carried out by the Department of Agriculture has been in Castle Archdale which has typical-Fermanagh, heavy, clay soil which grows nothing but rushes. It is also not as productive as much of the rest of the land in Northern Ireland and that is the reason the Department of Agriculture picked Castle Archdale in the first place; they are not getting 12 tonnes per hectare, they are getting 10. What I would say is that there are limitations to the land you can use. If the land is high up and more exposed, you tend to get a lower yield. It is not like a spruce sitting on top of a mountain — forget about that; it is not going to grow there — but it will grow on the poorer, lower ground that you get in places like Fermanagh and Tyrone. It does not like bog, and when I say bog, I mean acidic bog. There is bog in Fermanagh, but it is heavy clay bog, if you know what I mean; it is not bog at all; it is more like marshland and heavy clay: willows love that. Willows do not like pHs below 5.2, so, if a peat bog is that acidic, they will not perform.

One of the reasons the Republic of Ireland's short-rotation coppice was given a death-knell for about 10 years was that 15 years ago, Bord na Mona tried to grow willows on reclaimed bogs; it was a complete disaster and killed any further research in short-rotation coppice in the South. We brought the Irish Department North about six months ago, and

when we showed them that willows can grow very well immediately north of the border, they were rather astonished. There is not a panacea for everything; as with every crop, there are limitations. As I said, the better the land you put it in, the better the return. I have it on my worst arable land, although some of it is quite good, and I had willows that grew to 16 ft this year.

Mr Poots: You make a profit on your energy production but you are receiving set-aside as well. Is that correct?

Mr Gilliland: No. My project is a 15-year one. Out of those 15 years, I get set-aside payments for the first five years only.

Mr Poots: That is what I was coming to. How long can set-aside be guaranteed?

Mr Gilliland: When I planted my land in willows, it was into guaranteed set-aside, so I am guaranteed it for five years. Under the current Agenda 2000 proposals, set-aside rates will be reduced to nought — not abolished. Voluntary set-aside will be maintained for people like us who want to go into industrial crops. I will be going to Brussels on Thursday and Friday; I am an unofficial adviser to DG17 — the Energy Directorate — on this issue. We are lobbying very hard for energy crops to be recognized as a bona fide land use so that when the Agenda 2000 package is eventually agreed, they will be on the same level-playing field that every other commodity is in agriculture.

Mr Stewart: Can the land be used at a later date for grazing, hay, et cetera?

Mr Gilliland: Yes. As part of my work, I went to Sweden to see the Swedish experience. Perhaps I did not stress that after you harvest willows, they resprout and grow again. So we are looking for at least five, if not eight harvests out of an acre of willows, and we will get that as long as the yields are maintained.

You can come out of willow production and go back into arable production within one season. The willows are harvested in the winter-time — December, January and February. They are cut off two inches above ground level and all the top timber is taken off. You then wait until they resprout in April/May, and when the new growth is about so high, you give it a hefty dose of Roundup, a readily available weed-killer. That will kill willows almost instantly — as I, to my cost, found out. You then give the weed-killer time to work on the roots and kill the stumps and then in about June or July, you go in with a heavy-duty rotavator and rotavate the surface, just breaking up the dead roots in the soil; you mulch it, let it lie fallow and by September, you can go in with a plough, plough all that down and put a crop of wheat in, or sow a crop of grass. You do not need a digger or anything like that.

In many cases, this is a tremendous soil conditioner. One of the problems that I have as an arable producer is that in continuous arable production, my organic matter level in the soil drops every year; it is only a small fraction, but over a 30-year period, it works out to be 3% or 4%. It is critical that the organic matter in soil is not depleted too much, and ploughing in all that root matter and all the leaves that have fallen every year ensures that the soil is in very good condition.

There is a negative aspect in that willows love water; they love drains, and they always seem to find where all your field-drains are. In Castle Archdale, some of the willow-plots have been converted back to grass and the drains have not suffered the damage that was expected. While they were growing there, the willows blocked the drains, but that did not really matter because they were using so much water anyway. When the plant is killed, the roots are biodegraded and washed out in the drains, so the problems that had been envisaged did not arise.

Mr Stewart: Would all farmers need to be grant-aided?

Mr Gilliland: We are asking willow coppice — a non-subsidized crop — to compete with subsidized agriculture, and that is impossible. I have tried to do it through NFFO. I am getting a £400 one-off payment plus five set-asides which is a total of £1,900 for a crop that is going to be in the ground for 15 years. So we are actually looking at a net subsidy, on a yearly basis, of £120 a hectare, compared to £300 a hectare on most other commodities. Something is needed to pump-prime it — to get it up and running. In the medium-to long-term, the Swedish experience has shown that if you do this by creating economies of scale, there are dramatic cost reductions to be gained; that was demonstrated by the establishment costs of willow dropping from £1,850 a hectare to £600 a hectare.

The other thing I have not mentioned is the whole issue of plant-breeding. In eight years of plant-breeding, the yields of willows have doubled, and if that continues, that will also help to bring the costs down and, therefore, less support will be required to get it up and running in the first instance.

The Chairman: On that point, what is the reaction of farmers in Sweden? Do farmers there grow only willows, or do they have them as part of their overall enterprise?

Mr Gilliland: I saw the farmers there doing various things. Agriculture in Sweden is interesting; it consists of a very large co-operative movement. Everything is done through co-operatives. They now have a Swedish Willow Company which is part of the farming co-operatives. What actually happens is that the majority of farmers grow willows on part of their land and then sell them to the Swedish Willow Company. But, as in every business, there are more enterprising farmers, and I went to see a small co-operative in a small town called Kolbeck. Ten growers came together and negotiated a contract to supply heat to the town — not electricity, but the district heating system. They have negotiated a 15-year contract with the price to be reviewed every three years, just to see what is happening with fossil fuels. What they are doing is what I would like to do here. They are getting value added out of it by selling heat rather than wood. I think that the value-added road is the right one to go along.

Mr Junkin: I am very interested in the combined heat and power, especially in the piping of the heat. I have visited Sweden myself and looked at a domestic-waste incinerator. Do you see opportunities in Northern Ireland for domestic-waste incinerators coupled with willow-biomass gasifiers?

Mr Gilliland: It is up to Rural Generation to try to adapt gasifiers to take waste, if you understand what I mean. We have purposely shied away from it because waste incineration opens up a minefield of things. The general public perceive waste incineration as

a horrendous bogey. It is going to have to be addressed at some time or other, but we have tried to stay out of the minefields. We are a young company and at the moment we are just trying to push the whole concept; opening minefields could be detrimental to that.

What we are trying to do is push the concept of getting land surplus to food production into alternative constructive use.

Just look at the set-aside policy. In May I asked a cereal producer to put 18% of my land in set-aside and do nothing with it except grow thistles and docks, and it is a complete disaster. We still have surpluses in an awful lot of our products. In cereals the intervention quantities are rising dramatically, beef has risen dramatically, and we still have surplus land. Why can we not take that surplus land and do something constructive with it, and by doing something constructive give farmers a decent income for doing it? That is the issue I am trying to push.

I have stayed away from waste incineration. I am watching with interest what happens to the waste incinerator in Belfast, whether it eventually gets planning permission or not. It is very difficult to know if it is going to get planning permission because of the public's perception of incineration. As I said, I have shied away from it. That might not have totally answered your question, but I think that in future there will be room for it.

Mr Junkin: Let us say that the two systems are running side by side. If you take a domestic-waste incinerator and you couple it into a district heating system — OK, if you do not couple into a district heating system then you just have to worry about the smoke out of the chimney — you are going to find, as they have in Sweden, that your load is going to come on in the winter time, and you may not have enough domestic waste to cope with the demand. That is where I would see your gasifier coming in with your engine alongside, pumping more kilowatts into the system — maybe even oil or North Sea gas as well — to augment it for the months of January or February. But that means then that your engine and your generator are probably going to be dead in the summer months. Would that be a very big problem?

Mr Gilliland: No. You have actually touched on a very good issue and that is the effect of season and time of day. At the moment, because of my NFFO contract, I am required to produce energy right through the year. Now, willow production naturally occurs during the winter — half of it occurs in the winter. One of the reasons they have got their energy production costs down from biomass in Sweden is that they only use willow woodchip to fuel their plants, whether they be power plants or heat plants, during the winter when the demand is there. If you take the cost of my project, I have spent £140,000 on the hardware side of my project. To break that down, roughly £60,000 of it was for the plant, the grid connection and the district heating system and £80,000 was for woodchip storage — they make me store woodchip right through the year.

What I am saying to the Department of Trade and Industry at the moment is that the way they have got NFFO structured is inherently disadvantaging willow biomass. Beside me in Londonderry I have a rather old oil-fired power-station, Coolkeeragh. It happens to be making the most money of any company in the north-west. The reason it is making the most money is that it gets paid standby to do nothing. It does not produce electricity unless it gets a minimum of 15p per unit. You saw the figures I was talking about; it is making an awful lot of money. What we are saying to the regulator, Douglas McIlldoon, and to the DTI is that biomass could fill that slot without having to have the standby charge and, also, we would not have to put up the storage. If you take my facility, I could have done my project for probably

£80,000, just putting up a small store to hold a month's supply. I could have only half the plant running for five or six months of the year. But because he is making me produce the whole year round, I have no choice but to put up horrendous storage and huge drying facilities and dry it all at that stage. I believe that one of the ways forward in this is through a proper seasonal time-of-day tariff where biomass systems can be paid 15p a unit during those winter peak hours. It could come on to supply the grid, take the pressure off the grid when the heat is in great demand and be switched off completely in the summer when it is not needed. At least then you would be getting a far better margin from the sale of your electricity.

Mr Junkin: I was down in Enniskillen looking at the machine there — I have not seen yours — and there were a lot of wires and cables and pipes and so on. It was a wee bit Heath Robinson, but I suppose they were bolted on as they improved and modified it.

Mr Gilliland: It is a prototype.

Mr Junkin: Could you explain the gasification process. I know something hot is sucked up into the engine and the engine goes without diesel.

Mr Gilliland: First of all, anyone who goes to Enniskillen has to remember that the plant in Enniskillen is a prototype and has been cut and butchered and cut again and butchered again. It was designed by a computer and like anything designed by a computer, it did not work. Over a three-year period they switched it on until it packed up, found out what was wrong, modified it, fixed it again and then switched on again. And that is why it looks very Heath Robinson. Mine does not look just as Heath Robinson, I hope you will agree, Mr Chairman.

The Chairman: Very smart.

Mr Gilliland: It will get smarter still.

The process of gasification is the manufacture of gas from wood. If you throw a log of wood on to an open fire, the first thing that happens is that that log starts to dry with the heat of the fire. Then you will start to see some spits of tars and some liquid coming out of it — that is the process of pyrolysis, which occurs at about 800°C. Once you get to about 1100°C or 1200°C the tars have gone and the water has gone out of it. The next thing that comes out of wood is gas and that is what we want. It is at that stage that you would make charcoal. The making of charcoal and gasification are nearly identical. The difference is that they want the charcoal and I want the gas. If you continue on you then have total combustion into ash.

Inside the gasifier — ours is a batch-fed system — you put your woodchip on the top and you light the gasifier. When we light our gasifier — ours is still a little bit Heath Robinson — we put a blowtorch for, literally, 30 seconds in through a port to make the charcoal glow. As soon as it is glowing, we block up that port and we switch on a blower and that makes charcoal and gets the gas off. Our gasifier — there are several types of gasifier — is what we call a down-draught gasifier. In other words, when the gas is made, instead of rising up and going out through the side of the gasifier, it has to go down through the bottom of the charcoal process where the final total combustion has taken place. By going down

there it reaches temperatures of 1200°C to 1400°C and by doing that it burns off 95% of the rest of the tars that are in the gas. So the gas that we get out is far cleaner than gas from a standard up-draught gasifier which has nothing but tars as well as gas. We collect the gas; it is a fairly crude gas, a mixture of hydrogen, methane and carbon monoxide, very similar to the old town gas. It is a chancy mixture, but in the right environment, in the proper kit, it is not a problem. The old town gas was of exactly the same composition. The difference between it and liquid propane is that liquid propane is probably seven times more dense. We are producing about 50 litres a second of gas out of our plant.

The gas is then collected and it goes to a cyclone. In the cyclone we remove the dust particles out of it. From the cyclone it goes to a water-bubbler where we bubble the gas through water. What happens there is that the gas becomes saturated with water and any tars that are left in the gas bond with the water and not with the gas. The gas then leaves the water-bubbler and goes into a condenser where we cool it down to within 2°C of ambient temperature. By cooling it we reduce about 90% of the water. Because if you have got gas at 90°C fully saturated, you have gas coming out 17°C fully saturated, it only has about 15% or 20% of the water in it that it had. At that stage we put it through a gas regulator and we feed it directly through the air intake of a diesel engine, and we have a background of 10% to 15% diesel. It can run a diesel engine quite happily. From that diesel engine we drive the generator and we collect the heat off the water jacket and off the exhaust. We have two heat exchangers, unlike the Enniskillen system which has only one. We have an exhaust heat exchanger as well and that is plumbed all through the district heating system.

I hope that that explains roughly the technology.

Mr Junkin: Where in Sweden do they operate? Is it all through the farming community?

Mr Gilliland: In Sweden there are core areas of willow production. Most of the work is for bigger projects, either big heat plants or very big power plants where they are dual-fuelling it with waste, coal, forest residue. They have a lot of that in Sweden. No one in Sweden has gone down the line of small-scale combined heat and power plants because Sweden has very cheap electricity.

Willow production in Sweden occurs basically from the middle down. I flew into Stockholm and went north to a small city called Uppsala to the Swedish University of Agriculture Sciences. To give you an idea of the importance of agriculture in Sweden, they have a university just for agriculture — not a faculty, a university. To illustrate the importance of short-rotation coppice or, as they call it in Sweden, short-rotation forestry, they have a full faculty in the university for short-rotation forestry. I was a guest of theirs for four days, and they took me around the middle and east of the country where there is a big area of willow production. Any further north than that and they are running into frost problems. When I say frost problems they are looking at -30°C. At -30°C some new clones are having problems. It is not our problem. Two years ago we went down to -17°C or something like that, but that is very rare. It is not a problem here. The main area is basically from the middle, just north of Stockholm south.

I left there and headed south to Malmo. Just north of Malmo there is a small town called Svalov which has the world's largest plant breeding company called Svalov Able, who

launched the first plant-breeding programme in willows nine years ago. I was a guest of theirs for four days, seeing all round their project, and that was where I saw the first work with biofiltration. The sewage treatment works in Svalov has 50 acres of willows planted around the sewage treatment works. They irrigate the secondary water out of the sewage treatment onto the willows. So, basically, that is the area. The willow is mixed through it and the way it fits in is quite stunning.

I have had two objections in my area to my willows. I do not know why — they fit into the landscape very well. They are never allowed to get much above 18 feet or 20 feet because we harvest them. Where I live in Londonderry on the Culmore Road, an awful lot of very expensive houses have just been put up, and I think a few people might begrudge losing a little bit of their visibility. I would say that the benefits far outweigh the disadvantages. Our great friends, the Inland Revenue, have now classified short-rotation coppice as an arable crop, not as a forestry crop. Therefore, I do not need planning permission — I can plant them wherever I like.

Mr Junkin: You have demolished part of my next question. What opportunity is there for pheasant shooting?

Mr Gilliland: It is perfect.

Mr Junkin: But maybe not just on the edge of estate.

Mr Gilliland: I have a lot of pheasants. I am an arable producer and arable farms normally have a lot of pheasants anyway. My pheasants love my willows. I have a tame robin in my willows, in the plot beside the house, and every time I take a group up, this tame robin comes along. I have had various camera crews, and everyone says to me “He is your own personal one; you have let him out of the cage and put him there.” It is quite remarkable to see the change, and this is a corner of the field. I have wheat on one side and I have willows on the other side, and it is interesting to see the comparison.

Environmentalists phone me and say that I am destroying the world by planting willows. I say “Before you make this kind of dramatic statement, please come and see what we have done and look at my field of wheat on the one side and my field of willows on the other.” My field of wheat gets about six passes of spray every year. It gets 180 units of fertilizer every year — it is an intensive arable situation — and apart from the odd pheasant and a few creepy crawlies, there is practically no life in it whatsoever. There is definitely no flora or fauna because the herbicide has done the job. There is nothing inside there at all, but over the ditch the field of willows is completely different: the birds are nesting, and if you go into the willow coppice, you will find huge worm activity. All the willows have now lost their leaves; there is a mat of leaves on the ground, and you see them clustered into a bunch underneath which are two or three wee worms trying to pull all these leaves into the ground. That is tremendous for building up microbial activity in the soil — the worms’ activity will enable flora and fauna to grow on it. So when the critics see what is happening, they like it and the criticism stops.

Mr Junkin: It is a very exciting project, and I am sure we will think of more questions when we are going home in the car. Thank you very much.

Mr Clyde: Would it be viable for a borough or district council to put in a unit, if it had the land, to grow willows to supply electricity and heat for its leisure complex?

Mr Gilliland: Yes I do. Many borough councils have two reasons for looking at that. A borough council has a big demand for heat and power as it is, but the second thing is that most councils are also in charge of a lot of landfill sites, and they are getting a lot of abuse at the moment about how they are treating them. In Londonderry our landfill site in Culmore has been on the television several times quite recently, and the city engineer is getting a lot of hassle about what is happening there. That is why they are very interested in what we are proposing at the moment.

There is great room for partnerships between borough councils and farmers. The councils could get the farmers to grow the crop, contract it out and get them to do the work. That would give farmers more work, and the councils could sort out some of the environmental problems they are having with landfill sites. They also need heat and power. However, some of the bigger leisure centres are probably buying power at quite a cheap rate. Some of them are using a lot of power and are probably buying it for less than we would have to charge for our alternative at the moment. But savings that can be made in one area can help to offset the extra costs in other areas. But there is a lot of mileage in it. My own council has backed me completely — it has gone through the council now — and we hope to start our project this spring. I hope it will be the first of many.

Mr Clyde: If you were growing willows on the landfill sites you could still pump the leachate and recycle it — we were told at Enniskillen that the willows purify the leachates.

Mr Gilliland: That is correct. Malcolm Dawson from the Department of Agriculture in Enniskillen has been very successful in winning part of a European contract to look at the biofiltration of willows in Northern Ireland. This has been replicated in Sweden and Denmark so there are three sites. What we want to see is whether the original findings in Sweden can be repeated here in Northern Ireland in our wetter climate. And we also want to find out how much of the stuff we can put on, what the daily application rate is. We do not know these things here, and we need to know them.

But, in principle, willows will remove leachate, heavy metals, nitrates and phosphates, and we have a serious phosphate problem in our watercourses in Northern Ireland with BOD (the biochemical oxygen demand). In principle, it works, but we want to know the finer details — such as how much can we get away with putting on without its having a detrimental effect. Can we put 1,000 gallons per acre on, can we put 10,000 gallons per acre on? We know it works; we just do not know the ideal dose rate for Northern Irish conditions, and we hope to work these things out with the project we are starting this spring. What, for instance, is the optimum amount? And we are looking at both leachate and dirty water from sewage treatment works as well.

Mr Junkin: If you soak up the heavy metals and then you burn them, I assume that the heavy metals will end up as ash. Does that give you a problem then?

Mr Gilliland: You are right. What actually happens is that you concentrate the heavy metals in ash but the view that has been taken by the researchers in this is that it is easier to dispose of heavy metals in a dry form than to have heavy metals freely in solution, in

water, in the environment. My ash is currently being put straight back on to the land as potash, as a fertilizer for me, because we need fertilizer. But the ash coming out of this system would go to a decimated landfill site even though it has heavy metals in it. It would be better to put it into a proper new landfill site where it would be locked up than have it freely available floating around in solution. That is the approach that has been taken in Sweden, and I think that approach will be mirrored here.

Mr Clyde: What would the price of a unit to burn it be?

Mr Gilliland: As a company we are hoping that, by the time we have all our sums right and have gone through the finishing value engineering, we will have a plant going on to the market at about £60,000 for a gasifier, gas clean-up system, engine, generator and heat exchangers, in that order. That should work out at about £600 per kilowatt, and that is not out of the way.

The Chairman: This project has so much to commend it, not least the fact that it should encourage co-operation among Government Departments and farmers, between industry and farmers, and between local authorities and farmers. It should also have very positive benefits for rural communities. What sort of co-operation have you received from the Rural Development branch?

Mr Gilliland: At this stage within our Department of Agriculture Rural Development is the one branch that I have not had co-operation with, and there is no point in beating around the bush. I have been very well supported by the Energy Division in DED. I have been very well supported by the Science Service in DANI and its Policy branch, DANI and even by the Permanent Secretary himself, but Rural Development has taken a decision about me personally. They said that I am too successful a farmer and too wealthy a farmer to benefit from any help from Rural Development.

They have not given me the opportunity to answer that criticism, and that disappoints me. They were asked to our open day and they only saw fit to send someone from the Ballymena office instead of sending the head of the branch, when all the other heads of branches were there. I have not been able to give them the choice. My response to their criticism is that to develop this technology and get farmers interested, someone had to take the gigantic step and go from research and development into the commercial reality. I accept that I am one of the bigger farmers in the province. If I were not, I could not have afforded to do this. This is the first commercial project to try to get five or six farmers to work co-operatively together through the last three years I have been through, and it could have failed at the first obstacle.

I have been to hell and back with this project in three years. I have had every obstacle put in front of me from various places, from Northern Ireland Electricity right through. But I have got there. We still have a few more technical problems at the moment, but we will get there too. My comment to Rural Development is that they need someone like me to be the pioneer, to get it up and running and fire out other problems that have not been highlighted yet. But it is not until you can demonstrate the technology with the problems ironed out that you will be able to sell it to farmers. I still need help on various issues, I cannot do it all myself. I need help with willow harvesters and whatever, and I have not even started on that yet. Yet Rural Development have just taken the decision not to support me.

I am very disappointed because they have not given me a chance to talk to them about the projects for Fruit of the Loom and Desmonds, and those are just two ideas that you could repeat in many other rural companies. They are just two companies we picked in the north west because they are prominent, and, indeed, the two managing directors have been able to open doors for me. I am sorry, I am not going to hide from that: I have used the two companies to help open doors for me because that is what I needed, and I would like the opportunity to put it directly to Rural Development that support for me is needed in certain areas. They run away. They think I am looking for heaps and heaps of support for planting willows. I planted my willows without any help from them; I put up my power plant without any help from them, but I do need some help now, and not on the harvesting side. Ultimately, Rural Development need to sit down with their Science Service, and with people like me, to work out whether this technology is to take off. We actually need to put together a team of people to give proper support to farmers.

Farmers in Northern Ireland are traditionally useless at working co-operatively — they are so independent and so headstrong. That is true and I am one of them. They need help to form these small businesses. They need guidance and a special group to help them, and Rural Development has to be keyed into that. They have to get involved in helping the process to work, and it will not work unless they are involved. I hope that within the next six or eight months they will start to see light.

I was very disappointed that the head of Rural Development Branch, a guy called Gerry Mawhinney, declined to come to my open day. That saddened me. Cecil Murray, the Chief Scientific Officer, was there; Liam McKibben who is head of Policy was there; and it would have been fitting for Gerry Mawhinney to be there, and he was not. The Permanent Secretary spent five hours on my facility two months ago, and to get the Permanent Secretary, Peter Small, down there by himself, with no cronies, and to take him right through the process was great. I mean that sincerely because he was able to ask questions. He did not know the subject at all and he was able to ask very pertinent and direct questions right throughout. He was very impressed with what we have done on the ground and with the whole concept. I hope that Rural Development will eventually see their way to helping us take this forward.

One of the things that will also help is that in Brussels the Energy Directorate is saying that biomass has to go on to the Statute Book. In Agenda 2000, on the agriculture side, they will have to recognize what is going to go on to the Statute Book on renewable energy and that agriculture has a big part to play in that. The Farmers' Union took a delegation out about three weeks ago. We went out as a guest of our MEP, and all the commodity chairmen, senior representatives and Will Taylor were there as well. The commission told us that there were two things missing from the Agenda 2000 document, although they will be included later. One is food safety — which we can all identify with — and the other is industrial crops and alternative land use. That is the first time that I have seen DG6 acknowledging energy crops and industrial crops.

Before the Second World War, there was a very large industrial crop acreage in Northern Ireland; we grew two industrial crops, one was flax and the other was oat. You may say that oats are not an industrial crop but at that time, the majority of oats grown were not to feed cattle, but to feed horses. Horses were the transport of the day. So oats were a fuel crop — an energy crop. It was only after the advent of the Second World War, and Hitler

and his U-boats that we became paranoid about food security. The Common Agriculture Policy was implemented in the 1950s so that Europe could become self-sufficient in food and farmers did very well at that. They became self-sufficient; in fact, they had a surplus.

I believe that the time is right for change now. Agriculture should go back to its original position which was supplying industry — and not just the food industry, but other industries as well — with raw materials, and energy is just part of that.

The Chairman: Thank you for a very comprehensive presentation. The interest that members have shown in what you were saying is proof of the enormous potential we feel this has for Northern Ireland.

This Committee would like to help to stimulate this willow biomass and energy production. We are visiting Brussels in January, principally to discuss Agenda 2000 and the BSE crisis, but we would like to make time to speak to the relevant people about this. Mr Barnes will liaise with you as to whom we should speak.

Mr Gilliland: That would be fine. I will be in Brussels on Thursday and Friday. I already have some contacts in DG6 and I will tell the appropriate people about your visit and suggest that they meet you.

The Chairman: Do you wish to comment on the Agenda 2000 proposals, as chairman of the Seed and Cereals Committee?

Mr Gilliland: I would like the opportunity to say a few words on Agenda 2000 in its entirety, rather than just on cereals — and this is wearing my own hat. In agriculture, we have to be resigned to the fact that the Common Agriculture Policy, as we know it, is not going to continue. Farmers are going to have to look at becoming better marketeers better businessmen; we are going to have to look at other ways of getting income. My biomass project is one example of what I have done within my business; I foresaw what was going to happen in my business.

It worries me that Agenda 2000 will not go far enough to be able to reach an agreement with the WTO. I believe that we may get an agreement on Agenda 2000 in 18 months or two years, only to have to renegotiate the whole thing in order to get a WTO agreement. If I have to bite the bullet, I would prefer to bite it once rather than twice. If the ultimate goal is to go to the WTO, then we would be better going the whole way there.

As chairman of the cereal committee, it is my job to try to make sure that that transition occurs as smoothly and as painlessly as it can. But it is not going to be without pain. It would be very foolish of me to say that all is going to be rosy. We had the first reform — the MacSherry proposals in 1992 — and one of the worst things to happen, from a long-term point of view, was that farming had a honeymoon period for two or three years. It is only in the last two years that we have had the cut-backs that we have talked about, and we had a massive devaluation of sterling just after that. There are a lot of people who believe that because the first reforms were not too bad that the second reforms will not be too bad either. I do not share that view, and I do not know how we can convince them that there are going to be changes.

I am particularly alarmed that the cereal sector is the only one being asked to make cuts in their prices without being given full compensation for doing so. They are asking us to take a drop of 20% in intervention prices, and instead of our arable land being fully compensated, they are proposing 50% compensation. That is totally unfair when other commodities are being considered for full compensation.

At the first reform of the agriculture policy, in 1992, they introduced the concept of a regional average yield. This figure was worked out according to the historic performance of crops in each member country. You were given your compensation on a tonnage basis, so that if your regional average yield was five tonnes per hectare, you multiplied your area by five and that gave you your area payment. The problem with that was that Northern Ireland was given a very bad regional average yield figure and that is now coming back to haunt us. Our area aid in 1993 was 22% less than England and 23% less than the Republic of Ireland. Yet if you took our individual crops — winter wheat, winter barley and spring barley — and compared them like with like, we were within 2% or 3% of the yields that they were getting in England and the Republic of Ireland. However, Northern Ireland's regional average yield was pulled down because we predominantly grow spring barley, which has a lower yield than those higher-yielding crops grown by a few specialist producers like myself. In the Republic of Ireland and England it was weighted towards winter crops, yet our individual crops yield just as well. We were discriminated against. We lobbied very hard and in 1995 we got it changed slightly — we are now 11% behind England and 12 % behind the Republic of Ireland. But the compensation being talked about by Brussels will further exacerbate it because it still uses this regional average yield figure. This discrimination will be compounded because the extra compensation that they are going to give will be that bit less again in Northern Ireland. That is the one big issue that we are particularly worried about at the moment. We have had several meetings at Dundonald House and they have said "We have given you one movement; we are not going to give you another." The problem is that Agenda 2000 is going to compound the problem and make life worse.

The other thing that is worrying us involves the oil-seed sector. Oil seed is a specialist crop, but it is very important to a specialist producer because it is a break-crop — it rests the ground from cereals. It means that I can reduce my inputs with the next crop — I can use less cereal fungicides and less fertilizer. So it is an intrinsic part of my rotation, and it is good environmental policy. However, they are intending to slash the oil-seed rape payment from £170 an acre down to £120 an acre. That will be the nail in the coffin for oil-seed rape.

Finally, in light of the BSE problems and the ban on meat-and-bone meal, people are crying out for other sources of protein. We, as arable farmers in Northern Ireland, would like the opportunity to grow proteins, and the Northern Ireland grain trade would be supportive of this also — in that way we could support local industry. But because of the regional average yield figure and the extra discrimination, it is absolutely impossible for us to make protein crops viable at this stage. Yet there is a big demand for vegetable proteins; not meat-and-bone meal proteins.

Those are the three key issues that we in the cereal sector are particularly worried about. And there are two other things facing us at the moment. First, the strength of sterling has crucified cereal prices. A few years ago I got £135 a tonne for wheat and barley, but today I am only getting £85 a tonne. That is a dramatic drop. This 37% figure which was blattered around by the press at the weekend is a bit low. My net farm income has dropped by

70% in two years — that is what is happening. If I, a large-scale producer, feel that, think what is happening to Mr Average. The majority of producers will not make a taxable profit this year. Coopers and Lybrand have put out a profit warning in the United Kingdom. They reckon that 80% of the United Kingdom's arable producers will not make a taxable profit this year. Secondly, that is compounded by a lack of demand for grain to feed because of BSE. And there is no market for straw; our straw market is completely flat. We are a small sector and we are not directly affected by BSE — but we are very much affected indirectly. I would argue that the cereal sector has been hit as hard as the beef sector, and we have not been compensated for what has happened. But the knock-on effect was there because if the beef man has no money to buy feed, he has no money to buy straw. We have seen collapses in both the grain and the straw markets as a result.

That is a summary of our position.

The Chairman: We have taken evidence, as I mentioned, about livestock generally, but we have not heard from cereal producers. Thank you very much; we wish you all the best in your endeavours.

Mr Gilliland: Thank you very much. If you are in the area, you are welcome to come and see what we have done — I think you would be quite impressed.

We are facing a few technical difficulties at the moment. We have a problem with the engine but we will get through all that. You cannot expect the first commercial project to go smoothly. When you see the commitment that I have put into it and I am not running away from this — I hope that you can support me. I would be absolutely delighted, and the Department of Agriculture need support too because they are out there fighting for funding for the research and development programme too. I have tried to help them get funding for their programme.

Mr Gaston: How much does your harvest machinery cost?

Mr Gilliland: I want to do something different because what is available at the moment will not suit Northern Ireland. In Sweden they are using big, self-propelled forage harvesters. We have those in Northern Ireland too, and you can drop off the grass header on the front of it and put on a willow header. It is as simple as that, and away it goes. The forage harvester can chop wood as easily as grass.

In Sweden, they are fortunate in that when they harvest there is permafrost on the ground and it is as hard as nails. But to go into a coppice here, in the months of December or January, with a self-propelled forage harvester weighing 9 tonnes or 10 tonnes, you make an awful mess. The Forestry Commission has carried out harvesting trials at Castle Archdale, so go there if you really want to see how bad harvesting trials are. It is steep and wet, and it is a real test. As an observer, I could see that that was not the right way forward. I have a big six-cylinder tractor, which I consider to be the way forward. I am replacing it at the moment, and the one I am buying has a front three-point linkage and a front PTO shaft.

I want to go to the continent and buy a front-mounted maize precision chop forage harvester that just sits on the front three-point linkage of my tractor. I will drop off the maize header, and then develop a willow header for it instead. So, we are looking for a piece

of equipment that can go on my tractor. As an arable farmer, I have a set of flotation tyres for my tractor — they are about two and a half feet wide — and are good for wet conditions. My tractor has a manual gear box which is also good for wet conditions. Most of the self-propelled forage harvesters are hydrostatic oil-driven and they sit and spin, in sticky conditions. For those conditions you need a direct-drive mechanical drive. The Swedish concept is right for frozen ground, but it is wrong for our conditions. You also need a tractor and trailer to take the material away. In my case, the same tractor will tow a trailer. So, you are looking at a one-task concept in which you cut, chip and load over the tractor into a trailer on the same tractor, you unhook the trailer, and that is it. It is a very simple system, but you have to remember to treat your coppice as nicely as possible because you want to get another crop from it. You do not want to destroy it. At the moment, I need about £20,000 for the harvester, and then I will see whether a company can make a header for the front of it, and £10,000 should go a long way towards building that.

If this industry is ever to get off the ground, we should be looking to pump prime. There is only one state-of-the-art willow planter in the United Kingdom, which belongs to one of the shareholders in Rural Generation Ltd, Murray Carter from Yorkshire. I have to bring Mr Carter and his staff over from Yorkshire to plant my willows. That is losing employment opportunities for our area. So, as part of our report, we have highlighted the need for support to be given to buy a specialist planter and a specialist harvester in Northern Ireland, so that all the jobs created from this are kept in Northern Ireland. Now, I am quite happy if that is bought by a co-operative. It would mean that everyone could use of it, and that is the right thing to do. These are issues that I want to talk to the Rural Development Branch about, constructive ways of trying to take the idea forward. The cost is not out of the way, and the machinery would be of use to anyone coming after us.

Mr Gaston: You mentioned flotation tyres. How strong are the willow stumps?

Mr Gilliland: I have had long conversations with the Forestry Commission who ran the trials, and they have told me that not once did the stumps put a cut in standard agricultural tyres, which surprised me. The great thing about low-ground pressure tyres is that they are only running with about 6lbs or 7lbs of pressure and so a tyre will actually give. Not only that, but the stump will also yield a bit. In any case, we have planted the willows in a double row, 0.75 metres apart. We then miss 1.5 metres, so what happens when you harvest it is that you straddle that double row and your tyres do not run over anything. The only time they run over anything is when you are turning.

Mr Junkin: You have mentioned that the only fossil fuel you use is for the vehicles. I suppose you have your eyes set on a field or two of oil-seed rape?

Mr Gilliland: I am an oil-seed rape producer, and I jokingly said to the Department of Economic Development “For very little expense I could become the first totally self-sufficient farmer in Europe. Would you not go the extra mile?” They said “No.” But that possibility is there. I have shied away from biodiesel because for every unit of energy you put in, you only get one and a half units of energy back. In contrast, for every unit of energy you put into short-rotation coppice aspect to create heating and electricity, you get at worst 15 units back, but it is usually closer to 20 units. So that speaks volumes. Hence the reason the United Kingdom Government refuse to support biodiesel. They are actually right on that, although the French Government totally disagree with them.

The Chairman: Thank you very much.

ORAL
AND
WRITTEN EVIDENCE

DIRECTOR GENERAL OF
ELECTRICITY SUPPLY
FOR
NORTHERN IRELAND

NORTHERN IRELAND FORUM FOR POLITICAL DIALOGUE

STANDING COMMITTEE D

Thursday 18 December 1997

MINUTES OF EVIDENCE (Mr D McIlldoon and Mr B Clulow (OFREG))

on

THE GENERATION OF ENERGY FROM NON-FOSSIL FUELS

The Chairman: Good morning, Gentlemen. You are both very welcome, and thank you for taking the time to come and assist the Committee in its deliberations.

We are currently examining, among other areas, the generation of energy from non-fossil fuels and, in particular, the use of willow biomass not only as an alternative farm enterprise for farmers but also as a means of creating energy that can be then sold on to the national grid. We would be interested to hear your views on this issue and how, in practical terms, it might be advanced in Northern Ireland.

Mr McIlldoon: Thank you, Chairman, for the introduction. I very much welcome the opportunity to come before this Committee. Energy policy, in its totality, is a matter of great public interest which ought to be made on the basis of an open and informed discussion. I would be very happy to come before any other Forum Committee to talk at greater length about how the industry is regulated, what the issues are and what needs to be done because there is too much ignorance among the general public about the situation. We need an informed public to be able to put pressure on those who make decisions, since they need to be made in the interests of the community.

I would like to introduce my colleague, Mr Clulow, who is one of my senior economists who specializes in the economics of renewables.

To set the discussion in context I will use some slides by way of a short introduction. OFREG is not a quango as many people imagine but is, in fact, a Government department exactly like the Department of the Environment or Economic Development. The only difference is that it is not headed by a Minister. It is headed by a Northern Ireland civil servant, at present myself. But it is the only part of the Administration that is headed by a native.

I will begin by showing you what has happened to electricity prices since privatization.

The first slide is a graph of electricity prices in 1991 following privatization in Great Britain but prior to privatization here. The green line shows the average prices for all of Great Britain. The dotted line is Northern Ireland and the yellow line is four companies in England, which are generally regarded as comparable with Northern Ireland because they cover a rural area, the south west of England, south Wales and north Wales. If you look at domestic bills — that is for the 90% of us who are domestic customers consuming about 3,300 kilowatt hours per year — Northern Ireland's prices then were worse than in Great Britain as a whole, but better than the price in the comparatory regions in Great Britain. So until 1993, Northern Ireland's domestic customers were doing just that little bit better. Then, of course, in 1995 this wide divergence opened up, as the graph clearly shows.

As you all know, electricity prices consist of generation, fuel costs and the cost of the power stations which represents 50% of the cost to domestic customers; Northern Ireland Electricity represents the remaining cost for the delivery of the electricity through the wires and through your meter into your house. The price control which I am allowed to make every few years only covers the Northern Ireland Electricity element of cost which only affects 50% of the bill. The red line on the graph shows the average price for Great Britain in 1991; the yellow line relates to the expensive companies in the south west of England and Wales which have large rural networks, with prices correspondingly considerably higher than the average for Great Britain. You can see that Northern Ireland Electricity, before privatization, was delivering electricity through the wires to domestic customers less expensively than the British average, and for considerably less than the comparable regions. After privatization, Northern Ireland Electricity's price control allowed it to very substantially increase its profits and its prices by a faster rate than inflation when it was falling elsewhere. This meant that the cost of delivering electricity through the wires in Northern Ireland was substantially dearer than the British average and even the comparative companies in England by the time the new price control came into effect in 1997.

The price control that I proposed would have made up some of the differential, though it would not have fully closed the gap. The price control that the Monopolies and Mergers Commission (MMC) imposed was even worse than my proposal. My second proposal in August 1997, compared to the MMC, would have been slightly better. You can see from the slide what has happened to Northern Ireland's electricity prices and how they have diverged from the relatively good position back in 1991. We are awaiting the result of the judicial review but even the best possible outcome would not fully redress the differential.

Prices will continue to diverge because the prices in England will fall again. The new price control in England will reduce prices there by another chunk and so we will have a divergence opening up again in the way that it did previously. That is just a bit of general background which you might find of interest.

The other part of the price control relates to generation costs, and again in Northern Ireland they were higher for domestic customers. They are now going to diverge very considerably because of generation competition in England and our continuation of old power procurement contracts. They will diverge over the next 13 years unless something quite dramatic is done about them. That is the background against which we could talk about renewables.

This is the situation with generation costs that we face in Northern Ireland until 2010 when the existing contracts can be cancelled. You can see that the average price now is about 4.2 pence. If some of the older stations fall out, it will drop slightly; but if you need something dramatic like flue-gas desulphurization at Kilroot it will rise again. They have come down to this sort of price by the end of the decade. We think they should be considerably lower. This line on the graph represents a desired price; that is where we would like them to be, and that is what I am working towards. Whether or not it is achievable depends on the willingness of the generators to co-operate and the decision of the Monopolies and Mergers Commission if I take the case to them. Three pence is what it should be if the industry had been sensibly privatized — the price in England now stands at 2.9 pence. There is no technological or financial reason why it should not be three pence in Northern Ireland, but because of the contracts it is impossible to get it down to three pence before 2010. My target is to get it reduced to three pence, which is the proper price.

There are substantial benefits from having agriculturally-based renewables. They can bring new jobs to rural areas as well as a CO₂ reduction which is important given the world-wide commitment by Governments to reducing CO₂ emissions. So that is a double bonus. Renewables are also environmentally sustainable — we will always be able to grow willows or turn cow manure into energy. It also adds to fuel diversity because the more sources of electricity you have the more secure you are against shocks in the world market.

It also improves social structure in rural areas because almost all of these schemes would require degrees of co-operation between farmers including the pooling of resources. For example, they would need arrangements about harvesting and marketing, and some of the equipment is very expensive. They might want to have a co-operative for consuming the electricity. All these things would contribute to improving social structures in rural areas and, indeed, not only among the farming community but between the farming community and other people in rural areas, who, for example, might want to consume the electricity locally.

Although you probably want to concentrate on biomass and biogas, there are other forms of renewables which are of interest to rural communities. For example, farmers who have a wind-turbine on their land normally get a percentage — I think it is about 1% — of turnover. So a farmer can have an income from a wind-turbine which takes up very little of his land, does not deprive the sheep of very much grazing and at a cost not worth talking about. Alternatively, if he has an opportunity for a small hydro-scheme he can save his own electricity and be possibly selling electricity to a neighbour.

During one of the very hot spells in the Summer of 1995, I remember visiting a farmer up in the hills around Cookstown, and he was still generating his own electricity from a little hydro-scheme that he had made himself — he liked that kind of thing — and he was saving himself £8,000 a year in electricity bills. That is a very substantial amount for a farmer to be able to cut out of his costs. All the renewables are probably of interest to the farming community, but the ones which can actually be turned into a business are biogas and biomass.

The problem is that producing electricity from oil is relatively inexpensive. If Northern Ireland Electricity is buying electricity from somebody, they will buy it at a price of 2p or less; that is what it is worth to the generality of consumers. And what it is worth to the generality of consumers is the price the consumer would otherwise be paying for the gas, coal or oil that would be burnt in one of the big power stations. Without putting a burden on the rest of the

consumers, Northern Ireland Electricity cannot buy electricity from another party without paying that very low price, and at that low price, you cannot afford to produce it. So in order to stimulate renewables, the Government introduced a Non Fossil Fuel Obligation Order which says to the electricity company — and this applies throughout the United Kingdom, although in Scotland they are called Scottish Renewable Orders — “You have got to buy a certain amount of electricity from renewable sources, irrespective of the price”. So there is a competition exclusively for renewables.

In Northern Ireland we have had two sets of renewable contests, and Northern Ireland Electricity has been required, under the first one, to buy about 15 megawatts and something similar under the second. Under the first one the average price was about 6p but as a result of falling prices, more competition and more knowledge, the price under the second is about 4p. So you can see that the average price of renewables is coming down to approach a price at which it can compete with fossil fuels.

If you were building a new fossil-fuel power station, the price would be higher than 3p — probably around that — so you can see there is a convergence in prices. It is quite possible that some renewables could come into the market-place without any kind of subsidy; the trouble is that the renewables that could come in at that sort of price tend to be things like hydro-schemes, wind-farms and landfill gas — gas in an old municipal rubbish dump, biomass or biogas could not come in at this price. There were nine applications for biomass in the last round; two of them were successful, and one came in at this price and is currently on the system. It is a small biomass CHP plant — 100 kilowatt — installed in Brook Hall at Culmore. It is John Gilliland’s scheme; if you have not looked at it already, I am sure he would be delighted to show it to you. There are a number of progressive farmers who have lots of bright ideas and are very effective businessmen as well. That price on the slide represents the fact that he got a grant for it. There is an energy-demonstration-scheme grant in that price.

The other one that is coming on the system is Blackwater Museum which, I believe, is also getting some kind of grant support. It is twice as big. It is at the Blackwater Valley near Benburb, on the border between Armagh and Tyrone and its price is slightly higher. It is 200 kilowatts. Both of those schemes provide heat as well as electricity. In one case it is providing heat round the farm and other buildings associated with it, and in the case of the Blackwater museum, it is providing heating for the museum and an associated hostel.

The only other biomass scheme that applied successfully was a bio-digester in McGuckian’s farm, somewhere in County Antrim, and that is using all the pig manure to produce gas which will, in turn, produce electricity through an anaerobic digester. There are several examples of anaerobic digestors in Northern Ireland producing heat, and I think there is one small one near Waringstown producing electricity. This one — McGuckians — was one of two that was entered in the NFFO (Non Fossil Fuel Obligation) round and was the only one that was successful. It has not been commissioned yet — I do not know if it is going to be commissioned, there seems to be some slippage. That is where those kinds of technologies are in Northern Ireland.

So what are the problems with agriculture renewals? Well, one of the problems is supply and demand — you really need a demand before you get a supply with something like this, and who is going to create the demand? The Government can create the demand by

having NFFO orders, and no doubt they will continue to do so. But there is a problem of price — the high costs cannot be overcome, although there is a variety of ways in which they might be mitigated. There is at the moment a lack of market enablement mechanisms. You need to have some way for this kind of product to come forward, and unless it does come forward in much greater quantities, its prices will not drop. Yet there is every reason to believe that, properly organized and structured, the prices could drop.

There are opportunities for renewables. There is a niche market for self-generation. At the moment, if you produce electricity, a lot of the money goes into the wires business. It is quite feasible to produce electricity on your own site and use it on your site. If you use it that way, you only have to pay the generation costs. You do not need to pay for passing it through the wires. With something like biomass, if you produce electricity at, say, 6 pence and consume it on your premises, it might still be quite competitive compared to buying fossil fuel electricity and delivering it through the wires to your premises. We are making certain changes in the rules so that if you do produce “green” electricity on your own premises, you will be able to wheel it to any other customer. So you could have a biomass plant in a village where the distances were very short and you could deliver it round all the local businesses in the village, possibly through dedicated wires. That might be an interesting little niche market.

Another idea is to combine the production of electricity with providing hot water to heat the buildings associated with the plant. It would require a degree of co-operation among households in an area, but you could have a local, district-heating system. There are a lot of businesses in Scandinavia which are based on biomass. If you want to explore that idea, you would do well to go and look at them in Denmark.

We know that natural gas has arrived in Belfast. I would very much like to see — as the gas regulator — gas moving to north-west and down the corridor towards Newry. But realistically, there are going to be large parts of Northern Ireland that are never going to get natural gas. So it may well be that these are ideas — biomass district heating — that those areas should be looking at.

Another possibility for agricultural renewables is to develop a “green” electricity portfolio. It would be quite feasible for Northern Ireland Electricity to offer customers the option, or, indeed, for another supplier to offer customers the option, of saying “I would like to buy all my electricity from renewable sources. I would need 4,000 kilowatt hours a year, so go out and contract with somebody who has a hydro scheme or the wind power to produce 4,000 kilowatt hours for me.” That would be quite feasible — other countries do it. Northern Ireland Electricity toyed with doing it, and for some reason dropped it. It is possible to do that, and I am sure that, sooner or later, they will do that. It seems to me, as Regulator, that it is highly desirable that customers who want to have “green” electricity should be able to buy it.

If you had a company which was marketing renewable electricity to customers who wanted to buy it, you would almost certainly want to have a portfolio of renewable generating sources. You would want to have wind turbines, hydro, land-filled gas, and you could combine in that some biomass plants. Although they would be high in price on their own, when you mixed them with everything else, the high price would be effectively diluted. So if 10% of the portfolio consisted of, say, biomass, 50% of wind, 30% of hydro and 10% of land-fill gas, the average price might still be low enough to be attractive.

The last possibility is what is called trading at peak demand. As we move to a competitive market in electricity, the price that a generator will get will vary throughout the day. So, if you have a machine that you can sell electricity from at, say, 6 o'clock in a winter's evening, you will not get tuppence for it; you might get 10 pence for it. That is what happens a lot in England: some people make their money by trading at peak times because they have that kind of trading mechanism. It may also be possible to have a biomass plant serving their own premises during a lot of the year, but also making money by selling electricity at a high price for maybe 200 hours of the year. That is not possible at the moment but it may very well be possible in the future.

Those are the opportunities for renewables. The question is, what happens next? Somebody needs to do a comprehensive cost-benefit study. There are benefits from renewables that have nothing to do with the price factor. It is not simply an energy; it is a rural development and social issue. You need to take all of those considerations into account if the Government are going to encourage renewables. I am sure the benefits outweigh some of the apparent costs. Beyond that, it is a matter of political will. If you want to encourage the development of these sorts of renewables, you will require the co-operation of the relevant Minister.

The Chairman: Thank you very much, Mr McIlldoon. Does Northern Ireland Electricity co-operate with the existing biomass producers, like Mr Gilliland, who are attempting to supply electricity to them?

Mr McIlldoon: Yes. Northern Ireland Electricity has no choice in the matter. The Department of Economic Development issue an order saying that they have to take 15 megawatts, or whatever it happens to be, and Northern Ireland Electricity then organizes a competition to take that. They have got to ensure that people's projects are assessed so that they are technically viable and that the people putting forward projects can run them. Then they have to offer them a connection agreement to the system, and they have to take all the electricity they produce and pay them. Northern Ireland Electricity co-operates fully with that. It is the law, and they have to do it.

The Chairman: Who determines the price?

Mr McIlldoon: It is determined by competition. Each technology bids, and the Minister decides that he or she wants so much wind. Say he wants 10 megawatts of wind, then it will be the lowest price wind project that will be selected in that category. Similarly, he wants 3 megawatts of biomass, then the cheapest biomass schemes to produce those megawatts will be selected. It is entirely at the Minister's discretion as to how the portfolio is carved up. He may decide to take geographical distribution into account — for instance, he may want half of the projects to come from west of the Bann. There is a lot of ministerial discretion, and their aim has been to get as low an average price as possible. There is no denying that the total electricity bill rises as a result of renewables. But they have ensured that there has been a diversity of supply and that it does not all go to wind, although up until now it has been 80% wind.

Mr Shannon: You have referred to the price differential that exists between the mainland and here, and the way that Northern Ireland Electricity puts the price up so high, and

the fact that you are trying to reduce it. You have said that you will have it down to the average of 3 pence by about the year 2010. What power do you have to do that? You have asked for a certain level, yet Northern Ireland Electricity have said “No, we are not happy with that.” So is it the Government which ultimately agrees the price?

Mr McIlldoon: No. Theoretically, it is independent regulation. The Government introduced regulators because they did not want Ministers interfering with day to day decisions about energy prices. So they privatized the electricity industry, and then they said “It is a monopoly, so we cannot just let it do what it likes or it really will exploit the population”, so they put in regulators. They then did not want to get back to a position where Ministers were dictating prices, so the regulators have got to be free from ministerial interference. They have this system of independent regulators, which means that while you are in office — unless you do something diabolical — you cannot be touched. The sanction is that they will not reappoint you if they do not like the way you behaved while in office.

I have control over the prices for the wires business — Northern Ireland Electricity’s part of it — and I issue a price control. Northern Ireland Electricity did not accept the price control, so they have an automatic right to go to the Monopolies and Mergers Commission. I wanted a 33% cut, but the Monopolies and Mergers Commission said 28%. I waited several months after the Monopolies and Mergers Commission had made their report to see what the market thought of this. The market pushed Northern Ireland Electricity’s shares up. The market was obviously quite comfortable with the fact that Northern Ireland Electricity could have a further price cut. So I then set a price cut of 31%, and Northern Ireland Electricity, as they are entitled to, asked the courts to judicially review my decision. I do not know what the judge is going to say. If the judge finds in my favour then Northern Ireland Electricity will have the right to appeal it, but if they do not, then the 31% price cut will take effect. If the judge finds for Northern Ireland Electricity, then theoretically I would have the right to appeal it as well, but one must assume that the MMC cut would take effect. Price control lasts for another five years to 2002, when it can be reopened, although it can obviously be reopened at any stage if it is manifestly failing to do what it is meant to do. For instance, if the company is making enormous profits and customers go on being — to put it colloquially — screwed, it can be reopened. However, there is a presumption that a price control will not be reopened because that makes the whole system very unstable. It is a bit of a dog’s dinner at the moment.

Mr Shannon: We have probably all expressed concern in our councils about the vast profits that Northern Ireland Electricity has made. I am not saying that they should not make profits — their shareholders deserve a dividend — but I feel that it is grossly unfair that it is the people here, who have built the electricity service, who are the ones being — to use your word — screwed to give extra money to the shareholders.

Mr McIlldoon: The return to shareholders since privatization has been 23% per annum real. The value of the shares is well over twice what they were when the company was launched. The Government’s intention was that this should be done for the benefit of customers; not for the benefit of shareholders. The intention was that prices would be lower because of a much more efficient industry — it is undoubtedly more efficient — and investors would get a reasonable return on their money. The company is protected from bankruptcy by law. I have a statutory duty, as every regulator has, to ensure that the company can finance its activities. Any of you who are businessmen know that businesses do not have that kind of

protection. If you do not deliver what the market wants, you go bankrupt. But a regulated company has an enormous amount of protection. So, investing in a regulated business is a very safe investment to make if you are getting that kind of return on your investment. I think it is scandalous, and I have a duty to go on trying to put it right, but it is something of an uphill battle.

Mr Shannon: There is no doubt that you will have the support of the community in trying to reduce electricity prices to those across the water. It is an absolute scandal that they have been able to do this to the electricity payer over the last few years.

Are you able to suggest to Northern Ireland Electricity that they look at grant-aiding the likes of renewable schemes for rural villages, particularly with their vast profits of £100 million last year? I think that that is quite an interesting idea.

Mr McIlldoon: Historically, Northern Ireland Electricity have not taken kindly to suggestions from me. They might take more kindly to suggestions from you. It is a mystery to me because Northern Ireland Electricity are allowed to produce renewables. They can own renewable generation. They are allowed to own five megawatts. They own the renewables on Rathlin Island. I have always made it clear that if they wanted to own a larger number of renewables I would be perfectly happy to increase that limit. It seems to me that if Northern Ireland Electricity really wanted to win the hearts and minds of the people, particularly in rural areas, they would offer to develop some of these schemes. There is no reason why they could not become shareholders, for example, and provide the technical expertise to make them work.

To be fair to Northern Ireland Electricity, they do support some rural energy efficiency schemes. I do not know whether you are familiar with the work that has been going on in Fermanagh, but there is a local energy agency there supported by Northern Ireland Electricity. There is one in Belfast, the Energy Shop, supported by Northern Ireland Electricity. There is a new one somewhere in the north-west which they probably also support. But they will not get involved in supporting these kind of village schemes. If they came to me and said “We would like to develop renewables. Some of this is a bit risky, but we believe that it is in the long-term interests of the community. Will you make an allowance for us in the price control? Perhaps 30p or 40p per customer over the year could be added into a fund to develop renewables”, I would have to look at that very seriously. It is certainly not the sort of proposal that I could reject out of hand. But Northern Ireland Electricity does not come to me with that kind of proposition. There are people in Northern Ireland Electricity who think that sort of thing and have talked to me about it, but they are relatively junior in the organization. It is different when they get near the board. Frankly, the board is just dedicated to making as much money as it possibly can. You can see them making money out of the land at Danesfort at the moment by developing it for housing, which is probably what it should be developed for.

I suspect that if you want Northern Ireland Electricity to move in that kind of direction — getting involved in the community, developing these kind of community projects — you really need to persuade people on the board. It needs to come not from junior people in Northern Ireland Electricity who are just dismissed, not from me whom they regard as an adversary, but from people like yourselves.

Mr Shannon: Would it be fair to say that Northern Ireland Electricity could be a prime mover in renewable energy sources if they, as a major supplier, were prepared to do so?

Mr McIlldoon: Yes.

Mr Poots: Do you not find that the generating companies are more of a problem with regard to price rises than Northern Ireland Electricity and that you have less influence and control over them?

Mr McIlldoon: Well, I have less influence and control over them. The theory is that you have several generators, they all compete against each other, the market sets the price, and, therefore, you do not need to regulate them. That is the theory and up to a point that works in England. Clearly, it is not working in Northern Ireland — I cannot just cut their prices. There is no process by which I can do that. I have got to do it in very indirect ways. Half the cost of generation is fuel prices. They are set in world markets, so there is not much that can be done about that. The other half is the cost of capital, wages and all the rest of it, and that is all wrapped up in the availability payments. Availability payments this year are going to be about £144 million, which is about £40 million too much. If we got rid of that, we would be well on our way.

I found the generators much more willing to co-operate about the various ways of improving the situation. Whether those come to a successful conclusion or whether we have got to go through the Monopolies and Mergers Commission, I am not sure — I suspect that we will have to go through the MMC process. Nevertheless, the generators have been coming up with ideas which would reduce prices, and part of the change that needs to be made is the taking out of old-fashioned, highly expensive and inefficient equipment — which they are prepared to look at — and replacing it with more efficient equipment. And the other half is having some kind of competition for the market. The market under the European Directive is going to be opened up to competition in 1999 or 2000. About one third of customers by volume — that means a very small number of large customers — will be able to buy electricity from the generator of their choice. That should certainly lead to lower prices for that section of the market.

Mr Poots: Have you a view on the interconnector?

Mr McIlldoon: Which interconnector?

Mr Poots: From Scotland to here.

Mr McIlldoon: Well, interconnection is a very good idea because it enables people to move electricity around to where it is needed. It increases competition and should lead to a better use of resources. We have got a North-South interconnector at the moment which is providing benefit to both systems, not least because in time it will provide the opportunity for Northern generators to sell electricity to the Republic. The Republic is going to have an enormous requirement for electricity over the next 15 years, which it is going to have great difficulty meeting itself within its own CO₂ restrictions.

The Scottish interconnector is one that has been around for a long time. It was originally conceived as a way of getting us access to the fuel diversity of the Scottish mix of generation — hydro, nuclear, coal, gas and oil. It was conceived at a time when 90% of our supply came from oil, and we were very exposed to the fluctuations in world oil prices. The world has moved on since then. Nobody is exposed to quite that degree of price volatility now. You can get contracts which are indexed against a lot of fuels. Our gas contract, for example, is indexed against oil and coal as well as gas. If the price of one thing changes radically, it does not necessarily radically change the price of the fuel you are buying.

As far as the Scottish interconnector is concerned, it is the decision of two private companies — Northern Ireland Electricity and Scottish Power — to build this particular piece of kit. I have no say in that. My only concern is that customers may be required to pay an excess price for the electricity that comes over that kit. Northern Ireland Electricity has an obligation to purchase electricity economically, which is why it can only purchase renewable electricity at a low price, unless it is subject to an order.

This week I am sending out invitations to consultants to tender for an economic appraisal. We will be looking at whether or not it is going to cost more than an alternative source of electricity. If it is going to cost more than Northern Ireland Electricity have to decide whether to bear the extra cost or whether to abandon the project. It is up to them; it is not up to me. But I have a duty to protect customers from having to bear an excess cost, and that is what I propose to do.

Mr Poots: There is also the proposal to build an incinerator at Belfast West and to produce electricity from that source. We have had concerns expressed to us by the Northern Ireland Grain Trade Association. Can you give us your view on that?

Mr McIlldoon: Not on the concerns of the Northern Ireland Grain Trade Association. That is none of my concern. It has been through a planning inquiry, and I am sure the planning inquiry will come to a decision as to whether or not there is any kind of risk to grain from being beside an energy-from-waste plant. Energy-from-waste plants operate in other parts of the world perfectly satisfactorily. My concern is whether or not it has an effect on pushing prices down. It will be built at a time when new plants, under the European Directive, will be allowed to come on to the system at the risk of the plant owners. If they can find customers who are prepared to buy from them at their prices, that is fine because it increases competition. I look at this as I would any other plant. My only concern is what it does to competition, security of supply and prices.

Mr Poots: Does OFREG have an environmental role?

Mr McIlldoon: We have a duty to ensure that electricity is used efficiently, and efficient use of electricity has an environmental impact. Obviously, if you can get more motive power, more refrigeration, more light out of fewer kilowatt hours of electricity, that is good for the environment because you are burning less fossil fuel. It is part of our environmental role to encourage energy efficiency. We have a general duty to encourage electricity to be used in a way which is benign towards the environment, but we do not have an overriding duty. For instance, we do not have a duty to encourage renewables against fossil-fuel electricity. We do not have a duty that overrides the duty of other environmental

watchdogs. There is an environmental agency which sets parameters — we cannot go beyond those.

Mr Poots: I was thinking of the overhead power lines that have been erected in environmentally sensitive areas.

Mr McIlldoon: No, we do not have a duty in that respect. If the Planning Service says that you should not have an overhead power line, and it is going to cost more to put it underground, we have to ensure that Northern Ireland Electricity has enough money to put it underground. We do not have a role in telling Northern Ireland Electricity to put it underground because it is in an environmentally attractive area.

One of the reasons Northern Ireland's delivery of electricity was reasonably priced compared to other areas is that Northern Ireland has a higher percentage of overhead wires than most of the United Kingdom. It is a cost benefit to Northern Ireland customers — there is no denying that.

Mr Junkin: You mentioned wind and biomass and so on. Do you think that all of these sources could have a real impact on the supply of electricity here if they were followed enthusiastically?

Mr McIlldoon: There is certainly a limit. You need — though I am not sure of the exact figure and you would need to check — 20 hectares or something like that to support 100 kilowatts of biomass generated electricity, so the question is how much land could be set aside for biomass. We have a peak demand in Northern Ireland of 1,500 megawatts. That will grow over the next 10 or 15 years. I would be surprised if biomass could provide more than 100 megawatts of that. There is clearly the potential for maybe 30, 40 or 50 megawatts of biogas, but that is really dependent on the amount of waste material produced to feed into biogas digesters. There is a limit to the amount of wind power that you can harness, and wind is, in any case, unstable — you cannot rely on it on its own. People who know about hydro tell me that there is at the most 20 or 30 megawatts of hydro potential in Northern Ireland.

If you add it all up — and there was a study commissioned by the Department of Economic Development some years ago, which is probably still available, called 'Renewable Potential in Northern Ireland' — the total potential is perhaps 300 or 400 megawatts against a future requirement of maybe 2,000 megawatts. Looking forward to 2010 and 2020, I would be surprised if existing renewable technologies were producing more than 20% of Northern Ireland's electricity. That is not to say that that potential will automatically be realized. If that potential is realized it makes a very significant difference to the extent to which we are recycling our energy expenditure in Northern Ireland, adding value and improving the lot of rural communities.

Energy is a potential rural business which certainly could be exploited, but I do not see a day coming when Northern Ireland will be producing all its own energy from its resources, unless you go in for very major projects like putting a dam on Strangford Lough. People have talked about that for years, but there are environmental objections to that — you would know more than I would about that. I am told that you could produce one third of Northern Ireland's energy from that, and maybe in 50 years' time another generation will decide that is what we will have to do.

Mr Junkin: There have been rumours for four or five years that district councils are going to be forced to incinerate their waste because of the increasing landfill tax. Apart from the station at Belfast, there has been very little activity in the province with regard to this. Councils are going ahead and paying vast sums of money putting waste into well-lined, well-engineered landfill sites. Do you see really much potential in burning waste and turning it into electricity?

Mr McIlldoon: The key is the amount of the landfill tax. In other countries it is so high that it almost produces free electricity. The people who are producing the waste are so pleased to get rid of it in order to avoid the landfill tax that they pay the generator to take it. There were a number of bids for incineration from waste in the last NFFO round, and only one was successful. But if you added up all up the bids, you could probably produce about 80 or 90 megawatts of energy from landfill waste.

Mr Junkin: Landfill tax will probably rise. At the moment it is £7 per tonne or something like that. It could rise to £15 over the next two years, but then the NFFO prices would go down at the same time. There has to be a balance. The point is whether it is viable to build one of these plants or not.

Mr McIlldoon: The price of electricity from incineration has dropped. In NFFO 1 there was an offer for energy from waste of something like 6p. It came down to below 4 pence this time.

Mr Clulow: The winner in the last NFFO round came in at 3.7 pence. That is quite cheap. NIGEN was in at 3.8 pence. They are all around the 4p mark; the highest bid was 5.8p, but the rest are all under 5p. Most are around the 4p level; only one is above 4.5p.

Mr McIlldoon: It does not require much of an increase in the landfill tax to make energy from waste an attractive proposition, so it could very well happen. The Government could say “We will have a NFFO round exclusively for landfill waste. We will not have any wind power competing in this one.” They can set practically any price up to 4p from tuppence-halfpenny.

Mr Junkin: I am not happy about those big wind-farms on the tops of hills. Apart from objections from tourists and people who cannot get television pictures, the look of them puts me off.

There was one of those biomass plants near me run by the monastery in Portglenone. I do not know if it is still working.

Mr McIlldoon: I saw it about three years ago, and it was certainly working then.

Mr Junkin: They went round the farms at one stage seeking slurry and bringing back water, in order to keep the thing going. I thought it was probably too ambitious for them; it was not supposed to be at the start.

Mr McIlldoon: It does not produce electricity, only heat. But there is no reason why it should not produce electricity. I suppose if they had any surplus gas they would use it for generation but clearly they have not. And as far as I know it was supplied entirely from the herd on the farm.

Mr Gaston: You mentioned hydro-electric schemes. Were you talking about the straight hydro-electric system or about what happens in Scotland where they make off-peak electricity, store it and then use it when demand is high? Is that feasible here?

Mr McIlldoon: You can do both. Most of the hydro-electric schemes that we have talked about in Northern Ireland have been small ones on rivers. Farmers in upland areas might have some scope for high-head schemes where a small quantity of water falls from a considerable height.

Pump storage works by having a lot of electricity available at night from some relatively cheap source. It is used to pump water up into a high dam, and it is then released as required when demand is high in winter afternoons. Of course, the cost of it falling out of the high dam is virtually nothing and is instantaneous. There are two or three of those in England and one in the Republic in the Wicklow hills. There was to have been one at Camlough in south Armagh. This was to be linked to a nuclear-power station at St John's Point because once you switch a nuclear-power station on it just keeps running, so it could produce electricity at night. That electricity would not have been of great value, so it could have been used for pumping the water up into the high dam at Camlough for use in periods of peak demand during the day.

However, the Camlough scheme has been abandoned because nobody envisages a nuclear-power station in Northern Ireland. So unless somebody wants to produce one on his own, there will be no pump-storage scheme. However, some hydro people have talked about the potential of relatively small pump-storage schemes in upland areas. If you have a dam and the ability to hold back a section of water, there is no reason in the regulations why you should not run a hydro scheme. You would certainly get a commercial trading system. You would get a better price for the electricity by releasing it at certain times, rather than just letting it flow 24 hours a day.

Mr Poots: Have you any concerns about the lack of support from the Rural Development Council for the biomass scheme?

Mr McIlldoon: I am not directly involved in any of these schemes. I am only there to facilitate. It is not my job to encourage people to do these things. I am very happy to talk to any group, and I have talked frequently to groups that want to run rural renewable schemes. I was not aware that the Rural Development Council was being difficult about it.

Mr Poots: It has offered no support whatsoever.

Mr McIlldoon: There were nine biomass schemes put forward in the last NFFO round, and I thought that one of them involved an off-shoot of the Rural Development Council. But there are certainly rural development groups that are interested in biomass.

The Chairman: Thank you both very much. You have given us two or three key recommendations for our report, and there are other issues that we intend to follow up. With your permission, I want to pass on to the Forum's Economic Committee your offer to speak to other Committees. They would find what you said in your introductory remarks to be of great interest.

Mr McIldoon: Thank you for your invitation to come here today, and if there is any further information that we can provide, we will be very happy to do so.

ORAL
AND
WRITTEN EVIDENCE

ENERGY DIVISION
DEPARTMENT OF
ECONOMIC DEVELOPMENT

NORTHERN IRELAND FORUM FOR POLITICAL DIALOGUE

STANDING COMMITTEE D

**MINUTES OF EVIDENCE
(Mr J Wolstencroft, Mr G McGeown,
Mr L Foye and Mr B Malcomson
(Department of Economic Development))**

on

RENEWABLE ENERGY

Monday 2 February 1998

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RENEWABLE ENERGY

The Vice-Chairman: Welcome to the Northern Ireland Forum for Political Dialogue. I apologize that our Chairman, Mr David Campbell, cannot be with us this afternoon.

After you have made your presentation the Committee would like to ask you some questions.

Mr Wolstencroft: Thank you, Mr Chairman. We are very pleased to have this opportunity to outline the Department's policy on renewable energy. Let me introduce the members of my team. Gerry McGeown deals with the Non-Fossil Fuel Obligation (NFFO); Lawrence Foye deals with the Energy Demonstration Scheme and INTERREG; and Brian Malcomson prepared all the papers for today's meeting.

I want to begin by updating the Committee on a number of quite significant developments that have taken place since the memorandum was prepared. Those developments will impact on the evolution of renewable energy policy over the next few months and, indeed, years. As you are aware, last May's general election changed the political complexion of the country. The new Government have initiated a number of significant reviews of energy policy right across the board, and these reviews will undoubtedly have some bearing on the development and direction of renewable energy policy in Northern Ireland in the coming years.

To be more specific, the key review for the Committee is the review of renewable energy, which was announced by the new Government shortly after it took office. Since we are an integral part of the United Kingdom we are, obviously, deeply involved in that review, which is going on at the moment. We estimate that the review will conclude in early spring, and the proposals will then be presented to Ministers. It is possible that there will be a new renewable energy strategy or policy for the United Kingdom.

There is also a broader review being conducted in Whitehall. That is a review of energy policy in its totality. Again, we are linked to that review. Clearly there is some degree of overlap and, one hopes, complementarity between the general energy review and the renewable energy review. The important thing for us is that we are linked in to both these reviews. We are putting forward the Northern Ireland case, and we will be assessing the outcome of those reviews in the light of our overall energy policy for the province and our renewable energy policy.

The other interesting thing that has happened since the memorandum was prepared is that the European Union have now produced their White Paper on renewable energy. Like all European Union White Papers it has to be translated into legal directives before it has any force, but it is now a new feature of the renewable energy firmament. In devising an energy policy for the whole of the United Kingdom the Government will have to take into account the thrust and direction of the European Union White Paper. So those are quite significant developments, which will have an impact on the evolution of our general energy policy and the important renewable energy component within it.

The detail of our policy is given in the memorandum, but it might be helpful to give a policy overview to set the memorandum in context. Essentially, there are three dimensions to renewable energy policy in Northern Ireland. One of those dimensions is common to Northern Ireland, Scotland, England and Wales. The second dimension is unique to Northern Ireland. It is not found anywhere else in the United Kingdom, and it allows us a degree of flexibility and to use funding in a way that is different from every other area of the United Kingdom. The third dimension enables us to work in a complementary and co-operative way with the Republic of Ireland on renewable energy and energy efficiency matters. So there are those three complementary and mutually-reinforcing elements to our renewable energy strategy.

The first of those three elements is the NFFO regime, which places a requirement on Northern Ireland Electricity to take a certain proportion of electricity that has been generated by renewable energy. That is designed to do two things: to promote renewable energy and to give it some impetus while balancing that promotion with a concern for the cost to customers of renewable energies and electricity generated from those sources.

The second and perhaps the most interesting aspect of our renewable energy strategy is the Energy Demonstration Scheme, which we initiated about two or three years ago on a pilot basis. The scheme is designed to promote new and innovative ways of using renewable energy and increasing energy efficiency. We are not looking so much for leading-edge technology as for new and imaginative ways of promoting renewable energy. That scheme ran for two years in Northern Ireland before we were obliged by the Department of Finance and Personnel and by Ministers to conduct an independent evaluation of the scheme's impact and to present the findings to the Department and to Ministers. We did this around the time of the election last May, and, quite frankly, we were rather apprehensive about whether or not we would be able to continue with the scheme. However, I am pleased to say that the independent evaluation concluded that this had been an exceptionally good scheme, which had served Northern Ireland well.

We were therefore able to make a case to the Department of Finance and Personnel and to Ministers arguing for a continuation of the scheme and a continuation of funding for

this purpose under the European Union SPD (Single Programming Document) programme. I am very pleased to say that in spite of this being a time of intense economic stringency, Ministers gave their approval for the scheme to continue for a further two years. Its continuation was announced by the Minister, Mr Ingram, when he opened John Gilliland's willow biomass combined heat and power facility in Londonderry just before Christmas. We are very pleased with the success of that scheme. It gives us a dimension which does not exist in the rest of the United Kingdom, and we very much hope that renewable promoters in Northern Ireland will make good use of it, indeed, we urge them to do so.

The third aspect of our renewable energy policy is the INTERREG mechanism, which enables us to co-operate with the Republic of Ireland on cross-border energy efficiency and renewable energy projects. These three elements are mutually reinforcing and complementary. Over the last few months we have also established regional energy efficiency offices in both Enniskillen and Londonderry, indeed, just a few days ago we opened our renewable energy information office in Enniskillen — part of the Enniskillen facility — to promote and disseminate information about renewable energy, particularly in the surrounding rural area.

That should give the Committee a clearer overview of the memorandum that we presented some months ago and set it in its current political context. The Committee's consideration of renewable energy is very timely because you are looking at this matter at a time when Ministers are reviewing the whole area of renewable energy policy. Therefore, you are ideally positioned to feed your comments and opinions into that review. Indeed, the Department of Economic Development would be quite interested in hearing how the Committee thinks policy might be reshaped for the future. We cannot guarantee that Ministers will accept everything you say or go along with it — it is a matter for them — but we would certainly be very interested in hearing the Committee's views.

Mr Shannon: Thank you for your very interesting presentation. I have three questions. First, what are your targets for achieving renewable energy and do you believe they are attainable?

Mr Wolstencroft: That is a very pertinent question. The specific target in NI-NFFO was 45 megawatts by 2005.

The Government's new review of renewable energy, which I mentioned in my opening remarks, is aiming to increase the level of renewable energy for electricity generation in the United Kingdom as a whole by up to 10% by 2010, so we will probably have to revisit our target in the light of the outcome of the current United Kingdom-wide renewables review. Indeed, it would be sensible for us to do so. As things stand, the target is 45 megawatts by 2005, which we would consider attainable on the basis of the success of the first two NFFOs, but it is likely that there will be a revisitation of that particular target in the light of the outcome of the renewable review in the United Kingdom.

Mr Shannon: There would certainly be pressure on you to do better.

Mr Wolstencroft: There is no doubt that the environmental directives from Brussels are becoming more and more stringent on energy producers and energy users. Certainly, the present Government, given their environmental commitments, would probably be looking

towards increasing those particular targets, but you have to balance that always with the impact on prices. Your assumption is, I think, a fair working assumption at this stage.

Mr Shannon: Are funds available for those who wish to explore renewable energy, for example, willow biomass?

Mr Wolstencroft: Yes, we have funding available under the Energy Demonstration Scheme.

Mr Shannon: Do you feel that that funding is sufficient to deal with the demands?

Mr Wolstencroft: The new Energy Demonstration Scheme has just been launched and we have only got so far five or six applications in, so there is money there to fund further applications.

Mr Shannon: Is it the Department's policy to pursue those applications as soon as possible?

Mr Wolstencroft: It is important not to put a strait-jacket on promoters. We do not say that you have to have your application in by a certain time. This is an open-ended scheme — the previous Energy Demonstration Scheme worked very well on that basis. We got something like 90 applications the last time, so the interest is there. But the problem of saying to people that they have to have their applications in by a certain deadline is that you constrain them within a certain timing strait-jacket, which is not always to their advantage, because it does take time to work up proposals and projects. We find it better to have an open-ended competition.

Mr Shannon: I was going to ask you about the number of applications. So there is an interest out there.

Mr Wolstencroft: There is an interest out there, yes.

Mr Shannon: How much money have you available to develop that?

Mr Wolstencroft: About £500,000.

Mr Shannon: Do you think that is adequate?

Mr Wolstencroft: It is for the nature of this particular competition.

Mr Shannon: In light of 90 applications, do you think that it is adequate?

Mr Wolstencroft: Yes, not all the applications will be accepted.

Mr Poots: We have visited the willow biomass facility at Enniskillen College and the project at Loughgall. I think the work that is being done there has to be commended, and I am not just saying that because Cecil McMurray is sitting behind you. Malcolm Dawson

showed great initiative when he set out to create a renewable-energy source. Have you any other schemes for producing renewable energy or are you sticking to the willow biomass?

Mr Wolstencroft: Well, the NFFO order supports a whole range of schemes.

Mr Poots: I mean schemes outside the wind power and that sort of thing, such as the agricultural schemes.

Mr Wolstencroft: That is, in a sense, what the Energy Demonstration Scheme is designed to elicit. The Department does not promote the schemes. Basically, we do not have the competence or the hands-on ability to do this; rather we set the framework policy in which people can come forward with projects. As I said in answer to Mr Shannon's question, we are quite keen for new proposals to come forward. Indeed, the whole thrust and intention of this Energy Demonstration Scheme is to bring forward schemes that have not been tried before. We are not interested in people doing what has been done before. We always like to feel that with the funding that we provide under the Energy Demonstration Scheme people are doing something new that has not been done before.

Mr McGeown: Might I also add in relation to the NFFO 2 scheme that one of the ten contracts that was awarded was in respect of what we call a biogas scheme, basically a pig-slurry scheme, in County Antrim. We are certainly aware of people who have talked to us in the last two or three years about a chicken-litter scheme. That did not go forward as an application on the second NFFO competition, but there are a number of projects that have been floating around. We are perfectly happy, as Mr Wolstencroft said, to receive those and to look at them, and if people want to come and talk to us about their proposals or about ways in which we could help them, whether under the Energy Demonstration Scheme or with technical advice, we are more than delighted to do that.

Mr Foye: With regard to the agricultural schemes, we have grant-aided a feasibility study on biogas in Fivemiletown at the Fivemiletown and Brookeborough Creamery. We also grant-aided a feasibility study on chicken waste involving Moy Park, Craigavon Borough Council and Ulster Farm By-products, so we have been active in terms of helping the research along with the basic information to see whether there is a viable project there or not.

Mr Wolstencroft: The point about giving advice and assistance is actually an important one. The most important thing is for people not to go through the pain and trauma of putting together a project which does not have any likelihood of success. While we do not have the technical competence in the Department, we have very close relationships with ETSU through the Department of Trade and Industry network. In the past when people have come to us, we have been able to go to ETSU and say "Here is a draft proposal for a possible project. How do you feel this might be reshaped or reorganized to have a better chance of success?" We can feed in technical advice at that stage which facilitates and helps the project promoter.

Mr Poots: How advanced are the schemes in the Irish Republic? Are they moving along at the same pace as ours and what sort of investment are they putting in?

Mr Foye: There are ebbs and flows. It depends just at what point of the year, or at which year, you particularly look at. Probably we are about neck and neck in terms of percentage of energy coming from renewables. They currently are on their third call for bids for renewables. We are not in a position to announce that yet. So they have placed contracts but the projects are not actually up and running yet.

Mr Poots: Have they any areas of special interest?

Mr Foye: They announced a scheme about nine months ago for an energy-from-waste plant. An American company, in conjunction with the Electricity Supply Board (ROI), won the contract to build a major plant in Dublin. We are not sure whether that is running into planning difficulties or not.

Mr Poots: That brings me nicely to the NIGEN and Belfast City Council scheme to build an incinerator. I would like to know your views on that.

Mr McGeown: We have just recently granted it a consent under the electricity legislation. Anybody wanting to run a generation plant exceeding 10 megawatts requires a written consent from the Department of Economic Development. The NIGEN proposal is for a plant of 16.5 megawatts, so they were required to come to us to seek a consent under the legislation. They made their application last October, we have looked at it and we have now granted the consent to generate. Before this will see the light of day the developer will require a number of consents — the main one is planning permission. As you are probably aware that proposal went to a public inquiry and the outcome of that is still awaited.

Certainly, from the Department's point of view energy-from-waste - also known as municipal waste incineration - is an acceptable renewable technology. It was one of those renewable technologies that was considered in our report of five years ago, which was, I think, circulated with our memorandum. There is a potential for using some of that municipal waste for energy-from-waste purposes. We accept that it is a renewable technology and are happy, from our energy perspective, to see that go ahead. It is for the planners to provide the planning consent and it is for other colleagues in the Department of the Environment who have responsibility on matters like air quality and emissions to ensure that that plant is built to the current European-wide stringent standards on emissions. I think that probably summarizes our view on that particular proposal.

As you know, one of the contracts under the NFFO 2 was for an energy-from-waste facility in Belfast, which was awarded to a French-led consortium. That proposal has yet to proceed. We are in favour of incineration as a method of producing energy and perhaps associated heat, and therefore we would favour it.

Mr Poots: Are there already incinerators operating successfully?

Mr McGeown: There are no incinerators in Northern Ireland producing electricity for the grid, but there are, I think, examples across the water.

The Vice-Chairman: What is ETSU?

Mr McGeown: ETSU is now a private company. It used to be an agency of the Department of Trade and Industry. It started off as the Energy Technology Support Unit and was then shortened to the initials, but the Energy Technology Support Unit describes very well what its purpose in life is. It has now been sold off to the private sector. Until recently, within wider government, it provided professional, scientific expertise in the whole area of energy.

Mr Clyde: Would funding be available to borough or district councils if they were to go down this road?

Mr Wolstencroft: There is a fund in Northern Ireland administered by the Department of the Environment which assists district councils in the promotion of energy efficiency measures, broadly defined. In fact, a number of district councils have made use of that funding. It used to be administered by our Department until a few months ago. If district councils have biomass projects for heating various properties within their ownership, they can obtain money from that fund. There is funding there of about £2 million per annum.

Mr Foye: Councils have also taken advantage of the Energy Demonstration Scheme. In fact, two combined heat and power plants were assisted under it in Craigavon and Carrickfergus. Also, under INTERREG a number of councils came forth with projects and have been assisted with those - for example, Craigavon is operating a wind turbine project. Councils have been very active in taking advantage of any grant assistance that has been going.

Mr Junkin: Mr Chairman, may I apologize to you and to our guests for coming in late. I am afraid I came in without my watch today and I stayed somewhere longer than I should have. So if I am asking a question that has already been answered, just tell me to go and read the transcript.

When I came in the first thing I saw was Mr Foye's car — it is very hard to miss it. He knows, and I think the Committee knows, that I am very interested in renewable energy, in particular the efficient use of energy in district heating systems. Nothing would please me more than to see fairly major district heating getting underway some place in Northern Ireland, preferably in my own town of Magherafelt, but if necessary wherever the nearest incinerator would be. If as well as using incinerated waste, which I believe is a good way of taking care of waste and generating electricity, I am wondering what would be the viability of using a willow gasifier to feed more energy in for the winter months when the demand is higher?

Mr McGeown: Feed into what sort of a plant?

Mr Junkin: Let us say all the councils get together and build a waste incinerator in Ballymena. It would provide electricity and heat in the form of steam. If you could channel that into a district heating system for somewhere like Ballymena, you could have a bigger demand in the winter months. Would there be an outlet for the agricultural community to push willow biomass as a top up to the system in the winter months?

Mr Wolstencroft: There are two questions there. One is about district heating, and the other is about willow biomass. Northern Ireland's experience of district heating has not

been a happy one. It was tried some years ago, and it was not a success for a whole variety of reasons. Since then district heating technology has moved on. There is no doubt that district heating, particularly if linked with CHP, has tremendous attractions in terms of energy efficiency by reducing energy usage and generating maximum heat and power from smaller amounts of energy. So the Department would like to see both CHP and district heating used more widely in Northern Ireland.

However, it must be recognized that you need quite a heavy base-load demand to justify district heating and in Northern Ireland that probably means a base-load demand from Housing Executive tenants. The tenants have to be satisfied that the heat will come through as and when required. There were problems the last time this was tried, and people still remember that. But we have done a number of feasibility studies on district heating, and we did one in Castlederg quite recently. Mr Foye can tell you the details.

Mr Foye: A Danish company was involved with the local community group, and they did a study of Castlederg. The study concluded that it was technically feasible, but something like 60% of the population of Castlederg needed to sign up to it to make it viable. They saw difficulties in getting 60% of the people to sign up to it. Oil is quite cheap at the moment. If oil was ten times its current price, a district heating system would probably look more attractive.

Mr Wolstencroft: One of the key things about district heating is that you must have the community behind you. You must have almost total consent for it. The community must be committed to the district heating project. It is not just a question of its technical feasibility, it is not even a question of its economics: if the community is opposed to it the project will not work. Anyone who has successfully instituted a district heating programme begins by asking if the local community is 100% behind the idea. If not, forget about it.

Mr Junkin: Would 100 houses justify a small willow heating system?

Mr Wolstencroft: It would depend on the size of the willow plant. That is the kind of issue that we have to look at. A feasibility study about that kind of issue is the sort of thing that the Energy Demonstration Scheme might be able to cover.

Mr Foye: The answer is yes. We grant-aided a study that looked at small rural factories such as Fruit of the Loom and Desmond's. The study concluded that it was feasible to provide heat and electricity to those factories from willow.

Mr McGeown: You asked if it was possible to have a district heating system which was mainly fuelled by municipal incineration and topped up in the winter by biomass. I am not sure if anybody at this table has the scientific background to answer questions like that. I am not a scientist, but I do not think that the developers of this technology are keen on mixing fuels. Theoretically, you could probably do it, but a generation plant is a bit like a big power station — you can run it on one type of fuel, however, they do not like having to change to another fuel. Someone with professional expertise in the matter would probably say that it is not a runner.

Mr Junkin: Do you see district heating as being a very good heat sink for the likes of willow biomass energy to be pumped into?

Mr McGeown: Yes, I think so.

Mr Shannon: I want to ask about the 90 applications. You must have had a wide variety of suggestions. Did any of the applications propose a hydro-power scheme?

Mr Foye: Yes, I think that two or three are being assisted. One proposal is to refurbish an old hydro-plant to service a textile-printing business in Antrim, and another scheme is near Larne.

Mr Shannon: This is a big thing in Scotland, but over here we do not really have the same scope for such a scheme. It could probably be done in Antrim, but surely it would be a costly business?

Mr Wolstencroft: Our geography is obviously very different to that of Scotland. They have big mountains and lakes, so they can have high-head hydro systems. But most of our hydro schemes are low-head hydro schemes, and they are smaller than those in Scotland.

Mr Foye: We grant-aided a community group in Benburb to install a hydro machine, and they went on to get a contract under NFFO. That is due to get underway at any time now. It is installed and ready to be switched on. This is quite innovative and it is owned by the community group.

Mr McGeown: There is a section on the hydro potential of Northern Ireland in the report that was circulated with our memorandum.

Mr Shannon: Do you give more help to community-based projects or are there simply more community-based projects coming through the system. Is that where the ideas are coming from?

Mr Foye: I am afraid so; yes. We worry slightly when all the technology has to be imported, but sometimes local technology can be used. And we give every support to community groups.

The Vice-Chairman: Thank you for coming along this afternoon to give your presentation and for taking questions from the Committee.

Mr Wolstencroft: I want to thank the Committee and to renew our offer of further discussions if that would be helpful.

ORAL
AND
WRITTEN EVIDENCE

DEPARTMENT OF AGRICULTURE
FOR
NORTHERN IRELAND

NORTHERN IRELAND FORUM FOR POLITICAL DIALOGUE

STANDING COMMITTEE D

Monday 2 February 1998

MINUTES OF EVIDENCE (Dr C McMurray and Mr L McKibben (Department of Agriculture for Northern Ireland))

on

RENEWABLE ENERGY

The Vice-Chairman (Mr Stewart): Welcome to the Northern Ireland Forum for Political Dialogue. After you have made your presentation the Committee would like to ask you some questions.

Dr McMurray: Thank you very much, Mr Chairman. We are delighted to have the opportunity to talk to you this afternoon about renewable energies. And we will be pleased to answer questions at the end.

I am going to talk mainly about renewable energy. Some of you had an opportunity to see our programmes on the ground when you visited Loughgall. On that occasion we made a slightly wider presentation about diversification, and I will mention that again in my presentation today to ensure that we cover the topic in the round. I have entitled the presentation “Options for diversification with emphasis on renewable energy” to cover that wider debate.

The paper that was sent to you for consideration was based on our research “Past, Present and Future” and dealt with three areas — short rotation coppice, agri-forestry and hybrid poplar. However, they are not the only issues that need to be looked at. Research and development is the enabling part of the technology. There are other aspects that need to be covered as well.

I want to briefly touch on the European Union White Paper on renewable sources of energy, which you have already heard about from our Department of Economic Development colleagues. That sets the scene for where renewable energies will be by the year 2010. It might be worth the Committee’s while to have a look at that. It is out for discussion at present, and consideration has to be given as to how it might be written into national legislation by member states.

I will talk briefly about the economics of and current barriers to short rotation coppice — that is, how we see it here in Northern Ireland — and talk about some work that

the Department has done on the economics of the subject. I will also talk about carbon budgets and the targets that the Government have set for the year 2010. I am not proposing to speak at all about the common agricultural policy and the world trade agreements, though they are very important aspects that lie behind a lot of the reasons renewables and diversification may be necessary for the future, given the declared intentions in relation to direct support for agriculture and the implications of those direct support schemes being withdrawn. That may mean considerable amounts of land in excess, and if that land is to remain productive, in what other way can we use it? That is one of the reasons the Department of Agriculture has a direct interest in this area. Of course, the world trade agreements have very important consequences for the prices of agricultural commodities, beef and grain et cetera, and they can set the scene for future developments.

Then we have the development of the United Kingdom national strategy which we heard about earlier, and, of course, there will ultimately be a need to develop a Northern Ireland strategy to build on what is happening at EU and national level, because we will have to write that into a Northern Ireland context. We are not there yet because, while we already have the EU White Paper, the national strategy has still to be developed, and until that happens we cannot be firm about how a strategy for Northern Ireland will develop, though I anticipate its developing in close association with our colleagues in the Department of Economic Development. We have been working closely with our colleagues in the Department of Economic Development on the NFFO — we have a joint working group which, while not active at the moment, is waiting for the opportunity to get together again and develop a joint proposal.

Coming back to research and development, we started an interest in short rotation coppice in the Department many years ago, and the driver for that interest was the potential lack of oil and energy as a result of the oil crisis at that time. We felt there was a need to discover alternative sources of energy. Of course, that crisis was resolved, and the problem did not materialize as we thought it might. That early part of the programme looked at how we would prepare the land and at what plant species were going to be suitable for use in Northern Ireland. That is where we homed in on short rotation coppice.

Willow is the only species that suits the climate and soil conditions that we have in Northern Ireland. We were originally looking at this crop in terms of its potential in the west of the province, on the difficult soils and environmental conditions there, but that was not the only reason for expanding the crop into other areas. As John Gilliland has told you, this crop can grow on any land — the better the land, the higher the yields and the easier it is to work with as well. We have demonstrated conclusively that it is possible to work with this crop on those heavy clays and poorly drained soils in Fermanagh. We have also looked at the planting density. It is very important to look at the trade off between the number of stools and the cost of the crop, and we have devised a strategy for that and made clear recommendations. We have also looked at the optimum harvesting cycle — for instance, how often do you have to cut, and what is the trade off between cutting every two years, three years or four years? — and we have now got a scheme which has become nationally recognized as the way forward. We have gone from a one-year initial harvesting of the crop to a two-year and then to a three-year sequential cutting, so while we talk about tonnes per year, the figures are really based on a three-year harvesting cycle.

These initial experiments ran into problems with rust. This is a disease which can defoliate the crop, and some varieties are very much more susceptible than others. This had the potential to become a major problem, but we believe we have a solution to it now.

Where are we at present and what do we see as the future for research and development? One big aspect is the use of clonal selection and evaluation. We had initial selection from available material, wherever that material came from in the world, but there is a much more focused strategy to get material specifically from breeding programmes in Sweden and from a new programme which has just started in England. Those programmes are making dramatic progress. We started with 10 tonnes per hectare per annum and we are now up to 18 tonnes per hectare per annum with the potential to go over 20 tonnes per hectare per annum. That would have a dramatic influence on the cost of the crop per tonne and on the returns required to make it economically viable. A new national network of 40 sites has been established, three of which are in Northern Ireland.

It is very important that we find out how this crop responds to various soil conditions and climates so that we can give proper advice on where it should and should not be grown. We are also looking at the impact of insects. We have found that some crops have got brassy willow beetle, and, of course, we are looking to see if some willows are resistant to the beetle. If it becomes a serious problem we will look at managing its control.

A critical aspect of our programme is disease control. We have a basic research programme with the Institute of Arable Crop Research, which is looking at characterization of the rust pathogen and its basic biology — how it mutates, its pathotypes and what damage these are likely to be causing. We have hit upon a solution which uses clonal mixtures, where we put in mixtures of different clones, and it looks as if this approach has given very good protection. It certainly delays the onset of the disease and allows the crop to grow fully throughout the season without suffering any great deterioration in performance. But we need to keep an eye on that because of the long-term nature of the experiments and because the rust pathogen itself is quite labile.

We are looking at fertilization and nutrient cycling at the moment, but the results of that programme are not yet known. This crop is designed as a low-input crop; it is not meant to have significant amounts of fertilizer or even chemicals added to it. There is a lack of information about whether the limiting nutrients are potassium or nitrogen. We hope that this programme will give us some guidance on what small amounts of fertilizer may be required to give sustenance over a number of years.

Environmental assessments have also been important in identifying the impact this crop has on the environment. Indeed, we can also ask about its impact on the landscape. We have been working with the Nature Conservancy Council which has been carrying out assessments on our plantations and those in Great Britain. They are looking very favourable. The crop is certainly wildlife-compatible and it is also creating biodiversity. I have mentioned that it is a low-input system, and there may be some other environmental benefits which I will touch on now.

It may be possible to use this crop as a bioremediation measure, and we have just been successful in getting a very large European research grant to look at its potential use as a biofilter to mop up heavy metals, leachates or other pollutants from municipal waste, which

probably cause quite significant environmental problems. That is a European programme which is coming from and in association with colleagues in Sweden, France and Denmark.

You cannot grow a crop without knowing what you are going to do with it, so we have spent a considerable amount of time recently — indeed, since the early 1990s — on the use of this crop in the gasification and the combined-heat-and-power scenario. We have been looking at small units, less than or equal to about 200 kw, and that is what we have set up — some of you had an opportunity to see that in action at Enniskillen. We are generating electricity which can be fed into the grid and waste heat can be used to heat the intake water for Enniskillen Agricultural College. That is really a small district heating system — it was referred to before — using combined heat and power to extract maximum efficiency from the energy that is available from the willow biomass.

We have now transferred the technology that we have developed there. We were proving a concept — the first ever integrated facility in the world — and we have now transferred all that technology to Rural Generation Limited who are taking the system forward as a commercial enterprise and hoping to market it in the future on a world-wide basis. As I understand it, there is quite a considerable interest in this, and we have already let the plant at Enniskillen be used to test other feed stocks. For instance, a big firm that is interested in our technology is testing eucalyptus in the plant right now. You should understand that each feed stock has to be tested to see how it performs in the gasification element of the plant — that is critical.

As we see it, we will be able to build on this approach with small, integrated, rural projects for hospitals and agricultural colleges. You have heard John Gilliland speaking about Fruit of the Loom. That is the sort of application the Department has had in mind as the way forward rather than the very big energy projects that have been considered across the water. However, if somebody were to come forward with a very big energy project, we and the Department of Economic Development would consider it. No such proposal has been made, as I understand it, here in the North of Ireland.

Our programme is internationally based. We contribute to the sum of knowledge internationally and when knowledge has been available from elsewhere, we have used it. We have not been in the business of reinventing the wheel; we have been seeking to bring value to what we have been doing on a world-wide basis, and now that we have developed our expertise in this area, that expertise is available to anybody in Northern Ireland who wishes to look at the technology, consider it in detail and work up a business plan for exploiting the crop in their particular circumstances. That is something that we want to keep available for anybody who wants to develop this aspect of renewable energy in Northern Ireland further.

Agroforestry is another alternative land use. There is a deficit of trees in Northern Ireland. The number of trees per unit area here is well behind that in Europe. How can we get more trees and exploit their value in Northern Ireland? We came up with this idea of using agroforestry, which is really an integration of agriculture, in this case sheep production, with forestry to try to get a combination and to look at the interaction between the two enterprises. You saw that on the ground at Loughgall when you were there. As trees mature they increase in value, but if the trees take over, the amount of grass production is likely to decrease, and, as a result, sheep productivity goes down. What is important is how the two

interact, the nature of that interaction and how it impacts on the farmer in terms of the costs he has to pay to adopt into this approach.

After about 10 years in the programme we are not finding any decrease in the agriculture part of the programme. The trees are growing very well — we have got trees there at seven metres in height. We are collaborating with the national network of silvo-pastoral systems, which is exploring the opportunity across the United Kingdom. Fortunately, our system in Northern Ireland is providing the leadership for that national programme. Our site — in fact, we have some other sites as well — is doing extremely well and acts as a good lead for the national programme. The two tree species that we are interested in are ash and sycamore, and we are looking at them in different spacings.

All aspects of performance are being measured — wood production, sheep production. The environmental aspects are being measured including biodiversity; we know that in some of these sites the insect and bird populations are being enhanced. At 400 trees per hectare there has been no fall in animal production and we have trees at seven metres. Technology transfer has started, farmers are starting to show interest, and this has been quantified in a recent survey that we have carried out at an open day. We are starting to generate some interest in the farming community and making people aware of what the potential is so that they can make informed choices as to whether this is appropriate for their farming system. The conclusion is that these silvo-pastoral systems have potential, and we will be trying to enhance the data available to the farming community for that decision-making process.

I want to mention briefly hybrid poplar. This is another alternative that we came upon a few years ago when it was thought that we were going to have a wood-pulp plant in Northern Ireland and this would be a way of producing high-quality fibre. The poplar gives a very high quality fibre and there is a demand for enhancing the fibres from the larch and so on, the normal timbers that would be available. Poplar gives a very white fibre. We have been looking at new clones with superior growth and reduced disease susceptibility coming out of a programme in Belgium. That clonal evaluation is looking at the comparison between the clones. We have six sites in conjunction with the private sector looking at the soil, elevation and exposure interaction. Clonal selection — as we get new material we are adding that to the programme. We have already identified clones that are of potential value in Northern Ireland, and it is likely that these have specific utilization potential for us here.

Coming back now to, if I may, the short rotation coppice, I want to say a few words about the economics of that from the agriculture perspective. We have identified the costs of the establishment, ground preparation and mechanical planting, willow cutting, rabbit fencing, cut-back after one year and weed and pest control. What is important here, and I will be coming back to this point in a minute or so, is the huge cost of the willow cuttings. That is a major cost of the investment, but we expect that to come down if the technology takes off. The total establishment cost is about £1,900 per hectare. There is no point just looking at one harvesting cycle, you need to look at the total investment over 26 years in order to get a feel for the break-even points and also for the total return that is likely to occur. So you should not be proposing to go into coppice production on a short-term basis; it has to be a long-term commitment, if you are going to get any response. Other costs have been identified including the weed control necessary during the rotation and also the harvesting costs. On a 26-year

cycle these total costs include, by the way, the establishment costs, estimated at £8,121 per hectare.

Looking at the end use of the product, we have estimated the required sale price per tonne dry matter to give the same income as various farm enterprises, given various prices for conversion costs and the value of sold electricity and heat. We cannot just recommend to farmers to grow this crop. We have to know how it is going to compete with other enterprises, if it is likely to give the same returns, and, if it is, what price farmers need to be getting for the product coming off the farm. We carried out that study a couple of years ago — it needs probably to be amended in light of the current economic situation on farms. If the opportunity cost is about £200 per hectare, which you would be getting from a suckler herd, then at 12 tonnes per hectare the farmer would need to be getting £54 per tonne. But if this cost comes down and the yield goes up then this equation changes quite dramatically, so depending on the circumstances and where you are in the initiation cycle, there is likely to be a variable and flexible response.

We come now to some policy issues. Short rotation is only viable in a significant scale if planted on grassland in Northern Ireland. You are probably aware that there is a very limited amount of setaside with respect to cereal crops, so if we have to put it only onto arable ground, it is not going to make a very big impact. We really have to be thinking that if it is going to make a significant impact here it is going to have to go onto grassland. The establishment costs are likely to drop significantly as the scale increases. Benefits are expected in terms of maintaining rural employment with an integrated production/utilization chain. I do not necessarily see it adding to rural employment, but it will certainly help to maintain employment in rural communities. We are saying very clearly that it has to be an integrated chain. A farmer would have to give careful consideration to going it alone. He has to have a market for his product, and if he has not got that he is going to have something that he is not being able to use. I think that makes sense.

The point in terms of global energy at the moment is that short rotation coppice is carbon dioxide neutral. The Prime Minister has indicated that the United Kingdom is committed to reducing carbon dioxide production by 20% by 2010, so that is a very considerable reduction. It is now believed that short rotation coppice will be required if this target is going to be met; it cannot be met solely by other means. Because of the planting production cycle — four years to the first harvest — and the requirement of a staged planting regime to maintain continuity of supply, planting must start soon. If the United Kingdom is going to meet that commitment and does not use short rotation coppice as a means of meeting that commitment, it is not going to be possible to switch on that tap come the year 2006. So that is why a national strategy for biomass, including short rotation coppice, is currently necessary. It is being worked on, as we have already heard, in Whitehall Departments involving us here in Northern Ireland, and, of course, as I have mentioned already, a Northern Ireland strategy will have to be developed whenever we see the way the picture has been painted at national level.

I hesitate to put too much on the table at the moment in relation to the European White Paper. Suffice to make the point that the European White Paper creates a very significant demand for renewable energy and also for the potential growth of biomass. Biomass, in terms of the White Paper, is defined much more widely than just short rotation coppice — there are other ways of cracking that nut. There is the use of liquid biofuels,

biogas, and so on, but that paper which I commended to you to have a look at in detail does suggest that there is a very significant potential for short rotation and biomass within this particular plan. If you look at point three here biomass is among the most promising within the rural sector and combined heat and power using biomass the greatest potential of volume among all renewable energies.

So with that comment I will rest my case and welcome any questions that you have.

Mr Poots: You mentioned the cost per unit of willow biomass. What is the potential for reducing that cost with the expansion of the willow biomass in a scheme like the one currently operating in Sweden?

Dr McMurray: The breeding programmes can reduce the cost because of increased yield of biomass per unit area. We are now working on a scenario which is giving us about 12 tonnes per hectare dry matter per annum. It is likely that with new clones coming available that that would go to 18 and potentially 22 tonnes in the future. Really, the breeding programmes are at a very early stage. We know from breeding programmes from other crops that once you concentrate the mind and get down to making improvements, you can make substantial inroads. The willow at the moment is virtually an unimproved crop.

There is an opportunity for reducing planting costs. If you start to generate your own local nurseries and to cut those locally and come to agreements with the producers of the cuttings, those costs will come down quite significantly. As you saw from my slide, the planting costs account for about 46% of the current establishment costs. There is also likely to be cost reduction in terms of machinery and harvesting. If there were significant amounts of crop being grown here, local contractors would be able to come in with the machinery and provide that as a service. At the moment the machinery has to be brought into the province.

Mr Poots: Can that be quantified? By how much could costs be reduced?

Mr McKibben: In the discussions that we and the Ministry of Agriculture, Fisheries and Food in London have had with British Biogen, which is the trade association for the willow biomass industry, they have indicated to us that they believe that the establishment costs could be reduced from the figure of £1800 to £1900 to something like £900, provided that there is progress in the areas that Dr McMurray mentioned.

Mr Poots: That, in turn, would reduce the required price from 54 down to, say, 30.

Mr McKibben: Or the level of subsidy for which they are looking.

Dr McMurray: It is not just as simple as saying that if you reduce your planting costs, you are going to reduce your cost per tonne. You would not be able to just reduce the cost by a factor of two.

Mr Poots: I was talking about the long-term viability of the whole thing.

I want to ask you about the potential for the disposal of sewage on to willow biomass. As far as I am aware, sewage is not going to be allowed to be dumped at sea for

very much longer so alternative methods of disposal will have to be found, or it will have to be put to some other use. I know that willow biomass is very absorbent. Is there potential for the disposal of sewage on to it?

Dr McMurray: Yes, we are looking at that as part of this EU project that I mentioned. If sewage is disposed of on agricultural land, there is a possibility of that land being contaminated with pathogens, but willow biomass is a non-edible crop and would not be affected by that.

Mr Poots: You are being environmentally-friendly, in more ways than one.

Dr McMurray: Yes.

Mr Shannon: I am interested in the figures.

We visited Enniskillen and were all very impressed by the scheme that they had there. You mentioned the increase from 10 to 18 tonnes per hectare, is this to do with the fact that the willow plants now being used are not susceptible to disease, or have you managed to breed a new variety with that idea in mind? If so, do you feel that a return of 18 tonnes is your ceiling, or can you go further?

Dr McMurray: We have just been able to get the new varieties into the variety trials, and that is looking very promising. The Swedish breeding programme has been going for some time, and the one at Long Aston, which is under the auspices of the Institute of Arable Crop Research, has started quite recently and, as I said earlier, these programmes are likely to result in there being increased yields. We do not see 18 tonnes as a ceiling; it could probably go higher. I cannot say what the ceiling is likely to be, but in other plant breeding programmes that have been going for some time, we are still achieving significant yield increases. For instance, we have a grass-breeding programme which keeps increasing yield, and it has been going for much longer than anything that is being done on willow biomass. There is a lot of potential.

Mr Shannon: Do you envisage a time when willow biomass will be a viable crop without any grant aid or assistance?

Dr McMurray: That is the position we would like to be in. Mr McKibben may be able to say when that is likely to happen. I do not think it is possible to predict at this point in time.

Mr McKibben: I am afraid I did not bring my crystal ball with me, but it would be fair to assume that it will not be for some considerable time. There would need to be developments in terms of both research and development on the production side and the market that might exist for the electricity. I cannot see any of this happening in the foreseeable future; I imagine that it will be well into the next century before we get to the stage where no subsidy at either end of the chain is necessary.

Mr Shannon: Do you see willow biomass coming into its own when supplies of other sources of heat, such as oil and coal, begin to run out? Is that what you are saying?

Mr McKibben: That is one aspect of it, certainly. The other thing is that a lot would depend on the relative attractiveness of other farm enterprises. I suspect that, at present, willow biomass would not provide the same return for most farmers as other farm enterprises would, and they would do well to give the matter serious consideration. Getting an enterprise like that off the ground would require considerable grant aid on a pump-priming basis, and who knows what might happen in relation to the wider energy field at any time.

Dr McMurray: May I add to that? This is all set in the context of changes that are likely to happen in the common agriculture policy and the world trade agreements, and as a consequence of that, what is going to happen to the subsidies and support measures that are available for normal commodities like beef and so on? In a macro-economic situation, you would have to build that into your considerations as well, so that you should look at the relative performance of the various sectors.

Mr Shannon: You talked about the price of willow — the actual plants. Are you saying that the cost of the plants will decrease?

Mr McKibben: We are anticipating that, yes.

Mr Shannon: You said it was around 40 in your 100%. What would that come down to?

Dr McMurray: It could come down to half of that.

Mr Shannon: I want to ask a very simple question, and I am sure there is a really simple answer. You talked about the 26-year scale for getting a return. Have I got that wrong?

Dr McMurray: The 26 years I referred to is the life cycle of a crop, not the time it takes to get a return. You will get a return in a much shorter time-scale than that.

Mr Junkin: Has there been any measurement yet of the phosphorus uptake for willows?

Dr McMurray: That is one of the issues that we are looking at in relation to fertilization. I have not got the results of that yet, although they should be available towards the end of the year. That is part of the overall equation. We are looking for crops that take phosphate out of the system.

Mr Junkin: I was speaking to some Lough Neagh people this morning, and phosphates weigh very heavily on their minds. There must be several sites in the Lough Neagh basin that would be excellent for willow production.

Dr McMurray: We are very conscious of the phosphate problem; we have major research programmes on phosphates because the eutrophication problem exists not only in Lough Neagh, but also on the Erne.

Mr Junkin: Can the willow gasifier also burn chicken manure?

Dr McMurray: We have never tried chicken manure in it. Chicken manure is wet, and you would have to put energy into drying it, but in those circumstances, it probably could be done. It should be explained that each substrate would have to be tested individually. You cannot extrapolate from willow; even to forest the residues, you have to retune the system because of the way the gasification process works. The movement of the chips into the hot zone of the gasifier is an independent variable and that is why Rural Generation Limited, because of the market opportunities, is looking at alternative substrates in the system at Enniskillen right now. Willow biomass is a product that, potentially, suits Northern Ireland, but if you were looking at this on a world-wide basis, you would be looking at other substrates, and you would have to be sure that they could be handled and also be adapted to the system.

Mr Junkin: If you need any chicken manure for experimental purposes, I have several tonnes.

Mr Shannon: How do you feel that the cut-back in the Department of Agriculture's budget will affect your planned research programme?

Dr McMurray: I cannot make a comment on that. We have had cuts in our budget in the past, but when I left the office no cuts were planned.

Mr Shannon: Things can change.

Mr Campbell: At what stage is the development of the national strategy?

Mr McKibben: It has been recognized for some time that the main question that the industry and government need to address is the question of aid for the production of willows on both arable and grassland. British Biogen, to which you referred earlier, was asked to put together a case setting out the justification for such aid and the amount that it considers to be necessary. I understand that after several attempts, a paper has now been produced and has gone to the Ministry of Agriculture, Fisheries and Food. That paper is now being considered by officials and by Agriculture Ministers, and Ministers in other Departments will have to be involved as well, particularly in the Department of Trade and Industry. So that is the first stage, if you like, in the national strategy being taken forward in a meaningful way. There will be other stages — I am talking about research and development, and issues like that — so we are some months away from the formulation of a national strategy; there is no question about that.

The Acting Chairman: Dr McMurray, Mr McKibben, thank you very much indeed for coming along today and answering our questions.

Dr McMurray: Thank you very much for giving us the opportunity. I hope you found our presentation helpful and, of course, should you have any further queries or questions that you wish to have addressed, Mr McKibben and I will be more than happy to take them on board.

The Acting Chairman: I also want to thank you for arranging our visit to Loughgall and Enniskillen. It was very worthwhile.

ORAL
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VIRIDIAN plc

NORTHERN IRELAND FORUM FOR POLITICAL DIALOGUE

STANDING COMMITTEE D

Thursday 5 March 1998

MINUTES OF EVIDENCE
(Mr A Boggs, Mr A Gaston, Mr A McCrea
and Mr S McCully (Viridian plc))

on

RENEWABLE ENERGY

The Chairman: May I welcome the deputation from Viridian plc, as it is now called — Mr Boggs, Mr Gaston, Mr McCully and Mr McCrea. We are indebted to you for taking the time to assist us.

Over the past two or three months we have been examining the potential benefits of willow biomass as an alternative energy source and, possibly, as a future alternative crop for farmers in Northern Ireland. We have taken evidence from people who have developed the system in Northern Ireland and from those who are actually using it, so we felt it important to get the views of the main players, as it were, in the supply of electricity here. Perhaps you will make your presentation and then take some questions.

Mr Gaston: On behalf of Northern Ireland Electricity or Viridian plc, as it now is, I thank you for the invitation. As you say, we are quite heavily involved in this and a major player in the province.

First of all, I would like to apologize on behalf of Dr Harren, who was not able to make it today. Instead, we have brought along a number of people who are involved in the practicalities of the work. They can give you more detail and, perhaps, a fairly fruitful time with questions afterwards. We certainly hope so.

On my left is Ashley Boggs. Mr Boggs works in organizing and developing the electricity market, and any renewable energy developments do have to be seen in that context. On my right is Stephen McCully. Mr McCully works on the supply side. He is particularly concerned with customer needs and with those of residential customers, and he is something of an expert in the area of energy efficiency and the environmental impact of energy and its consumption. On my extreme right is Andy McCrea. Mr McCrea is recognized at grass-roots level in most circles on renewable energy in Northern Ireland. He knows the projects, has been involved with the promoters and knows the technology very well and those who are involved in it. Mr McCrea is in a strong position to answer any questions you may have on particular projects or particular bits of technology. I am Alan Gaston, general manager of the

supply business, the customer-facing part of Northern Ireland Electricity. We read the meters, send out the bills and collect the cash. Perhaps more importantly, we set up the commercial environment in which electricity is bought and sold on a day-to-day level.

Having introduced the team, I want to set in context energy renewables and their impact on the environment. Renewable energy is a significant subject in its own right, particularly for agriculture. Biomass as an alternative crop is very important, but it is also important that we look at it in the context of Northern Ireland. I do not have to tell you that there are major economic matters for us to consider in Northern Ireland, not least in the area of energy and its supply. Its reliability is important as is minimizing its cost. Also, there are environmental concerns, and we would like to go through what is happening with and what we are currently doing about energy efficiency. We have a view that not to use energy in the first place is probably the ideal solution, and in Northern Ireland there is a lot of room for progress on that. Mr Boggs will speak on that now and then we will look at renewable sources and the willow biomass project.

Mr Boggs: One of NIE's main aims is to provide an electricity infrastructure that will facilitate the economic development of the province, and we aim to provide the reliability and quality supply that customers require. Of course, in today's modern world customers' expectations and requirements are rising, not least because of the growing sophistication of the equipment which is installed in domestic, commercial and industrial premises.

In the first five years since privatization in April 1992 we have committed around £240 million of capital investment in the network throughout the province. That money has gone towards reinforcing the network to meet the rising demand from customers; it has gone towards providing equipment to connect new customers to the network; it has gone towards replacing worn assets; and it has gone towards improving the performance of the network. Some of the performance improvement measures which we have adopted include the refurbishment of our very extensive 11kv lines, that is, 11,000 volt lines, which mainly serve the rural community.

We have carried out that refurbishment on a prioritized basis, taking the worst performing circuits first and tackling them. That refurbishment work involves taking customers off supply while work is being carried out, but we have tried to minimize disruption to our customers by introducing new techniques, such as live-line working techniques, and providing mobile generating units which we bring along and, as it were, plug into the circuit that work is being done on. One measure of network performance is customer minutes lost, and on that basis we have been able to improve network performance by around 25% since privatization. As an indication of our continued commitment we have plans to invest another £350 million of capital over the next five years.

I would now like to give you a few facts about price. I am sure you are aware that only part of the electricity bill is regulated, the part for which NIE is responsible, the transmission, distribution and supply aspects. The generation component of the price is not regulated. Taking the overall electricity bill for the province, NIE is responsible for 35% with the generation component responsible for 65%. Approximately one third only of the electricity bill is regulated.

The price control that we have on our business is known as the RPI minus X type of price control. Basically, it is an incentive-based price-control regime — a company gets an incentive to become more efficient and implement cost-cutting measures. The profits that we can make in our regulated business are governed primarily by price control and our ability to cut costs. Since privatization we have been working hard at making our organization more efficient, and one result of the recent price-control review has been to cut our revenue by £57 million. The efficiency gains which we made in the first regulatory period have now been passed through to customers as part of that £57 million cut in revenue, and NIE's charges, that is for the transmission, distribution and supply element of the bill, have been cut by 28%.

It is interesting to see how NIE's component of the charge compares with that of comparable electricity companies in Great Britain, comparable in that they are companies which have a similar sort of network to ours, predominantly serving a dispersed rural area. We tend to make our comparisons with Manweb, SWEB and SWALEC, and when we look at our underlying charges for transmission, distribution and supply and compare them with other companies' current charges, we find that we are cheaper than SWEB, Manweb and SWALEC — about 5% cheaper than SWEB, 6% cheaper than Manweb and 21% cheaper than SWALEC. So the incentive regulation which applies to our business has encouraged efficiency. It has delivered price cuts for customers and charges that are well below charges made by other, comparable companies.

The only obstacle to fully comparable prices is the generation component. Generation accounts for 56% of a domestic customer's bill and a much higher portion, 83%, of large industrial customers' bills. Now a recent study by OFREG's consultants suggests that generation prices in Northern Ireland are 43% higher than those in Great Britain. NIE has been doing what it can to reduce generation costs, but the leverage that we have with the generators to whom we are contracted for the purchase of power under the long-term power-purchase contracts that were put in place at privatization is quite minimal. For this reason the regulator, as you will know, invited the generators voluntarily to reduce their generation prices about two years ago, threatening to refer them to the Monopolies and Mergers Commission if they failed to produce meaningful price reductions. Since then we have been evaluating and discussing the proposals that have been coming forward from the generators with OFREG, and you will know from the press that Mr McIlldoon recently announced that he had received a letter of intent from the two main generators. It remains to be seen whether really significant price reductions will result from the current proposals from the generators. We would very much like to think that they will, but it remains to be seen.

Mr A Gaston: We turn now to the main thrust of what we are here to discuss today and that is the environmental impact of energy in Northern Ireland and, in particular, how renewable energy fits into that context. The first thing to note, as I said earlier, is that not using energy is the best first step, and in Northern Ireland there is enormous scope for people to improve their energy efficiency. This applies in all sorts of sectors — we have brochures for you which give details of different energy efficiency initiatives — households, communities, agriculture and industry across the board. I am thinking of measures such as low energy lighting and insulation, et cetera, which actually pay for themselves.

Essentially we are saying that the first step we need to take is not to waste energy that is very expensive to create. In the year that ended in 1997 we spent £1 million on a number of initiatives, details of which are in your packs, and the energy savings that were

achieved in that year are equal to the renewable energy output from what is called NFFO, the non-fossil-fuel-obligation contracts that were signed. We managed to save slightly more energy than that which was generated from windmills and things, and we see that as important, not on its own but in conjunction with other initiatives. We have also looked at shared savings where customers cannot afford the initial capital outlay. The repayment may be only two or three years but they cannot afford it, so we provide the capital. We have tried to provide advice locally to communities, and there are three centres now at Belfast, Enniskillen and Londonderry which we are helping to fund. We are also trying to promote energy efficiency so that it comes higher up the agenda of all sectors of the community, not least the agricultural community.

In looking at the whole issue of renewable energy, we look at four main criteria which we think are important. The first one is to look at the environmental impact of the renewable form of energy. What impact does it have on the community? Now that is subject to a process of planning approvals and consents, so that is really outside our remit, but there must be something that says that an alternative form of energy is environmentally friendly to start with. The second one is customer demand. If any sector or any market is going to develop, it is important to establish the customer's perception of it. To date, all the renewable energy in Northern Ireland has been generated under non-fossil fuel obligations — the Government have put an obligation that so much energy must be generated in renewable ways. There is a considerable public interest in renewable energy and we would like to see some mechanism whereby that interest can be demonstrated as a real demand and we can see that customers actually want this energy and are prepared to pay the price for it. We had hoped to launch an environmental tariff last April, but for various legal and technical reasons we have not been able to. We think that we will be able to launch it this April. For the first time customers will have the opportunity of saying that they want renewable, green energy. That will be a strong impetus to the renewable generation market. A person will be able to go along to his bank manager and say "I am hoping to sell this. Look, there is the customer's demand for it." It is a good underpinning for them.

It is also important to look at the impact on particular communities and community groups. Our view is that the greater the benefit the whole community can reap from a project, the more attractive it is as a project, and not just as an environmentally friendly form of generation. If it can get the support of the community and also bring employment and job creation back into that community, we see that as being a strong plus for any proposal.

Also, it has to have a cost effective rationale. We would all like to drive Rolls Royces but we cannot all afford them. There has to be something that says "Can we as a community afford this technology and, in particular, to go for the most cost effective?" Under the two NFFO orders that there have been, NIE achieved some of the best prices. The prices seem quite high, but they are some of the best prices achieved for the technology compared with England and Wales and Scotland. It is important that we come up with a cost-effective solution.

How does biomass, the subject of today's discussion, stack up against our criteria? First of all, in the right circumstances the growing of willow is an environmentally friendly suggestion. It is good for flora and fauna, I understand — I am taking the word of the experts here — and it is visually not too intrusive, so it gets a tick in the environmentally friendly box. It has a strong association with local communities. It is a crop for the farmer so it is, in a very

real sense, rooted into that community. When we look at the way that biomass has been developed at Brook Hall, it is clear that it is very closely tied into that community.

Also, in terms of developing the technology, there is an opportunity here for Northern Ireland to be a world leader in biomass. The willow technology has the potential to be world-leading, whereas the wind technology is virtually all imported. Probably the biggest issue on willow is that the technology has not yet been truly proven. The demonstration schemes have only been possible because they have been quite heavily sponsored by Government bodies. However, we are not pushing out in complete darkness. There is a strong base of development work being carried out by the Department of Agriculture in Fermanagh. There is a demonstration site up and operational at Brook Hall — I understand John Gilliland has spoken to the Committee. There is also a similar development coming along with B9 at Benburb using a different sort of technology. There is quite a lot to go on, and there has already been a lot of development work.

We understand there is probably scope for about 70,000 hectares. That equates to somewhere in the region of 30 to 40, perhaps up to 50, megawatts of capacity, and that would be about 2.5% of the generation that is required in Northern Ireland currently. That is a substantial output. The crop would be quite substantial and it would bring in a worthwhile amount of energy. NIE has come to the conclusion that biomass, and particularly willow, is something that we should be pursuing further.

Mr McCrea has been involved with John Gilliland and also B9 and others on the development process. We are now saying that this is something that we would like to get further interested in and to try to support through the development phase. As I said, willow biomass is not at the moment an economically viable proposition. The Department of Agriculture's 1996 report concluded — and I think that John Gilliland would agree — that it was a research and development project rather than a commercially viable project.

However, it is important that we as a community look beyond the end of our noses and look forward, and there are several things that we see as significant. First of all, it depends on the alternative land value. What is the alternative use of that land? This Committee has probably much greater understanding of those alternative values. There are figures quoted of £1,200 a hectare value for dairy and £500 a hectare value for wheat. Depending on where European Community policy goes, I imagine that those figures will change. They could change quite radically, so there is an important caveat there — the cost of planting, spraying, harvesting and processing the product. As volume increases it is clearly going to make a tremendous difference to cost. John Gilliland was saying that he has only one source of slips and the prices are very high. We would see that price falling substantially by an order of magnitude.

There is also the question of yield and, again, there are new clonal varieties being developed which give a greater yield for the same growing period and same growing conditions. The actual generation technology itself is in its infancy, and, again, there is room for progress there. The Brook Hall project fits very easily into a farming environment, and it is probably key for that project that it is a marginal project for the farm entity. In other words, there is equipment and labour there, and this is a marginal enterprise for them — the full cost of equipment and labour does not have to be set against this particular project.

There is also the issue of the value of the heat that is produced. It is a key ingredient that the heat can be taken off and used somewhere in a valuable way. It could be used for drying grain, heating farm buildings, a district heating scheme or heating a factory or whatever.

Finally, there is the whole issue of whether or not there is a premium for renewable energy. Clearly in Europe we are driving now at a larger proportion of renewable energy. People are, willingly or unwillingly, going to start paying premiums for that sort of energy, and that, obviously, is an input to the viability of it.

We hope that has put renewable energy and biomass a little into the context of Northern Ireland energy and environment. That is where we currently see willow biomass fitting into that landscape.

Mr Shannon: You have relationships with those people who want to pursue alternative energy sources, willow biomass being one of them. Do you have relationships with others who perhaps want to look at water as a system of power or at other alternatives such as manure? Have you followed those through?

Mr Gaston: I will hand over to Mr McCrea who maintains those relationships. He can give you all the details.

Mr McCrea: You are not suggesting that I am the manure man, are you?

There is not a day goes by that I do not get a call from a farmer or developer who has some idea that he wants to develop either a hydro plant or a wind turbine on his land. It is very difficult to give him an answer on the thing because it all boils down to how much money he knows he is going to get for the project. There is a whole dimension associated with project development, and we follow that all the way through from start to finish.

Going back 10 years — and I have brought a couple of little colour booklets with me — NIE developed independently, before we were privatized, the first utility-sized wind turbine in the United Kingdom. It was built up at Cloughmills in County Antrim and was financed, apart from a fairly substantial European grant, by NIE. So we have tried to see what mileage there is in Northern Ireland for a whole range of technologies. We also tried the same trick with hydro power, but we did not have quite so much success. We have tried to look at all the different technologies, completely independent of developers so that we have a knowledge base that we can impart to people who make enquiries.

With regard to other farm-based technologies, we have followed very closely the progress of the biomass generator at Bethlehem Abbey in Portglenone. There is a biogas generator at Cloughmills and another at Randalstown which is actually generating electricity onto the grid from time to time, so we are well aware of all these various technologies. Mr Gaston referred to NFFO several times, and I have brought a little sheet which gives you a rough description of what NFFO is all about and the various projects that are involved. You will see on the bottom of page three that there are three projects which are very much farm-based. Two of them are biomass schemes that you are probably aware of, and the third one is a biogas generator, which is being developed at Cloughmills by Colm McGuckian, who, as you know, is a fairly large pig farmer. We are now preparing for our first, tentative steps

into the arena of partnership and investing in the technology. So far we have largely been the purchaser of renewable energy rather than the producer, and you will understand that there are two sides to the fence. We are looking at the willow now, and it looks as though it is a technology that is very appropriate for Northern Ireland. It is getting over its teething problems and we might invest some capital in its development. So far we have made no R&D investments in such projects.

Mr Shannon: Your intention is to do so. Is that correct?

Mr A Gaston: We are currently looking at the feasibility — I was going through some of the headings, if I can put it like that — of getting involved in one of those projects and looking at others as well. In some instances there is an alternative provider of funds, and one thinks of biomass and B9. The NFFO project has indirectly provided a lot of the backing for developing projects because it has given a guaranteed off-take price, and that is really what these projects need to go ahead: somebody to say “Yes, I will buy that and pay four pence or seven pence, or whatever it is, a unit”, and that allows it to be banked by others.

Mr Shannon: Many farmers would wish to take advantage of what you know about saving energy. Is there anywhere a farmer can go to for advice?

I also note the projects mentioned in your paper, particularly the pig energy project and the dairy energy initiative.

Mr A Gaston: We do set up projects, and those are the two most recent ones, which we try to apply across all farms. Also, we do go out and give advice to an individual farmer or to a group of growers or whatever. Mr McCully will give you the details.

Mr McCully: Energy efficiency advice is very important. We give advice to all sectors, domestic, farming, commercial and industrial, in different ways. On the agricultural side we have a farm electric advisory service, and it gives advice on a range of issues relating to energy efficiency. For industrial customers we give advice through key account management, and for the commercial sector we have a special service for small businesses. On the domestic side we build partnerships with local energy advice centres which we support in Belfast, Enniskillen and Londonderry.

In your pack is a sheet which highlights a couple of the projects which we have funded directly, and there is also a brochure which reviews the £1 million programme which was undertaken in 1996/1997. Another programme of projects is running this year, and we intend to run similar programmes for the next four or five years, investing in the region of £650,000 to deliver real energy savings to customers.

Mr A Gaston: It is important when addressing farmers or any other disparate market to try to create something which can be built on across many farms, a balance with something general that can apply to individuals. Now the reason we produced this brochure for the agricultural sector was to light a spark of interest in this in farmers’ minds. We tried to use an example from each of the agricultural sectors to show what we have managed to do, and we made those examples very specific by showing photographs in particular locations. This is not a theoretical exercise, it is a very practical one. Then we use trade shows, such as the Balmoral Show, to make personal contact so farmers can come to us and get more

information on something they have heard about or read about in the agricultural press. Our advice on energy efficiency is given across as wide an area as possible and it is very practical. It is not theory which you have to go away and work out for yourself, and it involves farm visits.

We also give quite a lot of general farming advice, and we have a link into a research station in Great Britain which deals with subjects as alien to me as pig slurry. Aeration is one of the subjects I was looking at quite recently. I was not much the wiser afterwards, but it did not smell as bad as I thought it would. Getting technical advice and disseminating it widely can be very effective.

Mr Shannon: The exchange of ideas is one of the things I wanted to mention to you as well. I am glad to see that that is happening. Farmers can be very innovative, and they have lots of ideas. If they have ideas for energy saving, could you develop them?

Mr A Gaston: Absolutely. Last year's project with River Rena was a locally generated idea that came to us. We thought it looked good and gave it support. I would be very surprised if the ideas came from us sitting in an office. Most of the good ideas come from people out there doing a job.

Mr Shannon: Is that scheme still going on?

Mr A Gaston: I think the scheme has finished, but the principle of the heat pads still applies and has proved to be very successful.

Mr Shannon: On alternative energy sources you must look at the long term. Do you see alternative energy sources becoming more important in your work over the next few years with environmental tariffs and all that coming through in, perhaps, 10, 15 or 20 years' time? Do you have a long-term plan for 20 or 25 years ahead? Are you thinking about willow biomass, the hydro schemes and the slurry scheme or whatever as part of your remit?

Mr A Gaston: There is pressure on local government, national Government, the European Government and, indeed, the world to address the issue of environmental impact, and our understanding is that a target may be set of 10% by 2010 in the United Kingdom. I have not seen that on paper yet, but I understand that that is the sort of figure being talked about. In Northern Ireland 10% would mean approximately 200 megawatts of capacity. NFFO orders will amount to approximately 45 megawatts when the present phase is complete.

So one side, the Government, is saying that we are going to have a lot more renewable generation than we have today. On the other side, though, is public perception, and at the moment there is a strong, but as yet unsubstantiated, public voice for renewable green principles. Our environmental tariff, which I will come back to, will be addressing that issue of public demand.

Looking to the future, renewable energy will unquestionably play a larger role, and the question really is which renewable energy sources we will have rather than whether we will have any. Our feeling is that we should have something that is appropriate to the situation in Northern Ireland and makes use of the comparative advantages of Northern

Ireland. We have enough comparative disadvantages in the province, and it would be nice to make use of some of the comparative advantages. In a European context we are probably quite rich in renewable energy.

Mr Shannon: The consumer always wants cheap energy. What concerns me about alternative energy sources is that they will be expensive, and if they are expensive they will not suit the consumer. Every consumer is all for protecting the environment until cost comes into it. Do you see alternative energy sources being cheaper in the future or do you see them as grand ideas that can never be obtained?

Mr A Gaston: Renewable energy sources are more expensive than conventional energy sources. There is no argument about that — it is a fact. Expensive technology is involved, and renewable energy is probably between 10% and 20% more expensive than conventional energy. However, evidence suggests that the cost of renewable energy is coming down as the technology improves. The cost of renewables has already come down. Under the first NFFO order the average price was approximately six pence. Under the second NFFO order the price was approximately four pence, and that was a significant reduction over a small number of years. The price of renewables is clearly coming down.

There is also going to be a major political decision on what is going to happen to the provision of conventional electricity and conventional energy. Some European countries have gone for carbon taxes which have been pushing the price up, and so the differential has been narrowing from that side as well. There is the issue of how you price it. There is the polluter-pays principle and exactly how that can be worked in. I can see, looking into the future, that, with the necessary political will, we could have an environment in which renewable energy was the best option available to the consumer.

Mr Poots: Having some experience of willow biomass through what John Gilliland has done, are you more or less enthusiastic about embracing it as a viable source of electricity?

Mr A Gaston: It is early days yet — the machine has only run for a handful of days.

Mr McCrea: I agree with Mr Gaston. John Gilliland's project is probably the most advanced of its type in the United Kingdom yet he has already hit a snag, so we have very limited experience of that technology. We are fortunate in having the B9 project, the second biomass one, which uses slightly different technology. So, as these projects come together, we will have experience of two different approaches to the same problem.

It would be great if we could develop a technology we could market — and Mr Gaston has already alluded to this — all round the world, and that is the aim of B9. They are trying to bring forward a gasifier which can be sold in Third-World countries, something which can be manufactured in Northern Ireland and sold elsewhere. But that is for the future, and I have to agree that it is early days yet.

Mr A Gaston: It is early days but you never get anywhere if you wait for all the answers before taking a step. There are possibilities on the horizon and, given the gains there may be, we should be doing something about them.

The Chairman: What is the problem that Mr Gilliland has had?

Mr McCrea: He had an engine problem, not a technology problem as such. It was relatively minor and held him up for about two months — one of those start-up problems you frequently get.

Mr Poots: Mr Boggs said he had saved £57 million through cost-cutting measures and that that has been passed on to the customers. Has that been passed on in its entirety?

Mr Boggs: The £57 million reflects the new price controls that the MMC concluded should be put in place from 1 April 1997. Our tariffs, which were put in place on 1 April 1997, are fully in line with the MMC's conclusions, one of which was that there should be a £57 million reduction in revenue.

The Chairman: The emphasis has been very much on the farmers or the entrepreneur coming up with an idea. Would you see any role for your company in actually supplying the gasifiers to isolated rural communities or to large industrial users and then contracting out to farmers to produce the willow biomass? In other words, everything would be largely controlled by yourselves and you would sell the electricity that is generated. The benefit to the farmer would be a regular supply to grow the biomass.

Mr A Gaston: We could very easily envisage such a project where typically you would find a number of interested parties: there will be a farmer who is interested in growing a hop; there will be either a community or an industrial complex that is interested in taking the heat; and then there could be ourselves. We would see such a project as being best developed as a partnership; its precise structure is not vitally important. The community could bring the labour and the uptake of heat; the farmer would provide the biomass and the operation of the plant would probably fit best within his remit; and we could bring capital and commercial expertise. So it is a question of identifying a potential project that we can plug into, which will need a combination of technical knowledge and experience, capital funding and also some commercial strength to see it through the inevitable hiccups.

The Chairman: But if this whole concept is to actually develop it will require someone or some organization to lead the way. Do you see your company as being the leader or the stimulator, or do you see the Government, the European Union or perhaps some private individual doing that?

Mr A Gaston: You presently have a mixture of people who are providing stimulus in various ways, and each of them has a role to play. For example, in John Gilliland we have a private individual who has got the wherewithal and also the enthusiasm and energy to provide a stimulus, and that is fairly typical of Northern Ireland. We have many people who have the entrepreneurial get-up-and-go to go and do something about it. So I think that both the Government and European bodies have a major role to play in providing assistance to develop research and development capacity. And so far I think it is fair to say that those bodies have played their part enthusiastically, and we would like to see their continued support. And we intend to increase our profile and take more of a leading role in that regard because it makes a lot of sense for Northern Ireland, for the community and hence for Northern Ireland Electricity.

The Chairman: Are Northern Ireland Electricity obliged, under the Order, to purchase electricity from those organizations which set up generating schemes?

Mr A Gaston: The short answer is yes, but Mr McCrea can explain more fully.

Mr McCrea: If you succeed in the Non Fossil Fuel Order (NFFO) competition — and only the cheapest generators get through within technology bands — you have got a 15-year contract with NIE, which is inflation-proofed. But NFFO is only available from time to time whenever the Department decides to put an order on it. Alternatively, you can get remuneration for your energy through our bulk-purchase tariff, which is really a system to allow us to purchase energy from you. But we can only pay the avoided energy costs which are roughly two pence per unit at present. So there are two mechanisms: non fossil fuel obligation, which is a competition from time to time, and the bulk-purchase tariff.

The Chairman: Do the authorities decide the tariff?

Mr McCrea: The tariff is agreed with the regulator.

Mr Boggs: As part of our regulatory obligations under our licence we have what is called an economic purchasing obligation which requires us to purchase our supplies of electricity from generators at the best effective price. So we have to pitch our bulk-purchase tariff at a level consistent with our economic purchasing obligation, and it is in effect approved by the regulator.

Mr Shannon: I am interested in the landfilled gas project. Could you give me any background on that?

Mr McCrea: Two landfill gas projects have managed to secure NFFO contracts under the second Order.

I will take the second one first on that list, the Dargan Road landfill site. Anyone driving on the M2 coming out of Belfast over the last few years will have seen the dumping area on the right hand side. Over the years, the rubbish putrefies and gives off methane gas. That methane gas can be collected and burned in modified diesel engine, and it can be coupled up to an electricity generator. It is a very cheap method of generating electricity, and it is a very nice way also of disposing of methane which is a virulent greenhouse gas.

The second project is at the Cottonmount site, which is the preferred dumping ground for phase two of Belfast City Council's waste strategy; that is the new site for dumping the waste. Literally you are talking about digging a hole and pushing waste into it. As the waste rots over the years, methane gas comes off and if it can be collected — and the strategy that these folk have employed is to put collection mechanisms in the landfill sites — it can be brought to an engine, burnt off and used to generate electricity.

Mr Shannon: Your landfill site would obviously have to be quite large to make it worthwhile.

Mr McCrea: Yes, it would.

Mr Poots: As a land-owner I became aware, somewhat by accident, that you are required to pay twice as much money to impose on arable land as you are for ordinary farm land. Would the NIE or Viridian take steps to inform farmers of this so that in future they would not have to find out by accident like me?

Mr A Gaston: Speaking totally off the top of my head I would say that we would not have a problem in informing farmers through an appropriate channel about the different rates. I presume they reflect the land values of grazing versus arable.

Mr Poots: In grazing land there would not be a considerable loss because cattle could graze right up to the pole and scratch their neck on it, whereas a combine would be impeded.

Mr A Gaston: The payment should be going through on the basis of the appropriate charges. But we will take that on board and make sure it is progressed appropriately.

Mr Poots: My other concern is an environmental one, but I suppose it is an agricultural one too. Northern Ireland has more overhead power lines than any other part of the United Kingdom and it is a bit of a nuisance to farmers who have to work round the poles rather than through them. But from an environmental and health point of view there is considerable concern about the big pylons. Is Viridian committed to reducing the amount of electricity moved overhead or is it their intention to continue as at present?

Mr A Gaston: I want to mention two issues. The first one is the whole issue of the environmental impact of overhead cables. Undoubtedly, in terms of their visual impact you either love them or hate them.

There is also the issue of whether they pose a health hazard. NIE is very actively involved in that and so far there has not been any evidence to suggest that there is a health hazard involved in overline cables, but we would be contributing to the research to ensure that there is no problem. In terms of actually removing overhead cables, the alternative is underground cables. But these cables are much more expensive; that is just simple economics. It could be up to ten times the price of overhead cables. Obviously Northern Ireland being a very dispersed community has got a disproportionately high number of overhead cables.

Mr Boggs: We do have an ongoing programme in hand regarding the removal of overhead lines in urban areas.

Mr Poots: I know you are doing it in the village of Hillsborough.

The Chairman: Thank you all very much for taking the time to see us, and for your informative presentation.