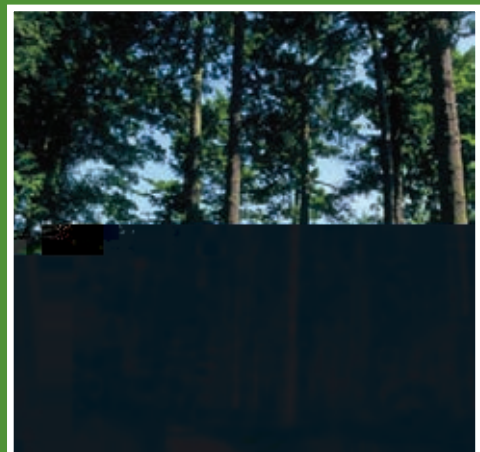


# Renewable Energy Action Plan

January 2007



## **FOREWORD**

I am delighted to endorse the publication of the DARD Renewable Energy Action Plan. The Plan seeks to ensure that the schemes and services provided by DARD will enable farmers, landowners and the wider rural community to capitalise on the opportunities presented by renewable energy within the broader strategic context of energy policy, tackling climate change, waste management and sustainable development.

This Action Plan provides a sound platform to take forward an exciting new agenda. It expands on the principles set out in DARD's Strategic Plan 2006-2011 published last year and will help guide the work of the Department in this significant and challenging area.

Its development has involved a lengthy and broadly based consultative process which reflects DARD's desire to work with stakeholders to address current issues and future challenges in the most effective way. The key objective in this process has been to create opportunities for the land-based and rural sector which will realise the potential of renewable energy in a balanced and sustainable way.

I hope that this Action Plan can be taken forward and implemented by a local Minister on the basis of an inclusive approach to sustainable development and the linking of policies across Government. Its success will depend on leadership, active engagement and sustained, integrated effort across the public sector and the broad sweep of stakeholder interests.

This initial Action Plan represents a major initiative and a commitment to future development in an area that is evolving rapidly in terms of technology and the underlying policy framework. Some of its proposed measures are subject to EU approval of the new Northern Ireland Rural Development Programme and final decisions on the content of the EU Competitiveness Structural Funds Programme. It is, therefore, a work in progress that will need to be reviewed and updated to take account of all of these issues and to reflect the priorities and aspirations of an incoming Executive.

With that in mind, an early review date of April 2008 has been fixed. However, by launching this initial Action Plan now, I am seeking to inject and maintain momentum in this important new area of opportunity.

**DAVID CAIRNS, MP**

**Minister for Agriculture and Rural Development**

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## INTRODUCTION

1. The 2002 report, 'Vision for the Future of the Agri-food Industry', recommended that the Department of Agriculture and Rural Development (DARD), along with the Department of Enterprise, Trade and Investment (DETI), and the Department of the Environment (DOE), should take a 'strategic approach to the development of sustainable energy systems at rural community level'. The Government's response to the report, the Vision Action Plan, gave a commitment to review DARD's policy in this area.
2. Therefore, an interdepartmental steering group was brought together to oversee the creation of a needs-based policy for the use of agriculture and forestry resources to assist the competitive and sustainable development of land-based renewable energy sources. To inform the development of a policy for renewable energy, a study was undertaken to investigate the potential for, and economic sustainability of, small scale embedded heat and power and heat-only systems in the rural economy. The potential of cropping for biofuels for transportation was also addressed. The study was completed in June 2004 and based on its findings, the steering group developed a set of recommendations for DARD to take forward. These were issued for public consultation in October 2005.
3. This initial Action Plan represents DARD's response to those recommendations, including the feedback received from the public consultation. The development of renewable energy is, of course, a broadly based agenda that impinges on several important issues, such as climate change, diversity of energy supply, waste management and sustainable development. In drawing up this Action Plan, DARD recognises that DETI has lead responsibility for energy issues in Northern Ireland. More broadly, the Office of the First Minister and Deputy First Minister (OFMDFM) has lead responsibility for the implementation of the Northern Ireland Sustainable Development

Strategy and the DOE for addressing climate change and waste management issues.

4. From DARD's perspective, the DARD Strategic Plan 2006-2011, published in March 2006, provides the overarching framework that will guide the development of DARD's evolving work programme in relation to the agri-food industry, animal health and welfare, the environment and broader rural development for the coming five years. Consequently, the Action Plan must sit within this overall framework and accord with the direction and principles stated in the Strategic Plan.
5. In developing a Renewable Energy Action Plan, DARD's objective has been to shape a coherent support framework that will enable the land-based and rural sector to realise the potential of renewable energy and contribute to the delivery of targets for renewable energy production at a regional, national and EU level in a balanced and sustainable way.
6. DARD also wishes to promote efficient energy utilisation within primary agriculture which will reduce energy input costs as well as help meet carbon reduction targets and have a relevance right across the industry.
7. This Action Plan promotes **"the opportunities afforded by the sustainable development of renewable energy in the agri-food and forestry sectors and wider rural economy"** by exploiting existing technologies and by expanding the knowledge base within Northern Ireland through appropriately targeted research and development and technology transfer activities.
8. However, with the rapid evolution of the broader policy framework at EU, national and regional level, plus the evolution of technologies and the market, it is recognised that this Action Plan must be reviewed at an early stage in order to maintain its relevance. Therefore, a review date of April 2008 has been set for this purpose.

## CONTEXT

### Changes in Agriculture

9. Farming communities are facing continuing change, with fewer farms remaining economically sustainable in the absence of an additional external source of income and a continuing downward pressure on agriculture's level of employment. Meeting the challenges that this creates requires diversification out of traditional agricultural activities and the growth of a stronger, more broadly based rural economy.
10. The agricultural industry is currently in the process of adapting to a fundamental change in the system of EU support, which has radically altered the economics of agricultural production and the viability of specific agricultural enterprises. The full implications of this in terms of land use, particularly in the more marginal areas, are not yet clear. However, these changes are beginning to impact in a period when the possibilities for alternative land use are gaining greater prominence, not least in terms of energy production.
11. A move into energy crops could provide a new income stream for agriculture and help broaden its economic base. Agriculture in Northern Ireland today is dominated by grass-based enterprises, but this dominance has not always been so marked. For example, at the beginning of the Twentieth century, the cropped area was six times larger than it is at present.
12. This specialisation in grass-based enterprises was driven by economic forces. If viable markets emerge for energy crops and profit margins compare favourably with those of existing agricultural enterprises, then a move to a more diverse mix of land-based enterprises will emerge. In the early stages of such a change at least, farmers currently involved in the production of conventional arable crops are more likely to make this

transition as they will have both the suitable land and husbandry skills needed to grow energy crops.

13. However, renewable energy technologies will also create opportunities for livestock farmers. With an increasing emphasis on sustainable waste management and minimising the environmental footprint of agriculture, the use of technologies such as anaerobic digestion may enable livestock farmers to convert what are now largely regarded as costly waste streams into a possible source of revenue (or, at a minimum, to reduce the cost of sustainable waste management).

## **Climate Change**

14. Climate change, brought about by increasing atmospheric concentrations of carbon dioxide and other heat-trapping greenhouse gases, has been described as “the most severe problem that we are facing today”<sup>1</sup>. The burning of fossil fuels is the primary cause of increased atmospheric carbon dioxide concentrations - thought to be responsible for up to 80% of annual global carbon dioxide emissions.
15. International recognition of the global impact of increasing carbon dioxide emissions has come in the form of the Kyoto Protocol. At the United Nations Framework Convention on Climate Change in December 1997, a significant number of industrial countries committed to cut combined emissions to 5% below 1990 levels by 2008-2012. EU countries committed to an 8% reduction in emissions.
16. In responding to this challenge, the UK Government has made a commitment to reduce greenhouse gas emissions by 12.5% by 2008-2012 and to move towards a target of a 20% reduction of carbon dioxide by 2010.

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<sup>1</sup> 2006 UK Climate Change Programme

17. It has been suggested that climate change in Northern Ireland could see average temperatures rising by between 2°C and 4°C by 2080, with summers being 50% drier and winters 25% wetter. Other possible effects include a lengthening of the growing season, a reduction in the number of snow days and a greater likelihood of extreme weather events, e.g. floods and drought.
18. The potential impact on the rural economy may include changes in crops and cropping patterns, increased pressures from pests and diseases and more weather-related damage.
19. Alternative, carbon reducing or neutral energy technologies will be key to lowering greenhouse gas emissions. Allied to the need to cut emissions of greenhouse gases is the need to ensure a sustainable energy supply in the future. Renewable energy resources will help form part of a portfolio of technologies that will provide the means of responding to these challenges. A number of these technologies offer the Northern Ireland agri-food industry the potential to play its part in this process.

## **EU Policy Context**

20. A number of policy initiatives at EU level are proactively driving the renewable energy agenda:
  - The **EU Renewables Directive** aims to encourage the promotion of electricity from renewable sources so that the overall EU target of 12% of energy from renewables (22% of electricity consumption) is met by 2010.
  - The EU recently launched its **Biomass Action Plan** to increase the development of biomass energy from wood, waste and agricultural crops.
  - The establishment of the **European Union Emissions Trading Scheme** (ETS) has also created a market mechanism by which carbon dioxide emissions can be traded, thereby providing a

strong economic instrument to support the production of renewable energy, including that from biomass.

- EU Directive 2003/30/EC (the '**Biofuels Directive**') set minimum indicative percentages (2% by the end of 2005, rising to 5.75% by the end of 2010) of petrol and diesel for transport to be replaced by biofuels in all Member States.

21. More recently, the EU Commission, in its 'energy for Europe' package, has made proposals to reduce greenhouse gas emissions at least 20% below 1990 figures by 2020. To help meet the new targets, the Commission has proposed that 20% of the EU's energy should come from renewable sources, and biofuels should account for at least 10% of all transport fuel.
22. A number of other EU policy initiatives are also indirectly driving the renewables agenda. For example, the reform of the **Common Agricultural Policy** (CAP) has decoupled payments of subsidies to livestock and crops in favour of the Single Farm Payment Scheme. This allows farmers greater flexibility in terms of the crops they choose to grow, including energy crops. This may help facilitate realisation of the Biomass Action Plan goals. However, a central principle in the move to decoupled support was that future production decisions on the part of farmers would be driven by market forces alone. Therefore, the commercial viability of energy crops at farm level will be a key factor in the evolution of this sector. The reformed CAP includes a special payment for energy crops and the possibility of growing energy crops on set-aside land.
23. Apart from the CAP, a number of environmental Directives will also have an indirect bearing on the development of renewable technologies within the agri-food sector, specifically with regard to the sustainable management of waste:
  - The **Integrated Pollution Prevention & Control Directive** employs an integrated approach to control the environmental

impacts of certain industrial activities. The requirements of the Directive are similar in many ways to the requirements on processes subject to integrated central control under the Industrial Pollution Control (NI) Order 1997. However, there are two important differences:

- The Directive applies an integrated approach to a wider range of issues; and
  - It requires that a wider range of environmental issues are taken into account, such as noise, energy efficiency, etc.
- The **Water Framework Directive** establishes an integrated approach to the protection, improvement and sustainable use of rivers, lakes, estuaries, coastal waters and groundwater within Europe. It impacts on the management of water quality and water resources and affects conservation, fisheries, flood defence, planning and environmental monitoring. It requires a control of all impacts - physical, polluting or otherwise - on water resources.
  - The **Nitrates Directive** aims to reduce and prevent the pollution of water caused by nitrates from agricultural sources. It is designed both to safeguard current and future drinking water resources and to prevent wider ecological damage in the form of eutrophication (over-enrichment of nutrients in water).

All of these Directives will drive a greater focus on the sustainable management of waste streams. Some renewable energy technologies have the potential to play a part in addressing this issue, thereby offering an integrated approach to waste management and renewable energy production.

### **United Kingdom Policy Context**

24. On a UK level, several initiatives are in place to promote the development of biomass energy systems, including the Department of Trade and Industry (DTI) sponsored Bioenergy Capital Grants Scheme.

25. The UK Renewable Transport Fuel Obligation (RTFO), which Government proposes to introduce with effect from April 2008, is intended to help deliver the objectives of the EU Biofuels Directive. Under this Obligation, 5% of transport fuel sold in the UK will have to come from renewable sources by 2010. It is expected that biofuels will be mixed in a 5% biofuel/95% fossil fuel blend to meet this target. Clearly, this initiative will create a sustained demand for biofuels (biodiesel and bioethanol) from the transport fuel industry.
26. The UK Biomass Task Force Report made a series of recommendations for the development of the biomass sector in England and Wales. The UK Government published a response to the Task Force Report in April 2006 in which it outlined the actions already, and still to be, taken to meet the recommendations set out in the report. Although the Biomass Task Force was aimed at England and Wales, the Government response included an Annex outlining the action being taken to develop and support the biomass industry in Northern Ireland. Work is now in hand to develop a UK Biomass Action Plan.

### **Northern Ireland Policy Context**

27. There is a number of existing Northern Ireland strategies and policies which have a direct bearing on the future development of the local renewable energy sector.
28. Published in May 2006, the **Sustainable Development Strategy for Northern Ireland: First Steps Towards Sustainability** outlines Government's commitment to tackling the challenges of sustainable development, thereby securing a better future for the present generation and protecting the interests of generations to come. It commits Northern Ireland to becoming more resource efficient, both in its production and consumption, to reducing waste and to looking more critically and imaginatively at how it generates and uses energy. It emphasises the need to build sustainable communities founded on

economic prosperity and attractive, healthy and high quality environments, with greater community engagement and civic leadership.

29. It addresses 6 priority areas for action:
- climate change and energy
  - sustainable consumption and production
  - natural resource protection and environmental enhancement
  - sustainable communities
  - governance for sustainable development
  - communication & learning
30. It is well recognised that, as well as reducing greenhouse gas emissions, energy efficiency will help to improve the competitiveness of businesses. In Northern Ireland, the Carbon Trust estimates that businesses and public sector organisations could save around £100 million per annum through the deployment of existing energy efficient technologies and practices. Clearly, improvements in energy efficiency represent a key step in the process of meeting Northern Ireland's energy needs in a sustainable manner, and this applies as much to the agri-food sector as to other parts of the economy.
31. This Renewable Energy Action Plan is firmly rooted in the principles of sustainable development, and DARD-specific actions relating to the encouragement of renewable energy production have been included in **“A Positive Step – Northern Ireland - A Sustainable Development Implementation Plan”**, published in November 2006.
32. The **DARD Strategic Plan 2006-2011** sets out a vision of a thriving and sustainable rural community. In order to achieve this vision, DARD has acknowledged that sustainable development will be a key driver of change over the next five years.

33. Within the context of the DARD Strategic Plan, the support framework described in this Renewable Energy Action Plan will help enable the Department to address some of the issues and challenges specific to rural areas and the land-based economy.
34. The **Regional Development Strategy ‘Shaping our Future’** provides a comprehensive policy framework for the development of Northern Ireland to 2025, and dedicates a chapter to caring for the environment. An objective of the Strategy is to contribute to reducing the impact of global warming, both locally and globally, and to emphasise the importance of cutting environmental costs generally, by reducing the consumption of natural resources and energy from non-renewable sources.
35. Targeted demand reduction and the development of renewable energy sources is at the centre of Northern Ireland’s energy policy. This is also recognised as a major factor in environmental policy in terms of mitigating climate change and carbon reduction. In line with the overall climate change agenda and the Northern Ireland Sustainable Development Strategy, the **Strategic Energy Framework**, published in June 2004, places a firm emphasis on renewable energy generation and reduced environmental impact. The **Environment and Renewable Energy Fund**, announced in February 2006, committed resources specifically to realise the aims of the Strategic Energy Framework.
36. The DOE’s **Towards Resource Management: The Northern Ireland Waste Management Strategy 2006-2020** sets out a clear vision for the development of renewable energy from waste facilities as part of the development of an integrated network of waste treatment and disposal facilities in Northern Ireland. This involves using material resources in a way that reduces the quantities of waste produced and, where waste is generated, to manage it in a way that minimises its impact on the environment and public health and contributes positively to economic and social development.

37. The above description of the policy context at EU, national and regional level illustrates the broad and complex policy arena in which the renewable energy sector is evolving. In developing this Action Plan, DARD has sought to create a support framework that will help deliver against the targets and objectives already specified, rather than create an additional layer of unnecessary complexity or duplication. Consequently, its central focus is to help the land-based sector and broader rural economy capitalise on the opportunities that are emerging in this area.

## **DARD WORK TO DATE ON RENEWABLE ENERGY**

38. DARD (and more recently the Agri-Food and Biosciences Institute - AFBI) already has a significant research base in renewable energy technologies extending back over many years and this is likely to remain an important element of DARD's new research and development strategy (to be finalised in 2007). Research and development work has been undertaken locally on short rotation coppice willow (SRC) since the mid-1970's. This has focused on the following five main areas to ensure that commercial developments are founded on a reliable knowledge base:
- Willow nutrition – studies have investigated the effect of fertiliser applications and the use of the coppice as a bioremediation system;
  - Genotype evaluation - new genotypes are evaluated prior to their commercial release;
  - Disease control - research has identified husbandry techniques to reduce the incidence of rusts, including the configuration of varietal mixtures in reducing disease impact;
  - Willow pest control - work has investigated the biology of willow beetle and black willow aphid and appropriate methods of control, including the use of varietal mixtures; and
  - Utilisation – research includes the co-ordination of production and conversion of short rotation coppice willow in a managed supply chain.
39. Specialist advice in a number of areas, including short rotation coppice, biogas and industrial crops, is provided to the agricultural industry, local councils, community groups etc. by the College of Agriculture Food and Rural Enterprise (CAFRE) and AFBI.
40. In 2004, DARD's Forest Service established the three year Challenge Fund for SRC to increase the amount of willow grown for energy use in Northern Ireland. Energy crops received a special grant within the Woodland Grant Scheme, under the Northern Ireland Rural

Development Regulation Plan 2000-2006. The Challenge Fund operated as a competitive mechanism under which applicants were required to bid for the support they needed to establish SRC for an energy end use.

41. During the first two application phases, agreements between DARD and private landowners were put in place to convert nearly 400 ha of high quality agricultural land to SRC by 2007. Provisional indications show that approximately 410 hectares will be planted in 2007 as part of the third and final application phase.
42. As a result of the support provided by the SRC Challenge Fund (£1.5 million committed), it is expected that by 2012, land in agreements will have the potential to produce around 8,000 tonnes of willow biomass annually for the energy sector.
43. A recent review of the SRC Challenge Fund by DARD's Forest Service concluded that the Fund:
  - Has contributed positively to wood fuel production and marketing in Northern Ireland through the development of grower and marketing clusters, and has provided the 'springboard' from which the sector's growth may continue;
  - Provided assurance to 'early adopters' by presenting a structured business path;
  - Has been extremely effective in contributing to forest expansion in Northern Ireland;
  - Provided the opportunity to understand the practical mechanisms of a specialist operation and to evaluate costs critically; and
  - Opened up opportunities to link this sector with complementary technologies such as bio-filtration and bioremediation.
44. DARD's Forest Service has also been working with wood processors to create stability in the wood supply chain and promote long-term

business planning. In response to this initiative, a major sawmill has invested in facilities to produce 2 megawatts (MW) of electrical energy and 10 MW of heat using wood chips and sawdust produced on site, as well as producing about 50,000 tonnes of wood pellets for combustion off site. Most of the pellets are currently being exported to power stations in England. However, the demand for wood pellets from the local domestic sector is expected to increase rapidly. The economic contribution from this wood-based energy operation is serving both to strengthen the financial performance of the sawmill operator and to underpin the demand for home-grown timber.

45. Forest Service is also working with wood processors to investigate ways of improving the recovery of low value wood residues from forest harvesting sites for an energy end use.
46. DARD's Rural Connect Branch has the remit to 'connect' farming families to DARD services and public funding programmes and services. Rural Connect Advisers have provided advice and guidance to individuals considering diversifying into and/or investing in renewable energy crops and technologies.
47. Advisers have also worked with groups taking forward different types of renewable energy projects. Several farmers' groups across Northern Ireland have been researching options around waste management and energy generation. Some of these have had funding approved through various programmes under DARD's Rural Development Programme 2000-2006.
48. DARD's Rural Development Division manages the overall delivery and implementation of the Rural Development Programme 2000-2006. The main elements of this programme comprise capacity building, local regeneration projects and programmes, sectoral and area-based development programmes and microbusiness development. Renewable energy produced locally offers the potential to increase

business competitiveness and stimulate diversification in rural communities. Renewable energy projects can be embraced within each of the elements of the Rural Development Programme and, currently, Rural Development Division is actively involved in a number of renewable energy projects.

49. Since 2003, DARD has committed a total of some £4 million in grant assistance to a range of renewable energy projects and technologies (including SRC) across Northern Ireland.
50. Under the Rural Development Programme, several projects have been awarded funding to erect wind turbines to provide wind energy for rural businesses. These schemes will enhance the viability of rural businesses and promote the concept of a sustainable renewable energy source. The most notable of these is a project being delivered by the Western Regional Energy Agency & Network (WREAN), which has provided grant aid to 26 rural businesses, most of whom are farmers, for the installation of 20kW wind turbines. The objective of these turbines is to replace some of the NIE sourced power and to spill any excess electricity back into the grid. Several rural community groups have been awarded funding to install various renewable energy technologies, including wind turbines, biomass boilers and water turbines. Funding has also been awarded for the installation of renewable energy technologies in rural schools.
51. CAFRE is in the process of installing a range of renewable energy technologies which will assist it to meet its energy targets and also provide demonstration projects for the benefit of farmers, landowners and rural communities. These renewable energy technologies will be developed, installed and demonstrated in partnership with a range of public and private sector organisations.

## **DRIVING THE RENEWABLES MARKET IN NORTHERN IRELAND**

52. Government has introduced (or will be introducing) a number of measures to incentivise the development and deployment of renewable sources of energy in Northern Ireland. These initiatives will help create sustainable markets in renewable energy supply that can link to a local supply base, thereby providing significant commercial opportunities for the Northern Ireland land-based sector.

### **- Environment and Renewable Energy Fund (EREF)**

53. The DETI led £59 million Environment and Renewable Energy Fund (EREF), launched in February 2006, seeks to enhance and accelerate the deployment of renewable energy technologies in Northern Ireland, thereby contributing to a reduction in the level of environmentally harmful emissions and helping to establish Northern Ireland as an exemplar region in renewable energy development.
54. The Fund supports action in four programmes: Research and Demonstration; Building Market Capacity through the Provision of Infrastructure and Supply Chain Development; Accelerated Deployment; and Underpinning Knowledge and Raising Awareness. Initiatives within these areas are focused on both the supply and demand sides and are targeted at all sectors, including agriculture and the public sector.
55. In July 2006, the Household Programme was launched to provide £8 million of support for the installation of renewable energy technologies, such as solar heat and power, biomass, geothermal and wind, in the domestic sector.
56. The Fund has added a very significant stimulus to the development of the renewable energy market in Northern Ireland and provides major

opportunities for the agri-food industry to contribute to its sustainable development.

#### **- Energy Management in the Public Sector**

57. The public sector estate in Northern Ireland currently comprises some 3,500 buildings. On the basis that the public sector should lead by example, a range of “greening” Government policies are currently being implemented in the management of this estate.
58. Northern Ireland Government Departments, with Ministers’ agreement, have been working to meet national targets set out in the Sustainable Development Framework for the Government Estate. As a consequence, the Northern Ireland Sustainable Development Strategy includes a target for the Government Estate to be carbon neutral by 2015. This target can be met only by the widespread adoption of renewable energy technologies.
59. The Department of Finance and Personnel (DFP), which has a central role within Government to promote sustainability in the procurement, operation and maintenance of buildings, has adopted the targets set under the Climate Change Programme published in 2000 to give effect to obligations arising from the 1997 Kyoto Summit, and the further objectives in the 2003 Government White Paper *“Our Energy Future – towards a low carbon economy”*. The latter outlines far-reaching changes in energy use, leading towards a national reduction in the level of carbon dioxide emissions of about 60% against current levels by about 2050, with further targets specifically for Government bodies.
60. In pursuit of these objectives, DFP monitors and reports on energy usage by all Northern Ireland public sector bodies. It also administers the Central Energy Efficiency Fund (CEEF), supporting specific projects to improve energy performance and the utilisation of renewable energy technologies (such as wind turbines, solar panels and biomass boilers) throughout the public sector. Since 1993, the Fund has invested over

£35 million in schemes of this nature. The Fund has also supported significant investments in the installation of combined heat and power (CHP) plants, which are now operational in over 20 District Council leisure centres, in seven hospitals and in Northern Ireland's two universities.

61. In 2006/07 and 2007/08, an injection of additional resources from the EREF has enabled the CEEF to support an increased number of energy efficiency and renewable energy projects across the public sector. This includes support for 14 separate renewable energy projects. It will also support the conversion of heating plants on the Stormont Estate to use biomass rather than fossil fuels – planning for this is now at an advanced stage.

#### **- Northern Ireland Building Regulations**

62. DFP is also responsible for the Northern Ireland Building Regulations, and has recently completed an amendment to Part F: Conservation of Fuel and Power, which came into effect in November 2006. This amendment requires adherence to higher thermal standards in building design, the effect of which will be to reduce carbon emissions by up to 40% in the buildings to which the new Regulations will apply. Although the amendment does not include a specific requirement to include renewable energy systems in buildings, the achievement of the required reductions without deploying renewable energy technologies will be technically and financially challenging. If these technologies are not included, equivalent energy savings will have to be achieved through other energy efficiency measures. Therefore, whilst not mandatory, developers could consider the installation of renewable energy technologies to be the path of least cost/resistance.
63. Looking ahead, DFP is in the process of amending the Building Regulations (Northern Ireland) Order 1979 to provide enabling powers so that future regulations may be made regarding sustainable development, the protection of the environment and the deployment of

microgeneration technologies. DFP will be assessing the scope for including a mandatory requirement for all new buildings to incorporate microgeneration facilities from April 2008.

#### **- Northern Ireland Renewables Obligation (NIRO)**

64. In April 2005, DETI introduced the Northern Ireland Renewables Obligation (NIRO) as the main mechanism for incentivising renewable energy deployment in Northern Ireland. The NIRO places a legal requirement on electricity suppliers to provide evidence that a specified and annually increasing proportion of their electricity supplied to final customers has been generated from renewable sources, or to pay a buy-out fee that is proportionate to any shortfall. A 60% increase in the number of applications to the Planning Service for projects linked to the NIRO in its first year of operation is indicative of its success. By March 2006, 3% of Northern Ireland's electricity consumption was derived from indigenous, renewable energy sources. Wind is currently the predominant renewable source under the NIRO and will continue to be so until alternative renewable energy technologies become more cost competitive. Nevertheless, non-wind sources of renewable energy for electricity generation are emerging. For example, the major biomass CHP plant opened by Balcas in Enniskillen in November 2005 produces both electricity and heat as well as a biomass energy product and, as such, is a world class sustainable energy example. The EREF has a particular focus on supporting the development of non-wind renewable energy sources, such as energy from waste, and will support the further development of this market.

#### **- Renewable Transport Fuel Obligation**

65. The Renewable Transport Fuel Obligation (RTFO) is being developed on a UK-wide basis by the Department for Transport (DfT) in Whitehall in liaison with the Devolved Administrations. The RTFO is proposed as the key mechanism in support of the UK target for biofuels to account for 5% of all road fuels by 2010. The Government has made it clear that it is committed to increasing the level of the RTFO beyond 5% after

2010/2011, but only if certain conditions are met, including stringent sustainability criteria.

66. DETI, as the Northern Ireland Department with responsibility for overall energy policy, acts as the lead contact with DfT in the development of the RTFO, with other relevant Northern Ireland Departments inputting as appropriate.
67. The RTFO will certainly create a significant market for biofuels across the UK as a whole. The particular implications of this for the land-based sector in Northern Ireland are not yet clear.

#### **- Planning Policy and Renewable Energy**

68. Planning Service is responsible for the formulation of the land use planning policies in Northern Ireland which regulate and facilitate new energy development. It is currently in the process of bringing forward a revised planning policy for renewable energy projects. This will be set out in Planning Policy Statement 18, which is to be published in 2007.

#### **- Renewable Energy Installer Academy**

69. Action Renewables, founded in 2003, is a joint initiative between DETI and Viridian Plc dedicated to increasing the awareness and uptake of renewable energy throughout Northern Ireland. Key among its activities is the development, in partnership with Sustainable Energy Ireland (SEI) in the Republic of Ireland, of a state-of-the-art training infrastructure for designers, specifiers and installers of renewable technologies - the Renewable Energy Installer Academy (REIA).
70. The Academy is an initiative grant-aided under the Renewable Energy/Energy Efficiency Measure of the Interreg IIIA Programme (administered jointly by DETI and the Department of Communications, Marine and Natural Resources (DCMNR) in ROI). In 2004, the lack of trained installers, specifiers and designers of renewable energy technologies was identified as one of the key market barriers to the

widespread adoption of renewable energy systems on the island of Ireland. The establishment of the REIA as a regionally accessible infrastructure for training, certification and accreditation of priority renewable energy system specifiers and installers to harmonised standards is serving to remove that barrier.

71. In keeping with the targets and objectives for the Academy, training laboratories have been completed in the North West Institute in Londonderry and Dundalk Institute of Technology (DKIT) for solar water heating, Lisburn and DKIT for heat pumps and East Down Institute (Downpatrick) and DKIT for biomass.
72. Substantial investment has been made in the establishment of the Academy, the development of training materials, training the trainers and testing and revising training courses. The project has attained the key objectives of giving renewable energy installers in the border region access to dedicated training opportunities in this field and increasing the number of professional installers and engineers who can undertake the design, installation and maintenance of renewable technologies.
73. During 2006/7 and 2007/8, up to 4,000 private households will receive grant aid from the Household Programme of the EREF to deploy these technologies and the Installer Academy will be the main source of accredited professionals to install these systems in Northern Ireland.

## **THE SCOPE OF THE DARD RENEWABLE ENERGY ACTION PLAN**

74. Within the context of the strategic and policy background outlined above and DARD's existing work in support of renewable energy opportunities, the Department used the 35 recommendations of the Interdepartmental Steering Group as the initial point of reference for the creation of this DARD Renewable Energy Action Plan.
75. The Department consulted publicly on these recommendations and received comments from a range of interested individuals and organisations. The recommendations of the Steering Group and a summary of consultees' views are detailed in Appendix 1, together with DARD's response. The 2004 study on the potential for, and economic sustainability of, small scale embedded heat and power and heat-only systems in the rural economy (referred to in Paragraph 2), along with the Steering Group recommendations and individual responses to the consultation, are available on the consultation archive section of the DARD website at [www.dardni.gov.uk](http://www.dardni.gov.uk).
76. In the period since the recommendations were first made to DARD by the Steering Group, a number has been taken forward by other Departments/bodies. There is also a number of recommendations which the Department believes would be more appropriately addressed by other bodies and organisations.
77. In drawing up this Action Plan, DARD has sought to ensure that the support and services provided by the Department will enable farmers, landowners and rural communities to capitalise on the opportunities presented by renewable energy within the broader strategic context of energy policy, tackling climate change, waste management and sustainable development. Given the linkages with and between these strategic drivers, which cross a number of Government Departments, it is essential that DARD works closely with other Government

Departments in Northern Ireland in furtherance of renewable energy opportunities for the land-based sector and wider rural economy. This is a key priority.

78. Given this complex set of relationships, **DARD will explore options to create a specific policy unit** to drive forward and co-ordinate the renewables agenda and to ensure that this is fully integrated with the policies and initiatives being taken forward by other Government Departments in Northern Ireland and, as appropriate, in GB and the ROI.
79. It is also important that there is close stakeholder involvement to ensure an orderly and sustainable development of the sector. Therefore, **DARD will seek to introduce appropriate structures to engage stakeholders in this process.**
80. Under an overall theme of “**promoting the opportunities afforded by the sustainable development of renewable energy in the agri-food and forestry sectors and wider rural economy**” the Action Plan has two broad objectives:
  - (i) **To support the exploitation of opportunities for alternative land uses and sustainable management of agri-food waste linked to renewable energy; and**
  - (ii) **To underpin knowledge and increase awareness of renewable energy technologies.**

## **ACTIONS TO SUPPORT THE EXPLOITATION OF OPPORTUNITIES FOR ALTERNATIVE LAND USES AND SUSTAINABLE MANAGEMENT OF AGRI-FOOD WASTE LINKED TO RENEWABLE ENERGY**

### **1. Exploiting Opportunities in Profitable Energy Crop Production**

Energy crops are renewable materials which can substitute for fossil fuels. Such crops are generally classed as 'carbon-neutral' because the carbon dioxide released during the generation of energy is balanced by that absorbed by plants during their growth.

Farmers will move to energy crop production only if the financial rewards and associated risks make it more attractive than existing agricultural enterprises. Thereafter, the on-going development of the energy crop sector will depend heavily on the actions of key actors within the industry itself and their ability to recognise and seize opportunities, including those arising from wider Government efforts to develop the renewable energy markets in Northern Ireland, as outlined above. However, pump-priming support will hasten this process and is available through a number of Departmental schemes.

#### ***(i) Support for energy crops***

##### ***- Short Rotation Coppice (SRC)***

SRC is a specialised form of forestry plantation and involves growing willow at close spacing and harvesting at regular intervals (normally every second or third year). A number of approaches to willow harvesting and chipping exist. The end product - willow chips at a moisture content of circa 20% - is used primarily as fuel to generate heat in biomass boilers.

In 2004, DARD's Forest Service introduced a three year Challenge Fund for SRC energy crops to encourage the establishment of short rotation willow coppice for renewable energy generation. The Challenge Fund operated under the umbrella of the Northern Ireland

Rural Development Regulation Plan 2000-2006 and has now closed to new applicants. To date, approximately 400 hectares have been planted or approved for planting under the Scheme and a further 410 hectares have been approved for the 2007 planting year. The average rate of assistance provided for plantings under the Scheme to date is approximately £1,920 per ha. Therefore, the SRC Challenge Fund represents a considerable investment by DARD in the establishment of this new sector.

At present, the economics of SRC for heat production, without a planting grant, suggest that it could represent a viable alternative enterprise for growers when the price of domestic heating oil is in excess of 35 pence per litre. The attractiveness of SRC as a crop is, however, significantly improved if it can also be used for bioremediation purposes and where the latter activity can either generate an additional income stream (through gate fees) or reduce costs elsewhere on the holding.

The biggest long term constraint on the production of SRC in Northern Ireland is the availability of a local end user (the bulky, low value nature of chipped willow mean that it is necessary to keep transport distances and costs to a minimum). Other constraints have also been identified - proximity to drying equipment, the availability of suitable land in terms of soil type, topography and road access to planting sites.

The three year SRC Challenge Fund has now closed to further applications and has been subject to an initial internal review. Drawing on the findings of this process, **DARD is seeking to develop a successor programme of support for the continued development of SRC under the auspices of the new Northern Ireland Rural Development Programme 2007-2013.** DARD Forest Service will make an announcement concerning such a measure later in 2007.

- *Support for other energy crops*

Under the EU Aid for Energy Crops Scheme, aid of €45 per hectare is payable for all crops used for the production of energy products, with the exception of crops grown on set-aside land. Crops eligible for support under the Scheme include short rotation coppice willow, hemp, sugar beet, oilseed rape and other cereals grown for energy production. Uptake under the Scheme in Northern Ireland has been limited - approximately 600 ha in 2006 (primarily SRC). Nevertheless, the Scheme, although modest in terms of its rate of payment, does represent an additional incentive and income stream for those growers contemplating renewable energy crops.

The Scheme is currently under review by the EU Commission. However, it is believed that this is unlikely to produce significant changes (apart from perhaps a degree of simplification in terms of its operation).

- *Biofuels*

Agriculture in Northern Ireland is predominantly grass-based, with only a small percentage (circa 3% in 2006) devoted to cereal and oilseed crops. These enterprises are found on just over 3,000 farms, with specialist cereal growing confined to less than 750 farm businesses. In the absence of a very significant change in land-use patterns, the quantities of cereals and oilseeds grown in Northern Ireland could not support significant biodiesel/bioethanol production and certainly not processing plants of the scale currently being contemplated in other parts of the UK. To put this in context, there are reports of several bioethanol plants being planned in GB which will depend on wheat as their primary source of raw material. Their combined annual intake of wheat will be in excess of 1 million tonnes. Total wheat production in Northern Ireland in 2006 was only 66,000 tonnes. Total production of all cereals in Northern Ireland in 2006 was just over 190,000 tonnes.

The UK biofuels sector is currently driven primarily by Government fiscal policy. The proposed RTFO should add significant impetus to this growing sector. It will drive demand for biofuels from the petrochemical industry, though this may well be centred on large scale production facilities and arable regions of the United Kingdom. Given this context and the level of arable production in Northern Ireland, there appears to be limited scope for a large scale biofuels sector to develop locally, and the current economic viability of small-scale biodiesel plants using oilseed rape as a feedstock is, at best, marginal. At the time of writing, limited direct support is available for projects in this sector. However, technological advances and second generation biofuels may provide scope in the future for Northern Ireland to be more significantly involved, though commercial viability will be a key driver. The final detailed design of the RTFO will also be an important factor influencing this sector's development and hence, the opportunities for biofuel production in Northern Ireland must be kept under review.

An important point worth noting is the fact that increasing EU and global demand for cereals and oilseeds from biofuel producers is leading to rising prices for these crops. Therefore, the Northern Ireland arable sector will benefit from this effect even if it is not directly engaged in supplying the biofuels sector. In other words, because of wider demand and supply effects, allied to open EU trade in cereals and global trade in oilseeds, Northern Ireland arable producers will capture many if not all of the benefits of the emerging biofuels sector without incurring the costs or risks of developing a local processing capacity.

***(ii) Supporting uptake of renewable energy production via the Financial Assistance for Young Farmers Scheme***

Young farmers will play a key role in the future development of rural areas. DARD's Financial Assistance for Young Farmers Scheme provides assistance to facilitate the establishment of young farmers

(under 40 years old) who possess adequate skills and competence and are setting up as head of holding for the first time.

Assistance under this Scheme, in the form of an interest rate subsidy, is available for an agricultural purpose on the holding for which the loan is obtained. The Scheme aims to promote additional farm investment which will generate new activities or add value to existing activities in farming in Northern Ireland. Therefore, it **offers the potential to support suitable renewable energy projects that meet the conditions of the Scheme.**

Applicants are required to submit a business development plan, including a specific project proposal, and a personal development plan indicating how competence requirements under the Scheme will be met (if unable to be demonstrated at the outset) when seeking the loan.

The Scheme will close for applications on Thursday 5 June 2008 or when all available funds (£4.5 million) have been committed, whichever is sooner.

## **2. Supply Chain Development**

A key requirement for the orderly evolution of a biomass-based renewable energy sector is the development of sustainable supply chains. Under the Sectoral element of the 2000-2006 Programme for Building Sustainable Prosperity (PBSP), DARD has awarded significant funding (£0.5million) for investment in the infrastructure associated with the processing of SRC. This will **provide grant assistance (up to 44% of total project costs) for the provision of storage and drying facilities and for harvesting equipment.** The scheme will close for applications on 30<sup>th</sup> March 2007.

Under the proposed new Northern Ireland Rural Development Programme (NIRDP) 2007-2013, marketing support will be available

which will help individuals and groups to capitalise on the market opportunities that are opening up in the renewables sector. The NIRDP Measure 1.2 has an objective of supporting actions aimed at improving the application of technology in the forestry sector, encouraging greater integration and collaboration between producers, processors and others in the wood supply and renewable energy chains and improving the marketing capability of businesses.

Under Measure 1.2, the **Agricultural and Forestry Processing and Marketing Grant Scheme** will provide support towards capital expenditure and new equipment to encourage innovation and investment in wood and other renewable energy markets.

In addition, the **Agricultural and Forestry Marketing Development Grant Scheme** will support the development of new outlets for existing agricultural, forestry and renewable energy products.

Under Measure 1.4 of the NIRDP, the **Supply Chain Development measure** will assist new collaborative initiatives to create more effective and sustainable supply chains.

Taken together, this suite of measures will provide the necessary support and incentives for the development of stable and sustainable supply chains, enabling entrepreneurial individuals and groups to grasp the opportunities that are emerging for the market-led development of the renewable energy sector based on indigenous biomass production.

### **3. Forestry Products and By-Products**

“NI Forestry: A Strategy for Sustainability and Growth”, published in March 2006, proposes an approach to the future development of the Northern Ireland forestry sector which seeks to strike a balance between the provision of timber, which accounts for up to 1,000 rural jobs, the protection of the environment and forest-based recreation.

The Strategy aims to double the current 6% forest area in Northern Ireland, largely through the transfer of land from agriculture to forestry and the sustainable management of existing forests.

In addition to growing more trees, there is scope to promote the harvesting of forestry residues as a renewable energy source. Forest residues are those parts of trees left on the forest floor after harvesting and not recovered for commercial purposes. Currently the potentially exploitable resource of forest residues in Northern Ireland is estimated to be 8,000 dry tonnes per year.

Sawmill co-products (estimated at 100,000 tonnes of woodchip per year) also have the potential to be used as a cost-effective wood fuel for energy generation.

Exploitation of both resources will depend on commercial viability. Therefore **the Forest Service and forest industry stakeholders are investigating the use of forest harvesting residues for renewable energy purposes, thereby improving the economic performance of timber production and realising wider benefits.**

#### **4. Using Agri-food Waste for Energy**

In Northern Ireland, approximately 9.7 million tonnes of manure are produced from housed livestock each year (88% cattle, 7% pigs and 5% poultry). These manures can be a valuable nutrient resource for crop production. However, they can also represent a significant waste disposal problem as their land application cannot easily be matched to crop nutrient requirements.

The implementation of the EU Nitrates Directive, the Water Framework Directive, the Integrated Pollution Prevention and Control Directive and the Waste Management Regulations (NI) 2005 will impose restrictions on the farming industry and the way it deals with its waste streams.

The Action Programme required under the Nitrates Directive includes a

closed period when the land spreading of animal slurry will not be permitted, together with a limit on the amount of organic manure that can be spread on the land. These restrictions will result in the need for additional slurry storage capacity on many farms and a greater focus on soil nutrient loading. This will create difficult issues to address for intensive livestock holdings in particular. However, sustainable alternative uses for manure could provide farmers with a viable outlet for animal wastes that does not rely on land spreading.

The report of the Expert Group on Alternative Uses for Manures (EGAUM) published in March 2006 described the potential of anaerobic digestion (AD) as a technical solution to the sustainable disposal of farm organic wastes, as well as providing a possible disposal option for food chain and municipal organic wastes.

Anaerobic digestion of organic wastes involves the bacteriological breakdown of organic matter to produce biogas and digested effluent. The biogas can be utilised by combustion in a combined heat and power unit, thereby creating a renewable energy resource from a waste stream. The technology is well tried and tested. The inclusion of a proportion of agri-food by-products other than animal slurry in the intake stream to the digester unit will enhance gas quality, production and economic viability. Crops can also be used as a feedstock, with several European plants currently contracting farmers to grow crops such as maize as a feedstock for AD (though the viability of this particular practice depends crucially on the high returns that are available from the resulting energy sales).

Dry organic waste, especially poultry litter, can be burnt directly to generate heat and/or power, again representing an opportunity to address a waste disposal problem in a sustainable way and creating a renewable energy resource.

The economic viability of AD systems is influenced by a range of factors, including scale, the cost of existing waste treatment processes, the cost of the conventional energy source being replaced and transportation costs of the waste intake. However, economic analysis indicates that centralised anaerobic digestion (CAD) schemes for combined heat and power production can be feasible, providing a market for the surplus heat is realised, gate fees for treating approved organic waste are available and the electricity generated gives rise to Renewable Obligation Certificates (ROCs). A critical element of such schemes is the availability of a means for the use or sustainable disposal of the digestate emerging from the AD plant.

Given the potential of waste combustion and AD technologies both to address significant waste disposal issues for the agri-food sector and contribute to broader renewable energy targets for Northern Ireland, **DARD is proposing to establish an Energy from Agri-food Waste Challenge Fund, co-financed under the EU Competitiveness Structural Funds Programme 2007-2013, to encourage the livestock and food processing sectors to develop a range of sustainable technologies which will utilise agricultural manures and food processing wastes to produce renewable energy.**

The proposed fund will support a range of full scale technologies and approaches to managing manures and waste from the agri-food industry, with the purpose of:

- Reducing the nitrate and phosphate inputs to soils and waterways;
- Exploring and demonstrating cost-effective and sustainable methods of dealing with agri-food wastes;
- Promoting alternative energy sources to the rural communities; and
- Broadening the energy supply base in Northern Ireland.

At the time of writing, this proposal remains to be assessed as part of the wider range of proposals under the draft EU Competitiveness Structural Funds Programme 2007-2013, which is currently the subject of a public consultation exercise. It will also be subject to the usual Government expenditure approvals process. Therefore, a commitment to proceed with this proposal cannot yet be given.

## **5. Promoting Opportunities to Deploy Renewable Energy Technologies within the Rural Economy.**

In addition to the opportunities afforded to landowners, renewable energy also offers opportunities for rural communities in terms of diversification, business competitiveness, employment and wealth creation. Under the existing PBSP, various renewable energy projects have been supported involving farmers, rural businesses, rural community groups and rural schools.

The proposed NIRD 2007-2013 recognises that there is a need for an integrated approach to assist rural communities to develop plans to regenerate villages and their surrounding areas. With the development of these strategies and action plans, **opportunities exist to develop initiatives to invest in renewable energy technologies** and to play a role in the achievement of national targets for energy generation from renewable sources.

As the Programme is designed to address needs identified by the rural population through a bottom-up approach, it is not possible to predict a definitive list of possible activities that may be supported. However, **financial assistance may be provided to support small-scale infrastructure projects** which could include renewable energy activities.

## **6. Energy Efficiency**

Although energy efficiency is a separate issue from renewable energy production, it is an area of investment that can yield significant

dividends and should be the first consideration for any farm or business contemplating its energy profile. DARD will be represented on the DETI-led cross-departmental group addressing the need for a coherent approach to the delivery of energy efficiency across all sectors.

CAFRE, in partnership with the Carbon Trust, will lead **a programme to improve efficient energy use on farms**. As part of this initiative, the Carbon Trust initially will undertake energy audits on a number of farm businesses across Northern Ireland to establish benchmark energy data for different types of farming enterprises. Following the analysis of these data, CAFRE will **increase energy efficiency awareness through the development and delivery of training programmes**.

## **ACTIONS TO UNDERPIN KNOWLEDGE AND INCREASE AWARENESS OF RENEWABLE ENERGY TECHNOLOGIES**

DARD considers that in order to enable farmers, rural communities and rural businesses to exploit fully the opportunities presented by renewable energy technologies, there is a need to promote understanding and to provide advice and information on the range of technologies available. DARD will, therefore, take forward a technology transfer programme to address this need. This will also be underpinned by a targeted research and development programme to explore new and emerging opportunities.

### **1. Pro-active Investment in Renewable Technology in the DARD Estate**

DARD is committed to showing leadership in the use of renewable energy technologies and energy efficiency measures on its own estate. Work has already begun to install a range of different technologies at CAFRE and at AFBI

#### **- CAFRE**

During 2006 and 2007, the following demonstration technologies, financed from the Environment and Renewable Energy Fund, are being installed on the CAFRE campuses:

- Wind turbines
- Biomass heating systems
- Air source and ground source heat pumps;
- Photovoltaic/solar power; and
- Development and demonstration of a range of energy crops.

All future renovations and new buildings within the CAFRE Estate will evaluate the potential of renewable energy technologies to be incorporated at the design phase of the project.

#### **- AFBI**

Work has commenced on developing a new, purpose built Renewable Energy Centre (REC) at AFBI's Hillsborough site. The Centre, which is

also financed by the Environment and Renewable Energy Fund, will incorporate a visitor centre and an energy laboratory equipped to enable appropriate data to be collected from all aspects of the work on renewable energy. The Centre is expected to open in 2008.

Biomass boilers will be installed to supply energy to the new infrastructure buildings and to meet other on-site demands. It is likely that two or three boilers of different designs will be used for experimental work on a range of biomass materials. Storage and drying facilities for willow chip, and other materials required to fuel the system will be constructed on site. A farm-scale anaerobic digester and combined heat and power unit will also be installed, along with solar panels to meet the hot water requirement of the dairy parlour washing system.

The overall energy scheme at AFBI's Hillsborough site will be installed and managed as a small district heating system. With so many diverse sources of energy and a wide range of buildings requiring heat at different times and in different quantities, a major developmental aspect of the project will be related to the management of the system as a whole to achieve a reliable system providing the greatest benefits in terms of energy efficiency, carbon saving and cost saving.

## **2. Investment in Research and Development**

The longer term renewable energy research agenda funded by DARD will be set in the context of its forthcoming Research and Development Strategy and will seek to address knowledge gaps and opportunities to support the continued development of renewable energy options appropriate to the land-based sector in Northern Ireland.

The Renewable Energy Centre at AFBI's Hillsborough site is being established as a centre of scientific excellence to provide a sound research base and knowledge resource for the ongoing development of the renewables sector in Northern Ireland. It will continue and

expand DARD's previous research efforts into renewable energy technologies and in this context, the Centre will initially take forward research on:

- The effects of different harvesting, storage and drying methods on the quality, economics and performance of SRC willow; and
- The identification of optimal management regimes for anaerobic digestion systems based on farm wastes.

### **3. Education and Knowledge Transfer**

Based on AFBI work and other research findings, CAFRE will take forward a technology transfer programme on renewable energy programmes that will seek to increase awareness and knowledge of renewable energy issues among the farming and broader rural communities and enhance their capacity to exploit current and future opportunities.

CAFRE will deliver tailored education, training and technology transfer programmes to those entering and within the industry in the areas of energy efficiency and renewable energy deployment. This will be assisted by the adoption and demonstration of best practice within the CAFRE Estate, combined with dissemination of information through courses at the College and other local training events.

CAFRE will develop industry benchmarks on energy use for the various agricultural sectors in partnership with the Carbon Trust and assist farm businesses to improve their energy efficiency/utilisation.

## **CONCLUSION**

The renewables energy sector is in its infancy in Northern Ireland. Although many of the basic technologies currently available have been in existence for some time and have been deployed elsewhere, they continue to improve and evolve. In some cases, their economic viability is marginal and in all cases, is critically dependent on the level of fossil fuel prices. Nevertheless, in the expectation of rising fossil fuel costs, improvements in technology and reductions in technology costs, it is appropriate for Northern Ireland to position itself so that it can capitalise on the potential opportunities in renewable energy production. It is important to establish awareness within the industry that in the medium term fossil fuel will become less available and more expensive.

The land-based sector is uniquely placed to grasp this opportunity. However, a key factor in the successful development of this new sector will be the balanced and orderly expansion of both the supply of, and demand for, sustainable renewable energy solutions. Government has a significant role to play in this respect, particularly in the early stages of this evolution. Through this Action Plan and its on-going commitment to engage with other Government Departments, DARD will seek to play its part in the development of a sustainable and profitable land-based renewable energy sector in Northern Ireland.

Recommendations	Overview of consultation responses	DARD response
<p><b>Recommendation 1</b></p> <p>DARD should seek further to increase awareness amongst the rural community about renewable energy options and enhance its knowledge and skills to exploit the opportunities that exist. This should be achieved by the College of Agriculture, Food and Rural Enterprise (CAFRE) through the delivery of education and training and technology transfer programmes on renewable energy systems, and through inclusion of DARD's position within the DETI sponsored renewables outreach programme delivered by Action Renewables. In addition, DARD funded research programmes on renewable energy should build in technology transfer components to ensure rapid dissemination of new technologies and information.</p>	<p>This recommendation needs to go further, including renewable energy in all CAFRE courses, and covering opportunities available for adding value of produce on-farm, and diversification.</p> <p>Awareness should also be raised via delivery of agri-environment advice, to include a farm energy audit.</p> <p>A demonstration project should be set up at CAFRE, and also commercial projects situated across the province, mirroring focus farms.</p> <p>Details of the renewables outreach and other programmes</p>	<p>CAFRE will deliver education, training and technology programmes to those entering and within the industry in the areas of energy efficiency and renewable energy. CAFRE will deliver this through adoption of best practice within its estate combined with dissemination of information through courses at the college and local training events. CAFRE will also develop industry benchmarks for agri-sectors in partnership with the Carbon Trust and assist farm businesses to improve their energy utilisation. Research undertaken at the Agri-Food and Biosciences Institute (AFBI) has a knowledge and technology transfer component operating in conjunction with CAFRE. The Renewable Energy Centre at AFBI will have a</p>

	need to be published. DARD could work with higher/Further Education sector on projects.	specific visitor centre facility. Details of renewable outreach and educational programmes are/will be available on the DARD/ CAFRE/ AFBI websites.
<b>Recommendation 2</b>  The proposal of Action Renewables and Sustainable Energy Ireland, in partnership with key stakeholders, to develop, implement, test and certify a training programme for the main commercial renewable energy technologies which can support a self sustaining Renewable Energy Installers Academy post 2010, should be supported. The project aims to facilitate the deployment of renewable energy by increasing the pool of professional installers and engineers who can undertake the design, installation and maintenance of renewable energy technologies with the right skills and knowledge and continually develop high quality standards amongst these practitioners to ensure customer satisfaction and increased customer confidence.	The Academy needs to be in Northern Ireland, but not detract from existing colleges and training establishments. Information disseminated should include environmental considerations and technologies near to commercialisation to help this process along. There was concern that Action Renewables could not be impartial as it is geared towards the public, not the agricultural industry, and that DARD Rural Connect personnel should be trained to advise farmers.	A Renewable Energy Installer Academy has been established. The Academy is a joint venture between Action Renewables in Northern Ireland and Sustainable Energy Ireland in the Republic of Ireland. It has been developed within the INTERREG region which covers Northern Ireland and the six border counties in ROI, namely Cavan, Donegal, Leitrim, Louth, Monaghan and Sligo. It will be set up as a pilot project in the INTERREG region with a view to rolling it out across the island of Ireland.

<p><b>Recommendation 3</b></p> <p>A review of DARD's rural development policy is currently being undertaken which will define DARD's future role in this area. DARD should explore the opportunities to assist the competitive development of land-based renewable energy systems within the next Rural Development Programme/Plan (2007-2013), taking into account potential environmental effects.</p>	<p>Requests were made for the disclosure of funding and mechanisms to stimulate the market, and for renewables to be considered under all 3 Axes of the next Rural Development Programme. Initial costs of connection to the electricity grid should be capitalised by the state, wheeling charges reduced and net metering introduced for private generators, and realistic rates paid to private generators. Farmers need assistance in targeting new markets with land based renewable energy systems as priority.</p>	<p>The Northern Ireland Rural Development Programme 2007-13 will contain funding opportunities to support the roll-out of renewable energy technologies. Issues relating to the operation of the electricity grid fall outside the direct remit of DARD, but DARD will communicate the views expressed to the appropriate bodies.</p>
<p><b>Recommendation 4</b></p> <p>DARD should work in partnership with DETI, Action Renewables, DOE and other key stakeholders to help the rural community identify opportunities for the sustainable development of wind powered electricity generation.</p>	<p>There is a need to examine planning issues, involving public consultation. Required for both terrestrial and marine environments, to identify suitable sites. These sites should be prioritised, with restrictions on the development of wind farms in non-upland regions. Farmers who have already invested in wind power could be brought together to act as a body. DARD needs to engage with the industry to facilitate delivery and to set up a demonstration project. There is a need for a statutory marine spatial planning system and marine energy strategic environmental assessment. There was disagreement with the statement that wind energy is unreliable because it is intermittent. More likely constraints are grid connection, site access and planning delays. However, another responder</p>	<p>CAFRE will invest in wind power within its estate as an exemplar and deliver contextualised information in consultation with DETI, DOE and Action Renewables on its potential for farm businesses.</p> <p>Sufficient public and private sector mechanisms are already in place to enable rural communities to obtain advice and technical information on wind powered</p>

	believed wind energy to involve unacceptable cost, visual pollution, ultimate limited potential and destabilisation of the network, and to only generate electricity a third of the time.	installations. The Rural Development Programme 2007-2013 will contain funding opportunities for rural communities to obtain support in the installation of renewable technologies.
<b>Recommendation 5</b>  DARD should work with developers to help ensure the most effective deployment of large-scale wind systems. DARD should consider changes to legislation that will provide flexibility to develop its forestry property to meet wider priorities and respond to opportunities to secure commercial development, including wind farms, where these are consistent with other policies aimed at sustainable development of the forestry sector.	Comments ranged from large scale wind systems not enhancing the economy of rural areas, concern about potential impact on scenery, and the problem of turbulence in forestry areas, to DARD land being very important, and expanding the recommendation to include all land owned by the Forest Service. There was concern this would open DARD's forestry property to commercial development, and the suggestion that there should not be a presumption that Forest Service uplands are necessarily available for wind farms. Funding issues included ensuring money is directed towards the rural community and not outside organisations.	The NI Forestry Strategy requires Forest Service to make full and effective use of its estate. Existing forestry legislation limits development to 'forest related' purposes. Planned changes to the Forestry Act will open up the potential for wind farm development on the forest estate. However, developments would have to meet planning, environmental impact and other statutory requirements.  DARD does not consider that it has a broader role to play in the deployment of large-scale wind systems.

<p><b>Recommendation 6</b></p> <p>DARD should work to encourage rapid deployment of small-scale wind powered systems to promote the sustainable development of disadvantaged rural areas.</p>	<p>Responses varied. Some thought wind powered systems should be encouraged on all suitable farms. Others would like them limited to specific areas linked with business parks, local businesses or community buildings. Grants should be offered where installation assists to make a farm business more competitive. Emphasis was put on small scale embedded generation, with the electricity system allowing fair access, and support for proposals to split the supply and distribution elements of the electricity market.</p> <p>To solve potential problems of supply, wind could be combined in a hybrid situation to store potential generation.</p> <p>A series of small-scale energy projects around the Province could improve security of supply.</p> <p>It was thought that routing of major grid upgrades should take into account western NI as this is where the main wind resource is in NI. Current maximum capacity of 10MW for renewable generation to receive embedded benefits should be revised upwards to 30MW at least. The current application process was highlighted as a problem.</p>	<p>Under the EU Programme for Building Sustainable Prosperity, DARD has funded 26 projects to erect a wind turbine for the purpose of providing wind energy for rural businesses.</p> <p>See also response to Recommendation 4.</p>
<p><b>Recommendation 7</b></p> <p>Within the Rural Development Programme, DARD is providing financial support to rural</p>	<p>Consultation with the Planning Service was required to secure permitted development rights for wind systems below a given threshold capacity.</p>	<p>See response to Recommendation 6.</p>

businesses to assist them in meeting their energy costs by the utilisation of wind power through the installation of 30 X 20 kW wind turbines. DARD should provide resources to collate monitoring information from these small-scale wind-powered projects to produce case studies for training and education purposes and on which to base future strategies.	It was suggested 20 kW turbines are not a suitable size for many businesses and that more flexibility is required. Support should be extended to rural community groups. Monitoring the impact of grant assistance on the purchase and installation costs of small scale turbines needed to be carried out.	All support will be evaluated and case studies will be prepared to demonstrate the effectiveness of small scale wind turbines.
<b>Recommendation 8</b>  DARD should seek to increase the knowledge base within DARD on the opportunities for, and environmental impacts of, wind power in the rural economy. Investments should be made in the provision of training for the appropriate Policy and Service Delivery Group staff.	This should be provided by the private sector rather than divert resources from other areas.	DARD, CAFRE and AFBI will continue to develop their knowledge of wind power.
<b>Recommendation 9</b>  DARD and DETI, together with other key stakeholders, should promote centralised and embedded electricity generation that is fully integrated into the rural economy, offering enhanced opportunities for wealth creation and environmental improvement.	Restructuring of the electricity supply chain was needed for embedded power generation. Other responses support decentralised electricity generation, small scale farm based CHP systems. Query on whether DARD proposed to start commercial trading or enter PPP with rural organisations, as local groups could undertake CHP and wind operated schemes.	DARD has provided input to Action Renewables on proposals to DETI for a microgeneration strategy which may partly address some of the recommendation.

<p><b>Recommendation 10</b></p> <p>DARD, DETI, DOE and other stakeholders should collaborate to identify the potential for re-instating small-scale hydro-power schemes, particularly where there are benefits for the rural community.</p>	<p>Calls were made for DARD to be more proactive, testing and demonstrating technologies now available, technology other than turbines, and submersible turbines using piping rather than old millraces.</p> <p>DARD could assist the development of hydro-electricity especially where it could provide power for the re-creation of the rural industry. Sites could be identified where reinstatement of water power installations could take place.</p> <p>Large-scale schemes were thought too important to be ruled out, as they could provide support for other renewable sources.</p> <p>It was also queried if this recommendation came under DARD's remit.</p>	<p>The Northern Ireland Rural Development Programme 2007-2013 will contain opportunities to support the roll out of renewable technologies.</p>
<p><b>Recommendation 11</b></p> <p>DARD should collaborate where necessary with DETI and other interested parties to help extract the maximum potential from tidal power in a manner that does not impact on fishery and environmental interests.</p>	<p>There was a concern that Strangford Lough may be a controversial site as it was likely to be designated a marine nature reserve by the UK Government. Monitoring was required for the proposed Severn Tidal Barrage and the development of the Wave Hub off the coast of North Cornwall, as there was difficulty in getting wave energy ashore. Collaboration required in conjunction with a risk-based approach. This should not adversely impact on navigation or other commercial interests. DARD should prioritise where these developments will be, and funding directed towards the local community. Again it was queried</p>	<p>Marine Current Turbines Ltd has been granted authority by EHS to install a tidal energy device at Strangford Lough. The project has been grant aided by DTI's Technology Programme and the EHS.</p>

	if this recommendation came under DARD's remit, and that DARD's involvement should be limited to providing advice on the impact of potential projects on fishing interests.	
<b>Recommendation 12</b> DARD should seek to assist Action Renewables increase awareness of photovoltaic technology amongst the rural community.	A number of responders thought this was outside DARD's remit as it did not benefit agriculture or the rural community, but that promotion should be available from sources other than Action Renewables. The Planning Service need to be consulted as it was likely to be cheaper to install the technology in new buildings than retrofit. R&D was needed to increase economical availability.	DARD will continue to work with Action Renewables to increase awareness of appropriate renewable technologies.  DARD has launched a 'Renewables for Rural Schools' initiative which will provide funding for investment in the installation of photovoltaic panels in 16 rural schools.  There is on-going work on the Government estate to incorporate photovoltaic panels through the Environment and Renewable Energy Fund.  Action Renewables have recently commenced an education programme which covers all aspects of renewable technologies.

<b>Recommendation 13</b> DARD should seek to assist Action Renewables increase awareness of solar power technology amongst the rural community.	The same responses to recommendation 12 applied here.	See response to Recommendation 12.
<b>Recommendation 14</b> DARD Forest Service should work with potential end users, InvestNI and DETI to determine the environmental and economic sustainability of harvesting forestry residues in Northern Ireland.	As the species of trees grown here have very little value for native biodiversity there should be no negative impact. Therefore, the use of these forest residues was to be encouraged. Such activities should be part of the normal preparation of forest development plans. One respondent would like reference to what to do with conventional timbers included in the recommendations. There was a concern about policy drivers within the Forest Service, as its focus was on sustainable development via commercial opportunities.	The Forest Service and forest industry stakeholders will investigate the use of forest harvesting residues to improve the economic performance of timber production and realise the wider (social and environmental) benefits. This may also form part of the future research programme at AFBI.
<b>Recommendation 15</b> Subject to the availability of resources, DARD Forest Service should continue with the Challenge Fund for short rotation willow coppice.	There were many calls for the Challenge Fund to be continued and extended to other energy crops, e.g. hemp. All energy crops already grown should be paid for by DARD and a scheme put in place to pay grants of £150 - £500/ha. Farmers need seed funding and capacity building. DARD should re-examine the way it delivers future funding, and explore the availability of cross border European funding. Concerns with the SRC Challenge Fund adjudication process were raised, where applicants	The three year SRC Challenge Fund has effectively ended. However, the case for a continuing programme of support for SRC is being considered within the funding constraints of the Northern Ireland Rural Development Programme 2007-13.

	<p>are rejected on the advice of environmental groups without further consultation. It was suggested that willow should be mainstreamed within DARD to avoid possible funding restrictions.</p> <p>DARD could assist demand by setting up long-term heat contracts to service the Government Estate.</p> <p>An energy challenge fund is needed which covers all potential land based renewable energy sources, which would be wider than forestry.</p>	<p>DARD will tender for the supply of biomass for selected areas of its estate. Furthermore, DFP will address this with the installation of a flagship, biomass-fuelled plant to provide energy requirements for an office block in the Stormont Estate.</p> <p>DARD is proposing to establish an agri-food waste challenge fund under the coming Structure Fund Programme (subject to consultation and approval)</p>
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<p><b>Recommendation 16</b></p> <p>Research to assist the development of a sustainable energy crop sector should be considered for inclusion in DARD's research and development strategy. Potential areas for collaboration with research centres in the Republic of Ireland and Great Britain should be continued.</p>	<p>Growing crops on set-a-side land should be discouraged as leaving land fallow is valuable for biodiversity. Another response believed set-a-side should be scrapped or replaced by an energy or environmental crop obligation. A number of respondents wanted to extend the recommendation, encouraging collaboration with research centres, a joint North/South approach, and the establishment of a non-food crop group. Suggested areas of research were existing crops e.g. short rotation grassland/maize silage, and the possibility of using cereals as a biomass source for heat production. Another suggestion was that emphasis should be on implementation and development, not more research. There was concern that it would be cheaper to obtain biomass from other countries, therefore putting in doubt the economic viability of growing energy crops in this country.</p>	<p>This Recommendation will be taken forward within the context of the developing DARD R&amp;D Strategy.</p> <p>CAFRE will also contribute to this Recommendation through its facilities especially at Loughry Campus where there is potential to provide a focus for Technology Transfer and education and training for DARD/AFBI as well as a recognised centre for industry partnership.</p>
<p><b>Recommendation 17</b></p> <p>A review should be completed of the work being undertaken by DARD Science Service on energy grasses (Miscanthus, Reed Canary Grass and Switch Grass) and consideration given to the merits for grant assistance in light of research findings and economic analysis.</p>	<p>Concentration of efforts should be on crops that have already proven themselves, and traditional crops i.e. wheat. There were requests for this research to be published. A number of responders wanted the research to look at uses for crops other than energy.</p>	<p>This Recommendation will be taken forward within the context of the developing DARD R&amp;D Strategy. A small area of Miscanthus has been planted at AFBI in 2006 to facilitate further research on the potential of this crop in Northern Ireland.</p> <p>DARD will ensure effective</p>

		knowledge transfer of research findings and their potential application.
<b>Recommendation 18</b> DARD should liaise with Department of Regional Development, Water Service and the agri-food sector to provide expert advice on the potential of energy crops for bioremediation and to treat municipal, industrial and farm wastes in a sustainable manner. DARD should facilitate the commercial demonstration of the potential for energy crops in bioremediation and the sustainability of such systems.	Gate fees were a key factor in whether the economics for heat energy from SRC willow biomass stacked up. Guidance should be available to farmers who want to receive gate fees on their land. Current methods of disposal, and the relevant environmental impacts of each, should be taken into consideration. DARD should also liaise with DOE regarding the Nitrates Directive & the use of human sewage as a nutrient source. There was the suggestion that bioremediation demonstrations were not necessary as it has already been done, and that DARD should be offering to set up bioremediation sites on the land of farmers who have already planted willow.	Research on bioremediation will be taken forward within the context of the developing DARD R&D Strategy.
<b>Recommendation 19</b> DARD should work closely with relevant Departments and agencies to develop the area of municipal waste management. Any proposed facilities for energy generation should look for opportunities for collaboration and synergies in terms of locations, capacities and input materials.	Better management could reduce the amount of biodegradable municipal waste going to landfill. Proposed energy generation facilities should support local farmers, rural communities and existing enterprises. On-farm models should be used as a solution to Municipal waste management. Two responses highlighted their lack of support for incineration.	Prime responsibility for municipal waste management falls to DOE. However, DARD will maintain a watching brief for opportunities to integrate sustainable renewable energy production from municipal and agri-food waste.
<b>Recommendation 20</b> DARD should liaise with DETI, Action	Most of the concerns were financial. Stable prices and	DARD funding from the

Renewables and other stakeholders to facilitate the development of the energy supply chain from grower to processor.	short/medium term contracts were needed, with farmers having a say in the supply chain, and assistance with the business aspect from DETI. DARD should facilitate direct sales from the producer to the customer to ensure the producer achieves a realistic value for the product. Action Renewables role should be raising awareness of technologies among the general public, and DETI's as assisting with the business aspect	Programme for Building Sustainable Prosperity has been provided for the development of SRC based energy supply chains. Additional assistance opportunities will also be available under the Northern Ireland Rural Development Programme 2007-13.
<b>Recommendation 21</b>  DARD should work with DETI, Invest NI, the Carbon Trust and other stakeholders to facilitate the agri-food and forestry sectors in developing biomass fuelled steam CHP systems.	A viable market for biomass products was required, with an all-island dimension of energy considered. A number of responses supported small-scale on-farm CHP systems, facilitating the use of farm manure. It was thought important that CHP users should have access to the grid and be paid a fair rate for excess power they export to the grid. Evaluating the fuel delivery systems servicing the boilers was also important. Cookstown was put forward as a possible site for a plant.	The Central Energy Efficiency Fund, operated by DFP, provides a means by which public bodies can receive support for the installation of energy efficiency and renewable energy technologies. DARD will work with DFP as appropriate to facilitate the development of suitable biomass projects and explore the opportunities to provide energy from waste in CHP systems.

<p><b>Recommendation 22</b></p> <p>DARD should maintain a watching-brief on technological developments in gasification and pyrolysis and facilitate their adoption by the agri-food industry where appropriate.</p>	<p>There was a call for DARD to be pro-active in identifying opportunities.</p>	<p>The Global Research Unit at AFBI has been active in the past three years in exploring renewable energy technologies that are appropriate to Northern Ireland. DARD will seek to put in place on-going mechanisms to identify knowledge gaps and opportunities.</p>
<p><b>Recommendation 23</b></p> <p>DARD should seek to pilot, thoroughly monitor and evaluate biomass fuelled heating systems within its own specialised estate. The aim of these monitored programmes should be to demonstrate to the public and private sectors the effectiveness of biomass systems in heating public buildings and help stimulate, and demonstrate, effective supply chains for fuel supply.</p>	<p>There was strong support for this recommendation, with the suggestion that it should encompass the whole government estate, with government offering long-term heat contracts which farmers could bid for. Renewable energy should be considered when existing boilers in the government estate need replaced, with DARD setting internal targets for 12% of their electricity usage from renewable energy by 2012. DARD should purchase biomass generated heat from commercial producers. One responder thought pilot schemes should be set up in rural areas, whilst another did not think piloting was necessary. An alternative was put forward in the form of implementing a similar project as that of the 20kW wind turbines.</p>	<p>Action is being taken forward by both CAFRE and AFBI and across the wider Government estate - see response to Recommendations 1 and 21.</p>
<p><b>Recommendation 24</b></p> <p>The proposed CAD plant at Fivemiletown</p>	<p>There was support for the establishment of CAD plants, some responders want to be kept informed of further</p>	<p>The proposed CAD plant at Fivemiletown did not</p>

<p>could provide a unique opportunity to obtain information that will inform future strategy. To this end, DARD should seek to engage in all aspects of monitoring the plant in order to obtain this information and provide a source of technical advice and scientific support.</p>	<p>proposals. Another responder was of the opinion that CAD plants spread diseases. Smaller plants should be funded, with grants for tanks not taking funding from other innovative schemes.</p>	<p>proceed. However, the proposed agri-food waste challenge fund may provide the opportunity to revisit this Recommendation.</p>
<p><b>Recommendation 25</b></p> <p>Subject to the availability of resources, DARD should consider funding to ensure continued provision of a core of expertise on anaerobic digester systems as a potential priority within its forthcoming research and development strategy.</p>	<p>It was queried whether trained specialists would need to be recruited and what guarantees of excellence and insurances would be required.</p> <p>A rural taskforce of farmers interested in AD could be set up. It was claimed that AD had not yet been exploited at farm level in NI because of implementation barriers, including legislation.</p> <p>The industry is in need of an R&amp;D programme to provide the necessary expert advice.</p>	<p>A farm-scale anaerobic digester will be installed at the AFBI Renewable Energy Centre at Hillsborough with funding from the Environment and Renewable Energy Fund. This will provide the necessary infrastructure for an R&amp;D effort focused on AD. This will be part of a broader renewable energy research agenda to be developed in the context of DARD's forthcoming R&amp;D Strategy.</p>

<p><b>Recommendation 26</b></p> <p>DARD should ensure provision of technical advice and scientific support to the poultry and mushroom industries as they evaluate the potential of poultry litter and spent mushroom compost as a renewable energy source.</p>	<p>Some considered that this investigation had already been done.</p> <p>There was an opportunity for cross border collaboration on the issue.</p>	<p>DARD will continue to provide technical advice and support to these industries.</p>
<p><b>Recommendation 27</b></p> <p>DARD should work with InvestNI and DETI and the industry as appropriate to help explore future developments and determine the support necessary to maximise the potential of poultry litter and spent mushroom compost as a renewable energy source.</p>	<p>This has already been done. Business opportunities need to be identified.</p>	<p>See response to Recommendation 26.</p>
<p><b>Recommendation 28</b></p> <p>DARD should seek to complement a cross-departmental approach on biofuels to examine opportunities for the rural economy arising from implementation of the UK programme on biofuels.</p>	<p>The recommendation should not be restricted to the UK programme on biofuels. There was concern that good environmental practice should be ensured, and whether demand for biofuels could be supplied from Northern Ireland, and at a competitive rate. Finance was needed to set up biodiesel and bioethanol production plants and infrastructure. It was suggested the added-value products to oil seeds should be considered first, then the recycling of waste natural oil into biofuel as a later step.</p>	<p>DETI has lead responsibility for biofuels and DARD will maintain contact with DETI in this evolving policy area. CAFRE will also develop knowledge and expertise in this evolving area with a target of increasing the % of biofuel used to 25% within the estate by 2008.</p>

<p><b>Recommendation 29</b></p> <p>Research to develop a sustainable biofuels sector should be considered as a potential priority in setting the research and development strategy for DARD.</p>	<p>The industry must be engaged in such research. A number of respondents felt that all necessary research had been done. It was suggested that the cultivation of energy crops needs to be supplemented, and a tax system put in place to encourage the use of biofuels. Trials of energy grasses producing bioethanol were needed, and assistance given to the construction of ethanol extraction plant. Research should be done by the DARD non-food crops unit. There was concern that growing biofuel crops could lead to environmental degradation, especially as the Renewable Transport Fuel Obligation may mean more land is needed. The energy efficient biofuels was queried as it could be energy-intensive to produce the crops. One respondent offered a refuelling &amp; recharging infrastructure programme, its aim is to increase the infrastructure of alternative refuelling stations (though not biodiesel). Grants were funded by the Department for Transport, but no applications from NI had so far been received.</p>	<p>The need for further research on biofuels will be considered in the context of the developing R&amp;D Strategy. This may include the environmental impact of growing biofuel crops, system energy efficiency, etc.</p>
<p><b>Recommendation 30</b></p> <p>DARD should establish strong links with the National Non-Food Crops Centre in York. The work at this Centre, sponsored by Department of Trade and Industry and Department of Environment, Food and Rural Affairs, is to facilitate links between scientific research, agriculture and industry and aims to identify opportunities where</p>	<p>Other possible links which could also be established were put forward - BioRegionals (Sutton), Global Watch (DTI), DEFRA, DFID, Ecowise, ETSU, Home Grown Cereals Association and various Universities.</p>	<p>DARD/AFBI has a range of corporate links with a wide range of organisations</p> <p>DARD is currently exploring options for improved linkages with the NNFCC. AFBI already has linkages with the</p>

sustainable raw materials can be substituted into industrial supply chains.		NNFCC.
<b>Recommendation 31</b>  DARD should investigate the potential to use liquid biofuels in its own transport vehicles.	There was a need for this recommendation to be extended to public transport vehicles. One respondent has had a pilot plant in Belfast producing biodiesel for the last four years, and has approached DFP, Forestry Service and the Rivers Agency to carry out user trials and been turned down. Another respondent had carried out a 12 month user trial. The technology already exists and was being used in other countries.	This Recommendation is being addressed by both CAFRE and AFBI. See recommendation 28 also.
<b>Recommendation 32</b> DARD should assess the potential of obtaining biofuel from rendering residues.	There was concern that this is limited by the Waste Incineration Directive. It was indicated that this is already practiced in Derry and Lisburn.	Strong commercial interest in this area means that there is no requirement for direct DARD involvement.
<b>Recommendation 33</b> Subject to the availability of resources, DARD should establish a small team dedicated to renewable energy within its Central Policy Group. This unit would be responsible for overseeing the implementation of the DARD renewables policy and directing and initiating regular reviews. The unit would act as the first point of contact within DARD on renewable issues for other government departments and agencies, the renewables industry and other external contacts.	The team needed to involve other Departments, with adequate funding. There were suggestions as to the membership of a reference group and that relevant expertise should be sourced from inside and outside of government. The group should also look at other non-food uses. There was concern it would be another talking shop unless there was a means for supporting the renewables industry via a market for biomass and the necessary infrastructure.	DARD is currently exploring options for creating a Unit to promote the role agriculture can play in moving forward the broader renewables agenda.

<p><b>Recommendation 34</b></p> <p>DARD notes DETI's commitment to establish a framework and structure for dealing with sustainable energy issues on a cross cutting basis. DARD's renewable energy policy team should represent DARD in the forthcoming structure. The team should also maintain close contact with the appropriate policy-makers in DOE to take account of policy areas of mutual interest, as well as environmental legislative concerns.</p>	<p>The team should be involved in the preparation of the DOE renewable energy Planning Policy Statement. One respondent felt a completely independent body would best serve public interests. Decisions should be made based on commercial reality.</p>	<p>DARD is currently represented on inter-departmental groups dealing with renewable energy issues.</p>
<p><b>Recommendation 35</b></p> <p>There is a need to maintain the momentum achieved through a renewables policy development process into the implementation phase. The cross-departmental approach to the policy development process thus far has been central to its progress and it is considered likely that further development will benefit from such an approach. Consequently, an interdepartmental working group on renewable energy for the rural community should be established.</p>	<p>Most responders requested representation on this group. It was indicated the Planning Service also needed to be included to work towards resolving planning permission issues. Care should be taken to ensure there was no duplication of work, as there was a proposal to promote an Energy Research Group in InvestNI. A strategic plan was needed on how to cash in on EU and UK policy. Also, a wider marine policy was required. Multi-disciplinary environmental surveys and integrated planning of seas was needed to ensure the right technology was developed in the right place. The group should ensure the new DEFRA Marine Bill covered NI. It should be recognised that grid connection is a constraint to marine renewables.</p>	<p>An interdepartmental steering group has been established to take forward the Environment and Renewable Energy Fund. This provides a forum for inter-departmental contacts on broader renewable energy issues.</p>



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MÁNNYSTRIE O

**Fairms an  
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