Regional Networks for the Development of a Sustainable Market for Bioenergy in Europe

Westmeath Community Development

Bioenergy Action Plan

Target Region
County Westmeath Ireland

06th July 2012

Supported by INTELLIGENT ENERGY EUROPE

Acknowledgements

This report has been produced as part of the project BioRegions. The logos of the partners cooperating in this project are shown below and more information about them and the project is available on www.bioregions.eu

The work for this report has been performed by Patrick Daly working as a consultant to Westmeath Community Development and with the acknowledged support and input of the following agencies and organisations.

Teagasc
Bord Na Mona
Westmeath County Council
Westmeath Forestry Growers Group
Irish Farmers Association
Irish Bioenergy Association
Mullingar Chamber of Commerce
Biotricity
Coilte
Thomas Flynn and Sons
Next Gen Heat

Foreword

Westmeath Community Development, which produced, and now presents, this Action Plan, as part of its role as the Irish partner in the BioRegions project, is the Local Development Company for County Westmeath.

The Action Plan is the culmination of much research and strategic thinking on the part of many people, most notably from a number of key stakeholders whose commitment has been heartening. I believe it is a tribute to them and to our consultant Patrick Daly who, through his knowledge and vision for the potential of the bioenergy sector, has succeeded in convincing a large number of groups and organisations to buy in to the idea of a local Action Plan and to input to same, including committing to specific supportive actions. An important focus of the Bioregions project is the transfer of Best Practice amongst like-minded organisations throughout Europe and we are grateful to colleagues in the other partner countries and organisations who have helped us build this plan of action.

Discussion on this topic began with us a number of years ago when members of our Board were examining ways we could address strategic issues in the county from the perspective of our own stakeholders, which include political, statutory, community and social partner representatives. It was felt that there was a voice needed to develop and a strategy adopted, which might make an impact on an issue which has long been the subject of debate, controversy and, at times, merely wishful thinking, the issue of localised sustainable and renewable energy solutions.

This Action Plan is a strong endorsement of the bottom-up approach to rural/local development which continues to be developed and endorsed in draft EU legislation. Member states of the EU, including Ireland, have a big incentive to take up the multi-fund approach inherent in Community Led Local Development (CLLD) projects like this, not least in the potential levels of funding which are there to be won. As the Europe 2020 Strategy is adopted as a successor to the Lisbon Strategy for Jobs and Growth, it aims to enable Europe to emerge stronger from the current economic crisis and to turn the European Union into a smart, sustainable and inclusive economy with headline targets for Employment, Research and Development/Innovation, Climate Change/Energy, Education and Poverty. CLLD is about what the EU calls the multi-governance approach, essentially using the bottom-up approach to complement, facilitate and add value to mainstream statutory homogeneous service provision.

The launch of this Action Plan is an example of this approach and of the potential of leveraging local social capital, knowledge and expertise when it comes to the question of sustainable energy. This Action Plan has been adopted by the board of Westmeath Community Development and is seen as a prelude to more proactive engagement in developing this sector and the wider issue of sustainable energy, given the relationship to job creation and other rural development objectives.

By Joe Potter

CEO, Westmeath Community Development

Executive Summary

This Bioenergy Action Plan has been developed as part of the 'BioRegions' project to review the current energy and bioenergy situation in County Westmeath and establish targets and actions to promote the bioenergy sector.

'BioRegions' is a three year inter European project, funded by the European Commission under the Intelligent Energy Europe programme, seeking to promote the development of 'bioenergy regions' across Europe, which are regions were a significant portion of the energy demand is met by sustainable bioenergy sources.

The Action Plan has been drafted with input and consultancy from project partners across Europe and from key stakeholders from the region and sector and has been led by Westmeath Community Development acting as the Irish partner in the project.

Westmeath has a population of circa eighty thousand people and is situated in the midlands region of Ireland with its land use predominantly in agriculture with the main economic activities including tourism, services and light industry. Agricultural land use is dominated by grassland, (approx. 110,000 hectares) with some forestry, (both conifer and broadleaf, 13,874 hectares) and tillage crops (7,176 hectares) mainly sugar barely and winter wheat. Given same the principal outputs from the sector in tonnes are grass, cattle and animal slurry waste. The county is administered by Westmeath County Council and is part of the Midlands Regional Authority. There are two key provincial towns, Mullingar and Athlone, both of which have Town Councils.

The principal energy infrastructure is the electrical grid and there is a natural gas grid to the south of the county serving the towns of Mullingar, Athlone and Tullamore, with most of the county remaining oil dependent. There are three regional peat burning power stations in the midlands one of which is now co-firing with biomass. There is no regional or county based energy data, however energy estimates based on extrapolation of national data, indicate an oil dominated energy demand (both building and transport) and a significant thermal market.

The potential availability of resources for application in bioenergy is dictated by agricultural tradition, practice and price. As such, the most currently available resources are likely to derive from optimising waste streams from the principle agricultural activities, slurry and grass, and in the utilisation of a smaller but maturing forestry resource, much of which is coming into first thinning's stage. Longer term more supportive mechanisms and adjustment in market conditions may be needed to support the transfer of land use to alternative uses such as bioenergy crops.

The existing bioenergy market is in its early stage of development with the principle biomass demand arising from the co-firing requirements of the 128 MW Edenderry peat burning power plant ran by Bord Na Mona. The penetration of biomass into the thermal market is currently small, estimated to be in the region of 2.5% (based on estimated boilers and a proportion of domestic energy use in open fires / stoves), with indications that much of the resource is coming from outside the county or region. As yet there are no Anaerobic Digestion or Biomass CHP plants in operation in the county, although planning approval has

been received for a 1 MW AD plant in Westmeath and a 15 MWe biomass CHP plant (Biotricity) in the region.

Given the current levels of energy demand in the county, its resource base and the minimal bioenergy supply and demand, the Bioregions project target of 33% of the regional energy demand (excluding transport) being met by sustainable bioenergy sources is a major challenge and is a more long term goal for the region. The stakeholder consultation process, undertaken while developing the action plan, proposed that a more realistic 'establishment' target should be set to promote the initial development of this emerging sector.

Given the grassland and cattle dominance of the county a key strategy for the region should be to exploit the energy potential from grass and slurry waste as a feedstock for technologies such as Anaerobic Digestion. In addition, the counties maturing forestry resource should be optimally managed to ensure full utilisation of the resource, which should mean increased potential application for biomass energy use. Longer term, it is envisaged that diversification of land use to other forms of bioenergy crops should be promoted. Penetration of the heating market will require a growth in conversion to biomass heating systems and a growth in local supply, which could be facilitated by the development of Biomass Trading and Logistic Centers. Importantly, energy efficiency and conservation should be set as a priority action to reduce the counties overall energy requirement.

Various stakeholders supporting this project have each outlined important actions and activities to promote the sector, including general promotion, education and training, financial supports, specific bioenergy projects, research and developing policy and planning guidance. Over the coming year the more short term actions will be implemented and monitored as part of the BioRegions project and over the medium to longer term, Westmeath Community Development will play a co-ordination role bringing together the various stakeholders to review and monitor progress toward targets, which are set out below.

Co Westmeath Bioenergy Establishment Targets:

	By 2015	by 2020
Energy Efficiency	10-12%	17-20%
Bioenergy	5-7%	10%-12%
Heat	*5-7%*	*12%-15%*
Elec	*3-5%*	*10%-12%*

Patrick Daly

Sustainable Energy Consultant

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Tables and Figures

Glossary of Terms

AD	*Anaerobic Digestion*
BAP	*Bioenergy action plan*
BAT	*Biomassehof Achental GmbH & Co KG*
BLTC	*Biomass logistic and trade centre*
BnM	*Bord Na Mona*
BTC	*Biomass trade centre*
CHP	*Combined Heat and Power*
CO2	*Carbon Dioxide*
CSO	*Central Statistics Office*
DCENR	*Department of Communications, Energy and Natural Resources*
DEAP	*Dwelling Energy Assessment Procedure*
DTTS	*Department of Transport, Tourism and Sport*
ESB	*Electricity Supply Board*
EU	*European Union*
FOREST	*Fostering Efficient long term Supply partnerships project*
GDP	*Gross domestic product*
GHG	*Greenhouse Gas*
GHS	*Greener Homes Scheme*
GIS	*Global Information System*
GJ	*Giga-Joule*
GW	*Gigawatt*
GWh	*Gigawatt Hours*
Ha	*Hectare*
HE CHP	*High Efficiency Combined Heat and Power*
IEE	*Intelligent Energy Europe*
IFA	*Irish Farmers Association*
IPPC	*Integrated Pollution Prevention and Control*
IrBEA	*Irish BioEnergy Association*
kW	*Kilowatt*
kWh	*Kilowatt Hour*
MJ	*Mega-Joule*
MW	*Megawatt*
MWh	*Megawatt Hour*
PJ	*Peta Joule*
RASLRES	*the Regional Approaches to Stimulating Local Renewable Energy Solutions project*
RDP	*Rural Development Programme*
R&D	*Research and Development*
REFIT	*Renewable Energy Feed-in Tariff*
ReHeat	*Renewable Heat Deployment Programme*
RES	*Renewable energy sources*
RES-E	*Renewable energy in electricity*
RES-H	*Renewable energy in heat and cooling*
RES-T	*Renewable energy in transport*
RPG	*Regional Planning Guidelines*
SEAI	*Sustainable Energy Authority of Ireland*
SERA	*South-East Regional Authority*
SRC	*Short Rotation Coppice*
SWOT	*Strengths, weaknesses, opportunities and threats*
t	*Tonne*
TEA	*Tipperary Energy Agency*
TFC	*Total Final (Energy) Consumption*
TOE	*Tonne of Oil Equivalent*
TPE	*Total Primary Energy*
WCC	*Westmeath County Council*
WCD	*Westmeath Community Development*
WFGG	*Westmeath Forestry Growers Group*

1. Introduction

1.1 Context

The European Union has committed itself to increase the share of renewable energy in final energy consumption to 20% by 2020. All EU Member states have their own individual targets with overall renewables targets for Ireland set at 16% of total final consumption to come from renewable energy by 2020, made up of contributions from renewable energy in electricity (RES-E 40%), by 2020, renewable energy in transport (RES-T) 10% by 2020, and renewable energy for heat and cooling (RES-H) at 12% by 2020.

Each member state has also proposed policy measures promoting the increase of renewable energy projects, part of them in the form of biomass projects. To enable implementation of biomass projects, supporting activities on local and regional level will be needed to enable these projects to be realized in rural areas in Europe. The potential for biomass projects is usually there, but realizing the potential runs into a large number of barriers on local level, related to problems with biomass trade and logistics or the lack of knowledge of many local stakeholders.

1.2 The BioRegions Project

'BioRegions' is a three year inter European project, funded by the European Commission under the Intelligent Energy Europe programme, seeking to promote the development of 'bioenergy regions' across Europe, defined as regions that aim to produce at least one third of the regional energy demand (excluding transport) from local and sustainable bioenergy sources, with a focus on sustainable biomass.

The principle objectives of the project are to

> *Support the development of efficient and reliable markets for solid biomass in five target regions in Bulgaria, Czech Republic, France, Latvia and Ireland (Co Westmeath / Midlands).*
>
> *Stimulate investment into bioenergy projects and trading businesses of local stakeholders.*
>
> *Inspire other rural areas to follow the example of the target regions.*

This is planned to be achieved by the identification of the 'success factors' in a number of *'Best Practice'* bioregion markets in Europe and adoption of the most relevant strategies and practices into the *'Target Regions'* via the adoption and implementation of a *Bioenergy Action Plan,* compiled with multi stakeholder input and support.

The BioRegions consortium comprises 13 partners from 10 European countries, including two best practice regions (Germany and Sweden), five target regions (Bulgaria, Czech Republic, France, Ireland and Latvia), four bioenergy experts (Germany, Czech Republic, Finland, Greece), one financial expert (Greece) and one dissemination expert (Belgium).

The consortium will organize stakeholder workshops, best practice visits and public consultation events in each of the target regions as well as a networking workshop in Czech Republic for stakeholders from the target regions.

Schedule of Bioregions Project Partners:

WIP Renewable Energies, Germany, www.wip-munich.de
ENVIROS Czech Republic, www.enviros.cz
VTT Technical Research Centre of Finland, Finland, www.vtt.fi
AUA Agricultural University of Athens, Greece, www.aua.gr
BAT Biomassehof Achental, Germany, www.biomassehof-achental.de
LTC AB County of Jönköping, Sweden, www.ltc.se (until 12/2011)
Ekodoma, Latvia, www.ekodoma.lv
WestCD Westmeath Community Development limited, Ireland, www.westcd.ie
EAP Energy Agency of Plovdiv, Bulgaria, www.eap-save.eu
SAT Regional planning syndicate of Trieves, France, www.alpes-trieves.com
EAZK Energy agency of the Zlin region, Czech Republic, www.eazk.cz
Capital Connect Consultants Greece, www.capitalconnect.gr
ELARD aisbl European Leader Association for Rural Development, Belgium, www.elard.eu

The formal project duration is from May 2010 to May 2013, but it is envisaged that the aims and action planning resulting from the project will continue beyond the formal project lifetime.

1.3 Outline of the Action Plan

This document is one of the five 'target region' action plans that set the framework for development of biomass projects and several supporting activities (varying from the creation of biomass trading centres to the establishment of regional information centres).

The purpose of the Action Plan is to define a co-ordinated and multi stakeholder strategy to support the development of a regional bioenergy market in the county and wider midlands area, with agreed overall targets and concerted specific actions to be carried out by the various engaged stakeholders in the region. As such this Action Plan is being developed with contributions from key local stakeholders who have been engaged through various networking events and meetings and whose input and commitment are important for the development of the bioenergy sector.

The content of the action plan is broadly as follows, in chapter 2 a general description of the region is given, including an energy profile and key stakeholders, followed by a description of the bioenergy / biomass situation in chapter 3 then followed by a SWOT analysis in chapter 4, showing the current strengths and weaknesses and the potential opportunities and strengths for the development of biomass in the region. This is followed in chapter 5 with an elaboration on the proposed target set in the region (based on the current situation and expected developments). Chapter 6 lists the concrete actions that should be undertaken to

reach this target, including short to long term actions. Chapter 7 lists the possible impacts of the actions taken and Chapter 8 gives a proposal of monitoring and evaluation of the progress of the actions in the action plan and an additional chapter has been added to include recommendations and suggestions that are beyond the scope of local stakeholder action.

The Action Plan will be formally adopted in (summer) 2012 and after that the first steps for the creation of the bioregion will be implemented. It will be updated periodically to adapt to changing framework conditions in the region.

1.3 Development of the Action Plan

Prior to the first drafting of the action plan (Winter 2011) and following a range of local networking events, further stakeholder engagement to the project was undertaken involving a range of meetings and dialogue with key stakeholders including some that hitherto had not been engaged in the networking process and events, notably agencies in the financial, business and tourism sectors.

A preliminary draft of the action plan, focusing on chapters 2 (Target Region Portrait) and 3 (Bioenergy Characteristics – with an emphasis on Biomass), was initially developed to facilitate Task 3.4 by Biomassehof Achental GmbH& Co KG (BAT) in Bavaria involving a study into the applicability of a Biomass Trading Centre in the county, and these chapters were issued prior to BAT's visit to the Irish target region in October 2011.

This was followed by a second draft, which involved a more detailed and holistic bioenergy resource assessment to support chapter 3. At that time (November 2011) a formal request for engagement was issued to a broad range of local, regional and national stakeholders to request their support to the initiative and to ask stakeholders to consider and document the type of concrete supportive actions that they may be able to undertake. This second revision, Draft 2, of the Action Plan was issued to the project team and presented at the project team meeting in late November 2011 reviewing action plan development.

Draft 3 of the Action Plan was issued to the project partners on 15th March 2012 for comment and input. This draft incorporated more detailed local energy profiling, revised resource assessment and detailed forestry resource study and first full draft of chapters 1, 2, 3, 4 and 5. Following input from the partners this draft was issued to key Irish stakeholders for comment and input in late march. Following same a consultation period was conducted, including a formal Consultation Meeting where stakeholders gave feedback to the action plan. This process included written formal feedback, which was then fed into the Action Plan and included co-ordination and collation of stakeholder schedule of actions and notably definition of targets and as such the development of chapters 5, 6, 7 and 8. This Final Draft was issued for final comment to stakeholders and project partners on 31st May 2012 with minor modifications following feedback over June for launch public launch on 12th July 2012.

2. Target Region Portrait

2.1. General Characteristics of the Region

2.1.1 Geographical Setting, Natural Conditions

Westmeath is part of the Midlands Authority Region which comprises the four midlands counties of Laois, Offaly, Longford and Westmeath itself, and comprising 6,524 sq. km - 9.5% of the total area of the state, and a population of 282,195. (6.0% of national population) and a population density of 43 persons/sq km. (Midlands Regional Authority 2012)

Westmeath is situated in the western part of the province of Leinster and is bounded by Co. Cavan to the North, by Co. Meath to the east, by Co. Offaly to the south and by Co's Roscommon and Longford to the west. The County has an area of 183,965 Hectares (CSO) with its land use predominantly in agriculture, mainly pasture. Its landscape is principally lowland with undulating hills and includes a number of important rivers such as the Shannon, Inny and Brosna, and large lakes.

A number of principle transport routes cross the county, most notably the M4/N4 Dublin (East) to Sligo (West) road route, the Dublin (Connelly) to Sligo rail route, both of which serve the town of Mullingar, and the N6 Dublin (East) to Galway (West) route on which the second provincial town of Athlone is located.

Fig 1 Showing Westmeath County and Location in Ireland. Source Author

2.1.2 Administrative Structure

The County is administrated by Westmeath County Council, which has a large number of permanent full time officers and employees, with its head office based in Mullingar Town. It has 22 elected 'local councillors' drawn from five electoral areas. The county council plays a significant role in the control of planning for development and infrastructure and provides key services in the areas of water, roads, social housing, environmental protection, waste, leisure and parks etc. The key provincial towns also have additional councils, notably Mullingar Town Council and Athlone Town Council, both with elected councillors but have limited roles and powers. These administrative organisations operate within the Midlands Regional Authority, which provides a co-ordinating and planning role and comprises 24 members from its constituent four local authorities and a number of committees.

2.1.3 Demography and Settlement Pattern

The county has a population of 86,164 (nearing 2% of the national population) with its largest towns being Mullingar at 20,103 and Athlone at 20,153, (CSO 2011a). The county has an average population density of 40.9 inhabitants per km2, (ranging from 5.1 to 1987.4) (WCC no Date), with the principle settlement areas being its towns and villages, and with a higher population density and growth to the east of the county due to proximity to the Greater Dublin Area.

2.1.4 Economy

Across the Midlands region the GDP is estimated to be €4,184M with employment dominated by services 60%, light industry 30% and agriculture 10% (IRO).

Westmeath has a significant agricultural sector, with some 119,969 Hectare of land or 65% of the county's land dedicated to farming, principally cattle, with an estimated stock of circa. 203,000 comprised mainly of beef and some dairy (CSO). Forestry and tillage are relatively marginal in the county with an estimated 13,874 hectares in forestry, both public and private and over 7000 hectares dedicated to various crops (SEAI). Tourism is an important sector, built mainly around the counties fishing and water amenities and there is also some light industry in the county based mainly around food processing and consumer goods and a number of state and semi-state agencies are located across the county.

2.2. Current Energy Infrastructure

The principle fuels are oil and gas followed by electricity with the main energy infrastructure being the electrical and gas grids. There is no heat infrastructure and there is no tradition of district or community scale heating in Ireland with oil and solid fuels such as coal, peat (turf) and logs being delivered by road vehicles.

2.2.1. Gas Infrastructure:

The gas grid crosses the county on an east to west route primarily servicing much of the towns of Mullingar and Athlone, with some town hinterland areas remaining un-serviced and most of the towns and villages being off the grid and generally road delivery dependant (mainly oil and solid fuels).

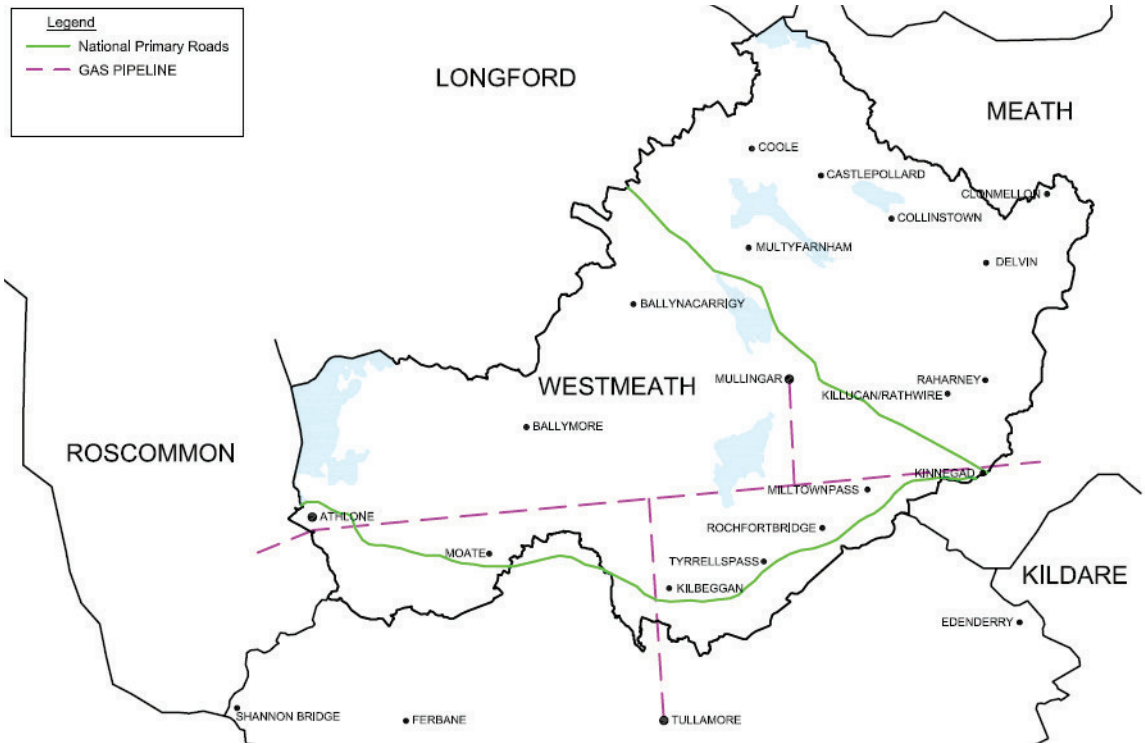

Fig 2 Schematic of natural gas grid, by Author. Gas route shown indicatively - derived from Bord Gais Networks pipeline map at www.bordgais.ie

2.2.2 Electrical Infrastructure:

The electrical grid includes both transmission and distribution networks at various voltages. Given the traditional industrial peat extraction and power plants there is a significant transmission network in the region with the 220kv grid passing through the southern part of the county and 400kv lines passing through northern Offaly, to the south of the county serving the main power plants.

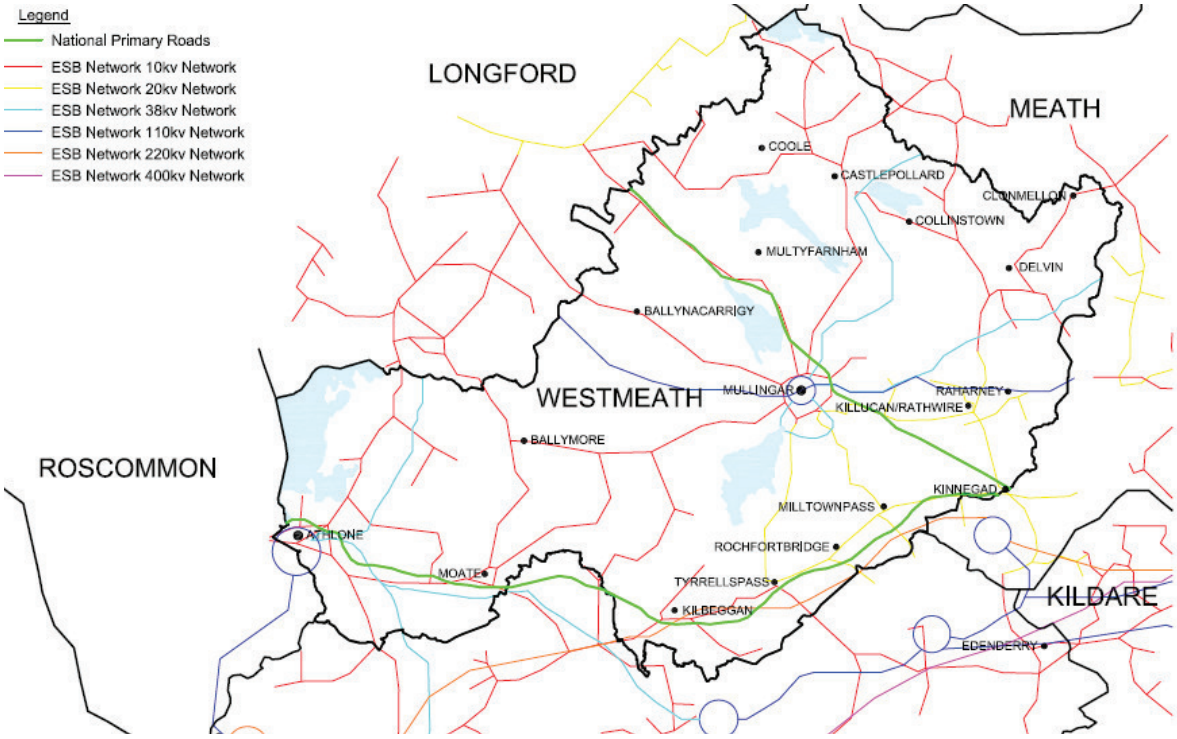

Fig 3 Schematic Electrical Grids in Co Westmeath - Source Author – Derived from ESB Networks, Network Maps at www.esb.ie/ESBNetworksNet

2.2.3 Current Power Generation:

There is no known electrical power generation in the county, although planning has been achieved for a wind farm near the Delvin town area to the north east of the county. There are no known biogas or combined heat and power (CHP) plants in the county, although planning has been received for a 1 MW anaerobic digestion (AD) plant near Mullingar, and a large scale biomass CHP plant is being planned in neighbouring county of Rhode.

There are however, three peat burning electrical power stations bordering the county, in the Midlands area, Lough Ree ESB Power Station with a capacity of 100 MW, West Offaly ESB Power Station with a capacity of 150 MW and Edenderry Power owned by Bord na Mona with a capacity of 128 MW and which is co-firing with biomass.

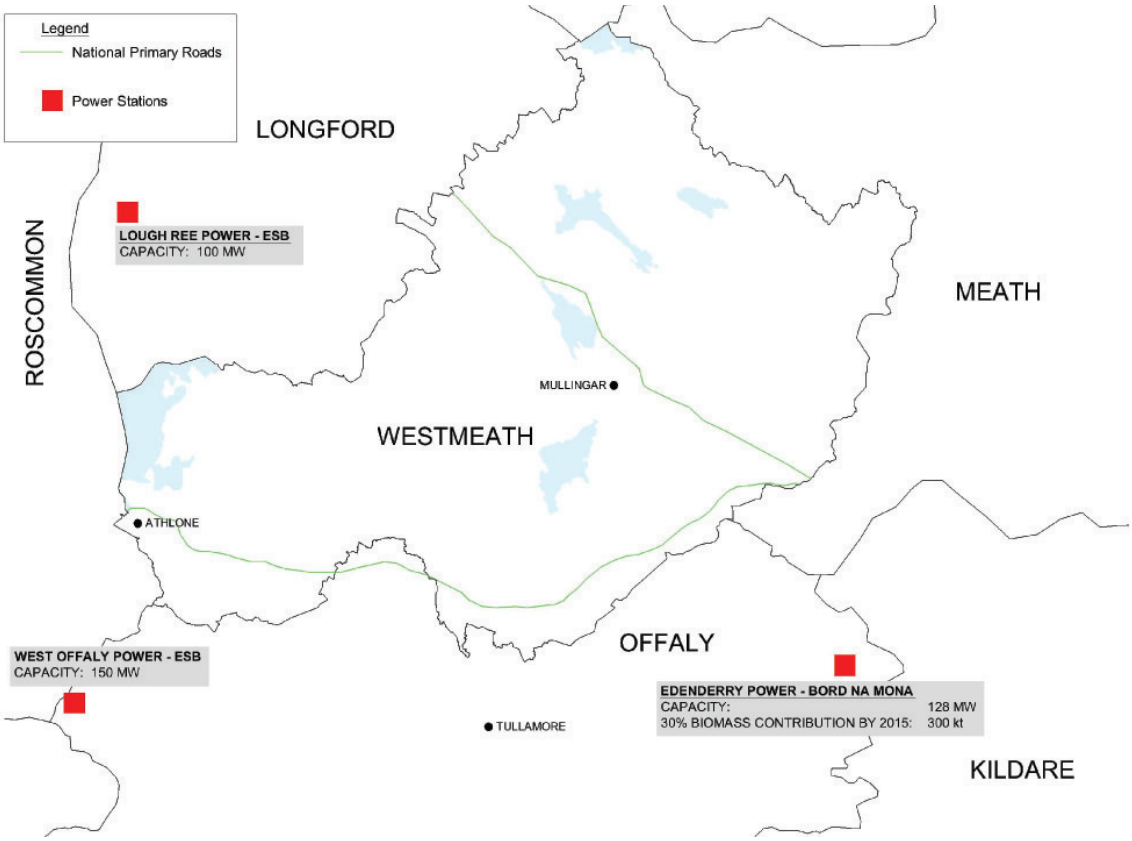

Fig 4 Schematic of Midland Peat Burning Power Plants in Co Westmeath - Source Author Power plant information provided by Charles Shier, Strategic Development Manager, Bord na Mona Powergen

2.3 Estimated Energy Consumption Profile for County Westmeath

There is no local or regional energy data available for the county or midlands region. In order to estimate and develop and energy profile of the county two methods of assessment have been employed. First is a simple energy profile of the county based on a per capita allocation of national energy data, and secondly a more detailed extrapolation based on methodology used in the report 'Regional Energy Balance & Biomass Heating Demand Estimates for 2020' by Bruton T et al (2010), for the Western Development RASLRES project, which uses national to county ratios for labour force, housing stock, licensed vehicles and farmland areas to estimate the proportion of national energy balance figures, for industry, transport, residential, agriculture and commercial and public services, applicable to the county. This is similar to the method employed in the SERA Action Plan for the South East Region of Ireland.

2.3.1 Simplified Per Capita Extrapolation:

This method is based on a simple extrapolation of energy based on a per capita basis of

national energy use. As such it is not fully reflective of the actual regional or county situation especially given the rural basis of the county with less gas grid penetration, less urbanisation and a greater use of peat turf for heating of rural homes. In addition there is generally less renewable energy generation in the county and as such the pro-rata national proportions would be unreflective.

Given same and based on a per capita extrapolation of national figures, a top down estimate of the counties energy consumption for County Westmeath equates to the following: *(Based from Sustainable Energy Authority of Ireland (SEAI) 'Energy in Ireland 1990 – 2009 2010 Report')*

Total Energy Estimate:
Total Primary Energy (TPE) County Westmeath 3,248,391 MWh/yr
Total Final Consumption (TFC) County Westmeath 2,676,148 MWh/yr
RES 116,942 MWh/yr (Note there is little actual RES generation in the county or Midlands area)

Thermal Estimate:
Primary Energy (TPE) 1,104,453 MWh/yr,
Final Consumption (TFC) 940,847 MWh/yr,
RES – H 39,516 MWh/yr
Biomass 31,962 MWh (Extrapolated from % on graph)
Biogas at 4,700 MWh (Extrapolated from % on graph) (Note -there is no known biogas generation in the county)

Electrical Estimate:
Primary Energy (TPE) 1,039,485 MWh/yr,
Final Consumption (TFC) 469,113 MWh/yr,
Gross Consumption (TFC) 524,611 MWh/yr,
RES – E 73,970 MWh/yr
Biomass 620 MWh (Extrapolated from % on graph)
Biogas at 319 MWh (Extrapolated from % on graph) (Note -there is no known biogas generation in the county)

2.3.2 Detailed Extrapolation

The second extrapolation is more detailed and uses national to county ratios for labour force, housing stock, licensed vehicles and farmland areas to assist in a more detailed sector extrapolation of energy data, based on data from the Central Statistics Office and the Department of Transport. This is based on Methodology used by RASLRES which was itself an extension of the methodology set out in the Energy Balance prepared for the Mid-West Regional Authority (Bruton T et al 2010), and is a similar approach to the methodology used by SERA in the South-East Region Bioenergy Implementation Plan 2008 – 2013.

These ratios were used to estimate the proportion of national energy balance figures (obtained from the Sustainable Energy Authority of Ireland (SEAI) Energy in Ireland 1990 – 2009, 2010 report), for industry, transport, residential, agriculture and commercial and public services, applicable to the county. This methodology has similar limitations to that of the simplified method and although more detailed it remains an extrapolation of national energy figures. Similar to the methodology employed in the RASLRES study, the methodology makes the following assumptions:

- 4% of electricity is used for heating. This is assumed to be split evenly between the residential and commercial sectors.
- All renewable energy in TFC is assumed to be for heating purposes.
- Statistical differences in the energy balance are ignored.

Based on the above methodology a top down estimate of the energy consumption for County Westmeath is as follows.

Westmeath Energy Balance Estimates (EBE) MWh						
		Extrapulation				
2009 MWh	National EB	Basis	National Figure	Westmeath Figure	% of Nat	Westmeath EBE MWh
Total final consumption	**142,444,240**					**2,656,617**
Industry excl. Electricity(2)	17,293,810	*No of perons in labour force (CSO, 2006)*	2,109,498	38,649	1.83	316,847
Industry electricity(2)	8,327,080		2,109,498	38,649	1.83	152,564
Transport(3)	59,022,250	*vehicles under licence (Dept of Transport, 2010)*	2,302,642	44,813	1.95	1,148,665
Residential excl. Electricity(4)	28,086,450	*number of houses excluding vacant dwellings (CSO, 2011)*	1,709,973	31,856	1.86	523,237
Residential – electricity(4)	7,966,550		1,709,973	31,856	1.86	148,413
Commercial services(2)	11,525,330	*No of perons in labour force (CSO, 2006)*	2,109,498	38,649	1.83	211,160
Public services(2)	6,919,850		2,109,498	38,649	1.83	126,781
Agricultural – oil(5)	2,465,560	*National farmland figures (CSO, 2000)*	13,113	120	0.92	22,563
Agricultural – elec(5)	697,800		13,113	120	0.92	6,386

Table 1 showing extrapolated energy use for County Westmeath by sectors.
Note: The RES figures are from the SEAI (2010) report, Energy in Ireland 1990 - 2009, 2010 report, include Hydro (normalised), Wind (normalised), Biomass, Geothermal and Solar energies

From this approach / method an estimation of the total county final energy consumption, excluding transport, for the county would be 1,507,952 MWh/yr and the BioRegion's target of 33% would equate to 497,624 MWh/yr. The following are a range of fuel and sector outputs from this estimation.

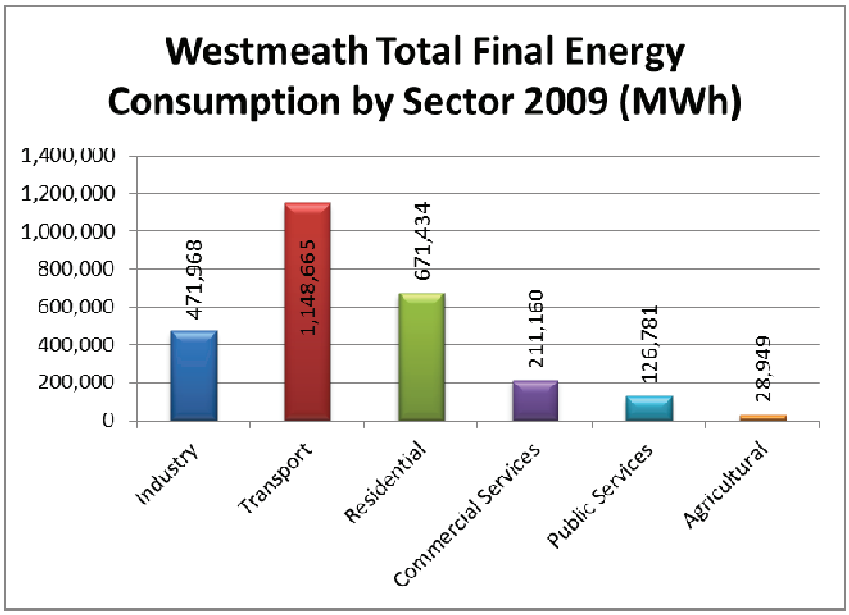

Fig. 5 presents the extrapolated energy consumption by sectors

This shows the dominance of the transport sector and the significant consumption due to the residential and industry sectors. The figure below highlights the Counties energy consumption on a fuel basis and clearly shows the dominance of oil, which would include both transport demands and heating applications.

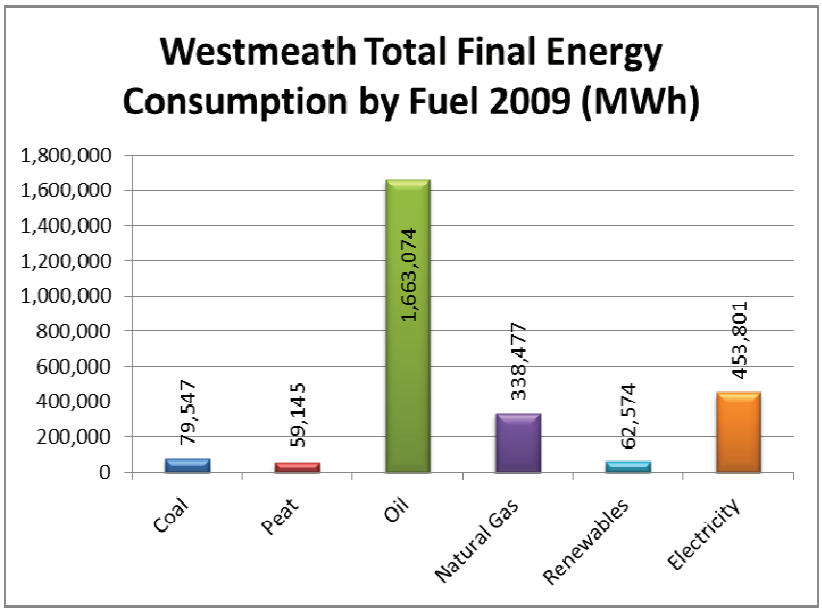

Fig. 6 Showing estimated energy consumption in Westmeath by fuel

Examining the thermal consumption component from this extrapolated assessment, see tables below, helps identify the dominant proportion of oil in the heating market and its relationship to natural gas. Key heating demand sectors are also identified, namely residential and industrial.

Thermal Component of Westmeath Total Final Energy Consumption extrapulation based on % from WH energy Consumption Table							
MWh	**Coal**	**Peat**	**Oil**	**Natural Gas**	**RES**	**Elect**	**Total**
Total Final Energy Consumption	79,547	59,145	510,180	338,477	45,146	18,479	1,050,973
Industry	23,865	213	149,794	113,144	29,831	-	316,847
Residential	55,682	58,932	261,944	135,413	11,266	9,316	532,554
Commercial Services	-	-	63,923	39,419	3,409	4,581	111,333
Public Services	-	-	34,519	50,500	639	4,581	90,239

Table 2 Extrapolated Thermal Energy Consumption for County by Sector and Fuel.

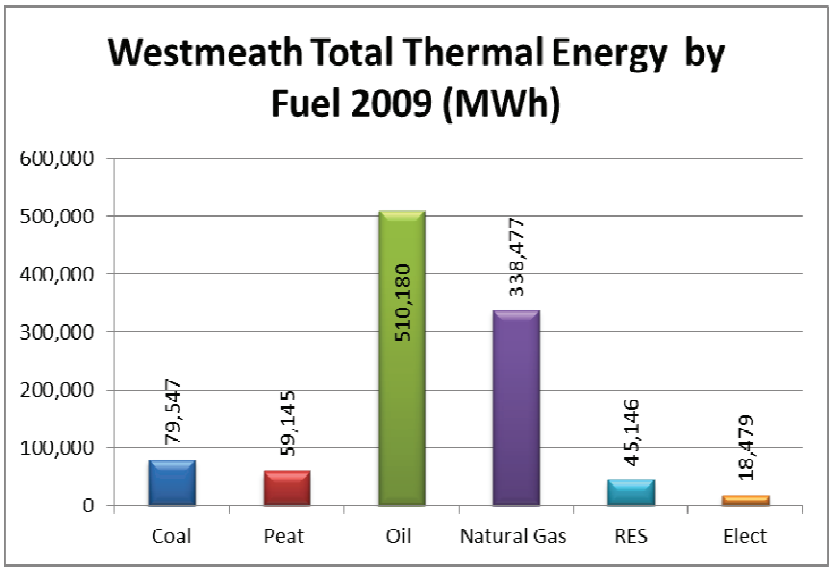

Fig 7 Showing estimated thermal energy use in County Westmeath

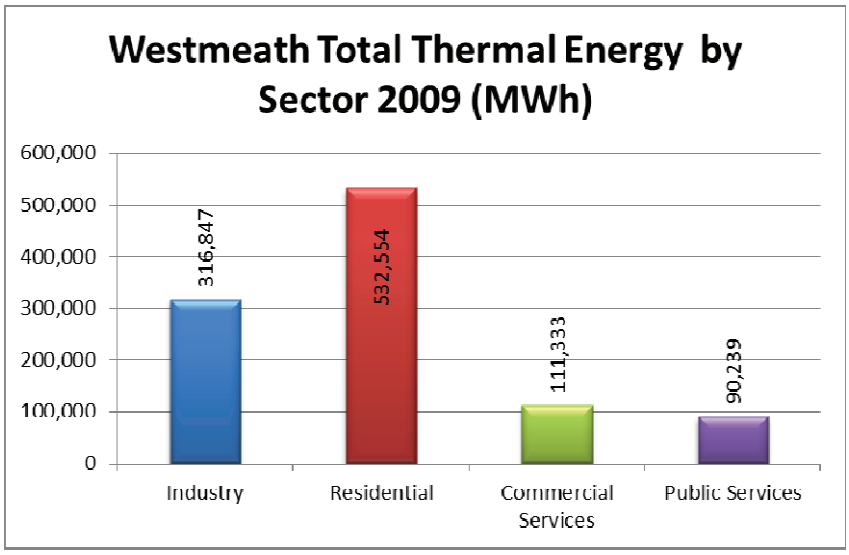

Fig 8 Showing estimated thermal energy use by sectors.

2.4. National and Regional Plans and Guides

2.4.1 Relevant National Policy, Plans and Targets

The Governments White Paper on Energy 'Delivering a Sustainable Energy Future for Ireland' March 2007 identifies four core issues for energy policy in Ireland namely, sustainability, security, competitiveness and economic opportunities in the sector, a number of which are addressed by renewable energy and notably by the development of regional / local bioenergy markets.

In 2009 the national contribution of renewable energy to overall demand was 4.9%, with RES E contribution being 2.6%, RES T being 0.6% and RES H at 1.7%. Irelands import dependency was 89%. (SEAI 2010b).

The National Renewable Energy Action Plan (NREAP) June 2010, set out the Governments strategy to deliver on Irelands 16% renewable energy target by 2020 as required under the EU Directive 2009/28/EC 'Promoting the use of energy from renewable energy sources'. The NREAP sets the following sub targets

12% renewable energy contribution to heating by 2020.
40% renewable energy contribution to electricity by 2020
10% renewable energy contribution to transport by 2020
30% co-firing in Peat Stations by 2015

Bioenergy is expected to make a significant contribution to national targets and a specific Action Plan for the Bioenergy Sector '*Bioenergy Action Plan for Ireland'* was published on 4th March 2007, and set out an integrated strategy for the collective delivery of bioenergy resources across the electricity, transport and heat sectors, recognising that a sustained multi-agency collaboration is required at national, regional and local level to ensure these targets and objectives are realised. The plan included the following strategies. In the electrical sector, the expansion of the REFITT feed in tariff to facilitate co-firing in peat stations and to encourage waste to energy projects, in the transport sector, the introduction of a Biofuel Obligation Scheme, and in the heat sector, expansion of current grant aid schemes to support a transition to renewable heating. Importantly it called for public sector leadership in driving bio-energy demand.

The main provisions of the Bioenergy Action Plan are:

Heat Sector	Electricity Sector
• 2020 Expand Greener Homes Scheme (additional €20m provided in Budget 2007) • Set target of 5% renewables by 2010 • Set target of 12% renewables for 2020 • Expand commercial Bioheat Scheme to include combination of renewable technologies (additional €4m provided in Budget 2007). Scheme to include voluntary and community sectors	• It suggests a 33% target for renewable electricity by 2020 • Expand REFIT scheme to support co-firing in peat stations and in waste-to-energy projects
Transport Sector	**Agricultural Sector**
• Set biofuel target of 5.75% for road transport by 2010 • Set biofuel target of 10% by 2020 • Biofuel Obligation Scheme by 2009	• Introduce additional payment of €80 per hectare for energy crops • Bioenergy Scheme to provide establishment grants for miscanthus and willow • Wood Biomass harvesting machinery grant for wood chippers and forest residue bundlers • FEPS scheme to facilitate increased levels of afforestation
Environment Sector	
• Amend planning guidelines to facilitate development of micro renewable technologies at domestic level • Examine re-balancing of annual motor tax to incentivise the public towards cars with lower CO_2 emissions • Energy labelling of vehicles • Promote use of 5% biofuel blends in local authority fleets	

Table 3 Provision of Irish NATIONAL Bioenergy Action Plan - Source SERA Bioenergy Implementation Plan 2008 - 2013

2.4.2 Regional Planning Guidelines

The Regional Planning Guidelines (RPG) for the Midland Region were adopted by the Midlands Regional Authority in 2004 for the period 2010 to 2022 and translate overall national planning strategy (as set out in the National Spatial Strategy and National Development Plan) at regional level. The RPG also provides detailed guidance for development plans at county and city level as well for land use and transportation strategies. The guidelines address the following matters:

Projected population trends and settlement and housing strategies;
Economic and employment trends;
The location of industrial and commercial development;
Transportation, including public transportation;
Water supply and waste water facilities;
Waste disposal;
Energy and communications networks;
The provision of educational, health care, retail and other community facilities;

The preservation and protection of the environment and its amenities, including the archaeological, architectural and natural heritage.

The RPG set out a vision for the region and strategies for economic development, regional settlement, transport and infrastructure, environment and amenities, tourism and an overall implementation strategy. The guidelines vision includes a generic statement on developing a sustainable future and includes in its goals the conservation and enhancement of the natural and environment, promoting sustainable development of the social, economic and physical infrastructure, and the promotion of renewable energy particularly in the context of the existing energy infrastructure in the Midland Region.

The RPG highlights the importance of promoting the rural economy for overall economic development, identifying tourism, forestry and renewable energy among the key sectors and noting the significant contribution of industrial peat-lands to energy and the associated extensive electricity transmission system already in place. The guidelines identify 'green enterprise' and renewable energy as a key sector opportunity noting;

The Midland Region is well placed for the development of renewable energy such as wind and biomass/biofuels given the predominantly rural nature of the landscape which includes large expanses of worked out peatland. The renewable energy sector has the potential to create high value jobs, but it also has the potential to result in spin off development in manufacturing, servicing and research and development activities (MRA 2010 p.49).

The Regional Planning Guidelines are available at www.midlands.ie

2.4.3 The County Development Plan - Westmeath 2008 - 2014

The Westmeath County Development Plan is principally concerned with the control of physical development, (infrastructure, land use, building etc.) and includes important development policies and objectives in relation to the renewable and bioenergy sector in particular.

Its strategic settlement plan has an objective to conserve and sustain a rural way of life within established rural communities and sustain rural farming communities. Economically it has a policy objective to facilitate enterprise and employment and in particular to support the rural economy and tourism.

In relation to infrastructure it notes the importance of the natural gas grid and the significant electrical transmission network. It encourages the development of renewable energy resources and has two key policy objectives of i) promotion of renewable forms of energy where it is consistent with the proper planning and sustainable development of an area and ii) favouring the use of renewable energy as a contribution to the energy demand of all new buildings.

The development plan states an objective under rural development / economy to protect the

viability of farms, to sustain rural communities and facilitate the development of agriculture. Importantly it recognises energy as a rural diversification opportunity and has a policy of promoting renewable forms of energy production, and specifically stating a support for the development of the bio-energy industry.

The County Development Plan for Westmeath is available at www.westmeathcoco.ie

2.4.4 SERA Bioenergy Implementation Plan

A neighbouring authority - The South-East Regional Authority, (which county Westmeath is not part of) developed a Bioenergy Implementation Plan for 2008 – 2013, which seeks to significantly increase the production and consumption of energy from biomass in the South-East Region and established targets of 5% of total energy supply from biomass by 2010, increasing to 17% by 2020.

The primary aim of the Plan is to promote the sustainable deployment of bioenergy within the South-East Region and to increase the production and consumption of bioenergy within the Region.

The objectives of the Plan are to:
• Increase the contribution of bioenergy to the Region's energy balance
• Reduce the reliance of the Region on imported fossil fuels
• Decrease the carbon footprint of the Region in terms of greenhouse gas (GHG) emissions
• Promote rural development and sustainable agriculture within the Region.

The Plan examines the current situation within the Region and estimates that Bioenergy, which denotes renewable energy derived from biomass, landfill gas, biogases and biofuels, currently contributes 1.5% of the total energy consumed within the South-East. This is primarily from the combustion of wood fuels for heat.

The SERA Bioenergy Implementation Plan is available at www.sera.ie

2.4.5 Other Projects

RASLRES:

The RASLRES project seeks to develop projects that sustain markets for renewable energy solutions in local rural areas. The main aim of the project – funded under the Northern Periphery Programme (NPP) – is to increase the use and uptake of locally produced renewable energy solutions in the NPP area through the development and implementation of targeted market stimulation models (or 'MSMs'). Led by the Western Development Commission – RASLRES has a significant focus on Biomass and has implemented a number of studies and supported a number of projects in their Region. RASLRES are co-

operating and information sharing with Bioregions since the inception of the Bioregions project.

Further information can be found at www.raslres.eu/ and www.wdc.ie

FOREST:

The Aim of the project is to work directly with bio-businesses in the bio-energy/wood energy supply chain in the Mid West Region of Ireland to develop and consolidate long term supply chain partnerships that will give the end user confidence in the total bio-heat system and encourage investment from larger non-domestic heat users.

The Project which is being lead by Tipperary Energy Agency will be carried out by business support agencies from 7 regions in Austria, Ireland, Italy, Poland, Spain, Sweden and the United Kingdom. This will allow the exchange of experience from businesses in more developed markets to those in less developed markets. It aims to work across the whole supply chain covering everything from the supply of the fuel to the installation and maintenance of the boiler systems. The focus is on non-domestic applications from 100 kW to 1 MW as well as small to medium scale CHP and district heating up to 10MW. The biomass fuels covered will be pellet and wood chip from all sources including forestry, arboricultural arisings, waste wood and energy crops. Tipperary Energy Agency has been co-operating and information sharing with Bioregions during the course of the project.

Further information can be found at www.tea.ie

BIOMASS TRADE CENTRES II:

The Biomass Trade Centre II project aims at increasing the production and the use of energy from wood biomass by motivating identified target groups to invest in biomass business and biomass logistic and trade centres (BLTC) in 9 EU countries (Austria, Croatia, Germany, Greece, Ireland, Italy, Romania, Slovenia and Spain), by presenting clear, integrated and market orientated information to potential investors: farmers and forest owners, forest entrepreneurs, wood energy contractors and other stakeholders regarding business opportunities to produce and sell energy products and services to the market. It will also foster wood energy contracting between biomass providers and potential users. The Irish project partner is the Irish Bioenergy Association, who are co-ordinating with Bioregions and are seeking to focus some of their workshops and promotion of a biomass trading centre in the midlands area.

Further information can be found at www.irbea.ie and www.biomasstradecentre2.eu

2.5 Supportive Instruments

2.5.1 Renewable Energy Feed in Tariffs (REFIT)

In May 2010 the Government announced an expansion of the existing REFIT scheme, (which has been in operation in Ireland for Wind and Hydro electricity generation since 2006), to the Bioenergy sector, providing a guaranteed price for renewable energy generated from bioenergy sources ranging from 15 cent per kilowatt hour to 8.5 cent per kilowatt hour depending on the technology deployed.

In February 2012, the government finally published its proposals for this expansion under REFIT 3, which is designed to incentivise the addition of 310MW of renewable electricity capacity to the Irish grid. Of this, 150MW will be High Efficiency CHP (HE CHP), using both Anaerobic Digestion and the thermo-chemical conversion of solid biomass, while 160MW will be reserved for biomass combustion and biomass co-firing. REFIT 3 focuses on the following technologies and scales.

Anaerobic Digestion (including AD CHP) 50MW
Biomass CHP 100MW
Biomass Combustion (including co-firing with peat) 160MW

Reference prices and payments for REFIT 3 are as follows:

i. AD CHP (units less than or equal to 500 kW) 15c per kWh
ii. AD CHP (units of greater than 500 kW) 13c per kWh
iii. AD (non CHP) (less than or equal to 500 kW) 11c per kWh
iv. AD (non CHP) (units of greater than 500 kW) 10c per kWh
v. Biomass CHP (units less than or equal to 1500kW) 14c per kWh
vi. Biomass CHP (units of greater than 1500kW) 12c per kWh
vii. Biomass Combustion:
For using energy crops 9.5c/kWh
For all other biomass 8.5c/kWh

(Source DCENR (2012) Renewable Energy Feed in Tariff 2012, a Competition for Electricity Generation –from Biomass Technologies 2010-2015)

2.5.2 Funding Supports

a) SEAI Grants

The Sustainable Energy Authority of Ireland administrate a number of grants and supports schemes for renewable energy.

For domestic consumers the authority operates two different support schemes, i) the Better Energy Homes Scheme (formerly the home energy savings scheme), which supports

measures for improved insulations, boilers / controls and solar heating, and ii) the Warmer Homes Scheme, which aims the energy efficiency and comfort conditions of homes occupied by low-income households via attic insulation, draught proofing, lagging jackets, energy efficient lighting, cavity wall insulation and energy advice. The former Greener Homes Scheme had supports for biomass stoves and boilers but this scheme is now closed.

In the commercial sector the principle supports schemes are;

i) the Better Energy Workplaces scheme which provides financial support for the implementation of a package of qualifying sustainable energy measures for upgrading projects in the public, commercial, industrial and community sectors with an emphasis on energy efficiency. However this scheme is now full.

ii) the Sustainable Energy Incubator Programme, which sought to fund up to ten high potential new and existing ventures through their incubation process, including bioenergy as a priority area. However this scheme is now full.

The former Renewable Heat Deployment Programme and CHP Deployment Programmes are now closed

SEAI also has supports for R & D in the renewable energy sector including a call for research and development under Miscanthus Pilot Demonstration Programme, however this is now closed.

Further information can be found at www.seai.ie

b) The Bioenergy Scheme 2010-2012

The Bioenergy Scheme, under the Department of Agriculture Food and Marine, provides establishment grants to farmers to grow miscanthus and willow for the production of biomass suitable for use as a renewable source of energy. The Scheme aims to increase the production of willow and miscanthus in Ireland and to encourage alternative land use options. It is open to applicants who are landowners or have leasehold title to the land and have responsibility for farming the land on which it is proposed to carry out the plantation.

Aid is payable on 50% of the approved costs associated with establishing the crop, subject to a maximum payment rate of €1,300 per hectare, with the balance to be invested by the applicant. Eligible costs include those associated with ground preparation, fencing, vegetation control, the purchase of planting stock and planting.

Further information can be found at www.agriculture.gov.ie

c) Rural Development Programme

The aim of the Rural Development Programme (RDP) is to improve the Quality of Life in rural areas and to encourage Diversification of the Rural Economy. The Programme covers all rural areas of Westmeath but excludes the areas within the Town Council boundaries of Athlone and Mullingar. As was the case with the previous LEADER programmes, the Rural Development Programme places major emphasis on the implementation of innovative approaches to rural development at a local level.

Support will be provided for the generation of economic activity and enterprise, including diversification into non-agricultural activities, the creation of new and the expansion of existing enterprises, job creation and sustaining of existing jobs as well as the generation of additional and alternative incomes in rural areas. The encouragement of tourism activities and the conservation and upgrading of the rural heritage, village enhancement works and the provision of community facilities such as community centres and playgrounds can also be supported under the Programme. Aid is also available in respect of Analysis and Development (Feasibility Studies, Business Plans, Tidy Towns Plans etc.) across Measures.

The principle measures supported are;

1. Diversification into Non Agricultural Activities
2. Business Creation and Development
3. Encouragement of Tourism Activities
4. Basic Services for the Economy and Rural Population
5. Village & Countryside Renewal and Development
6. Conservation and Upgrading of the Rural Heritage
7. Training and Information
8. Implementing Co-operation Projects

And it is considered that certain renewable energy projects could be supported under some of the above categories.

Further information can be found at www.westcd.ie

3. Bioenergy Characteristics

3.1. Analysis of Bio-energy Potential

3.1.1 Land Use - Agricultural and Forestry Resources -Hectares

Land use in Westmeath is predominantly agricultural. Data from the Westmeath County Development Plan 2008 – 2014 reports, some 119,969 hectares of land dedicated to farming, or 65% of the county's land. Compiling data on grassland and crop yields for the county indicates some 116,685 hectares of 'yield' taking into account that some crop land is used for two crops per annum, e.g. spring and winter barely. Including forestry this would equate to 123,865 hectares of resource yield.

a) Grassland

The following tables and charts indicates the extent of land use in the county and the dominance of grassland (for pastures, silage and hay) to support the significant cattle industry in the county, comprising mainly beef cattle and some dairy farming.

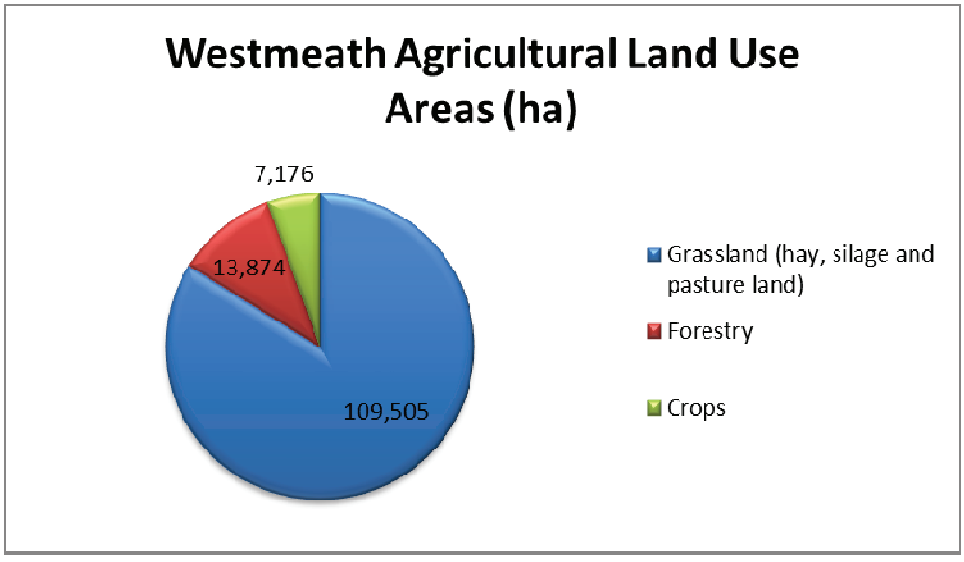

Fig 9 Showing principle agricultural land us in hectare, based on SEAI GIS mapping – forestry and crops and using data from Westmeath County Development Plan for grassland.

b) Forestry Land Use

According to the SEAI GIS data base there is an estimated 13,874 hectares of forestry in the county and 55,793 within a 50 km radius. The charts below indicate the public private ratio of ownership and a breakdown of species. However no data is given on the age of plantations or stage in growth or extraction.

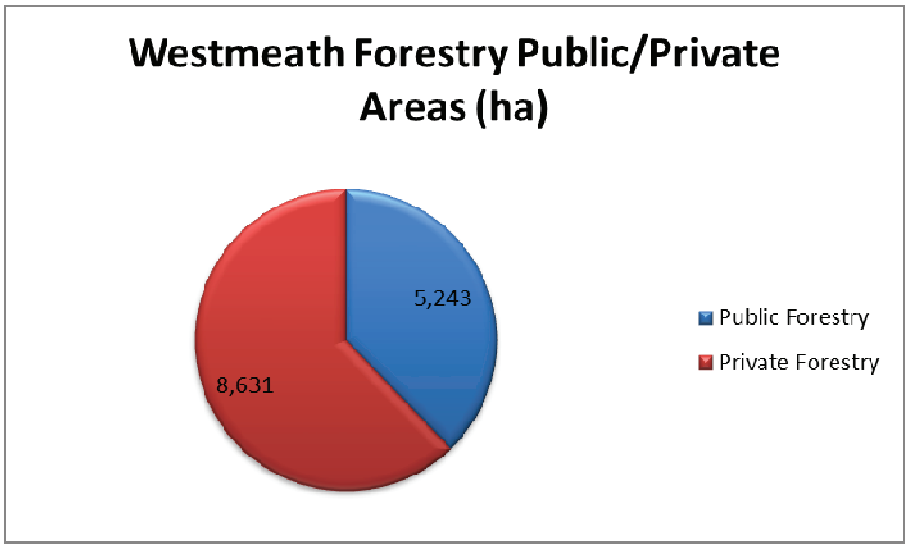

Fig 10 showing public – private forestry in Westmeath – orginal data from SEAI GIS Mapping.

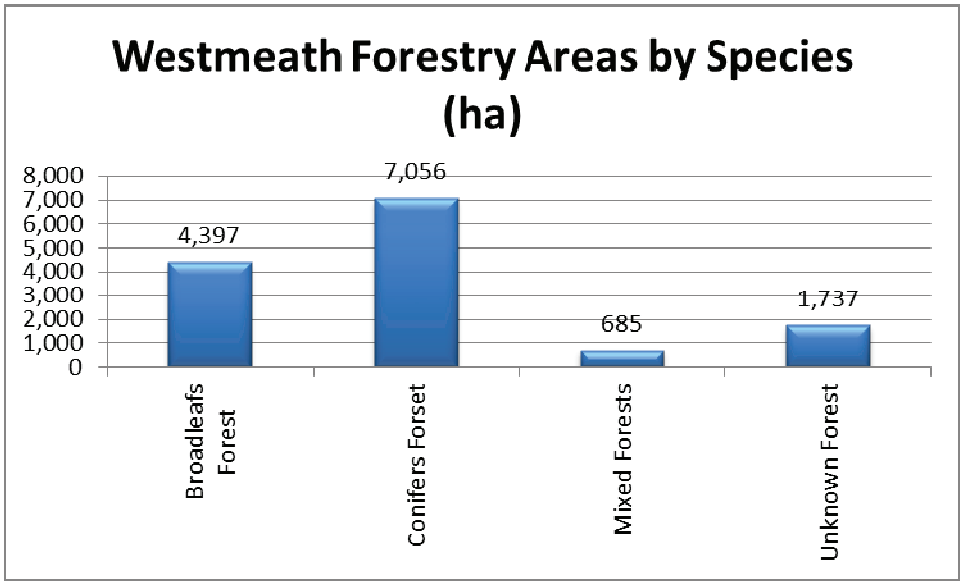

Fig 11 Showing breakdown of species - orginal data from SEAI GIS Mapping

c) Crops Land Use

The county does not have a dominant tillage farming tradition and based on the SEAI GIS there are some 7179 hectares of land dedicated to tillage crops, principally cereals. Some 87 hectares of this is dedicated to bioenergy / biomass crops. The following charts indicate the proportions and types of current crops, principally grains, which are noted as 'potential bioenergy crops' and the small amount of dedicated bioenergy crops currently planted.

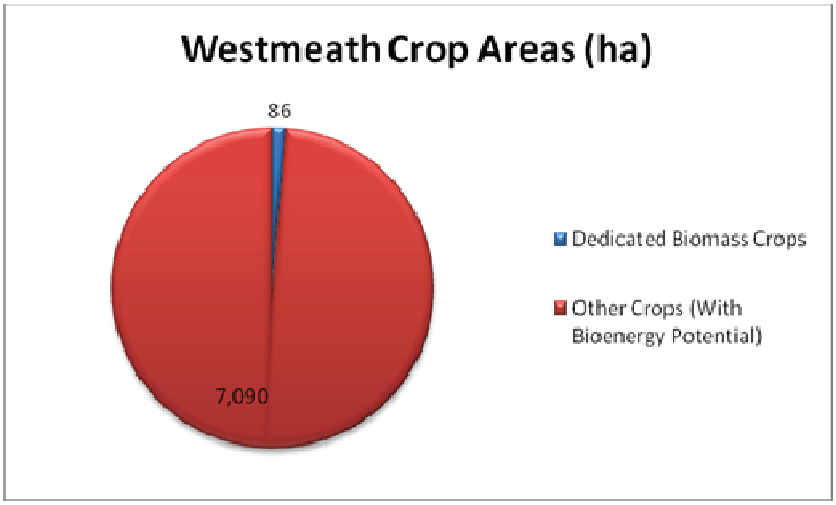

Fig 12 Showing extent of dedicated biomass crops (Myschanthus, Willow and SRC) and current crops, principally cereals from existing tillage use, that could have potential bioenergy use,.

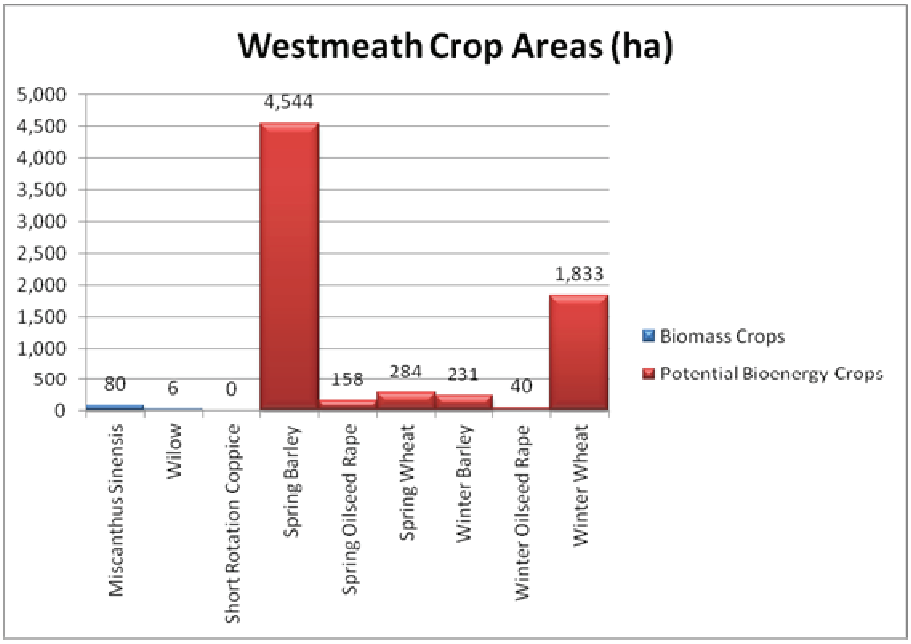

Fig 13 Showing dedicated and potential bioenergy crops by types, showing sugar barely and winter wheat as principle crops in tonnage.

3.1.2 Agricultural Output (Bioenergy Potential) - Tonnage

Assessing the total agricultural, forestry and waste resources for the county, identifies that grass and animal livestock waste are the predominant agricultural tonnage in the county. However these ratios do not necessarily reflect in energy terms as there are distinctly different energy yields available for different materials, generation technologies or fuel applications.

The following tables give an indication of output tonnage of various resources that may have some bioenergy potential, based on simplified calculation basis and assumptions.

Grassland converted to tonnes per hectare on basis of 10 tonnes per hectare, forestry hectares converted to m3 of green matter per hectare based on a simplified assumption of and average stock of 180m3 per hectare and extraction rate of 3% matching typical growth rate or (5.4 M^3/hectare), forestry tonnage based on assumed conversion factor of 0.25t of ODM per 1m3 of green matter, crops converted to tonnes per hectare on basis of range yield ranges drawn from SEAI GIS data, animal slurry tonnage based on tonnes per day per animal per housing season from Teagasc data. See appendix for further detail.

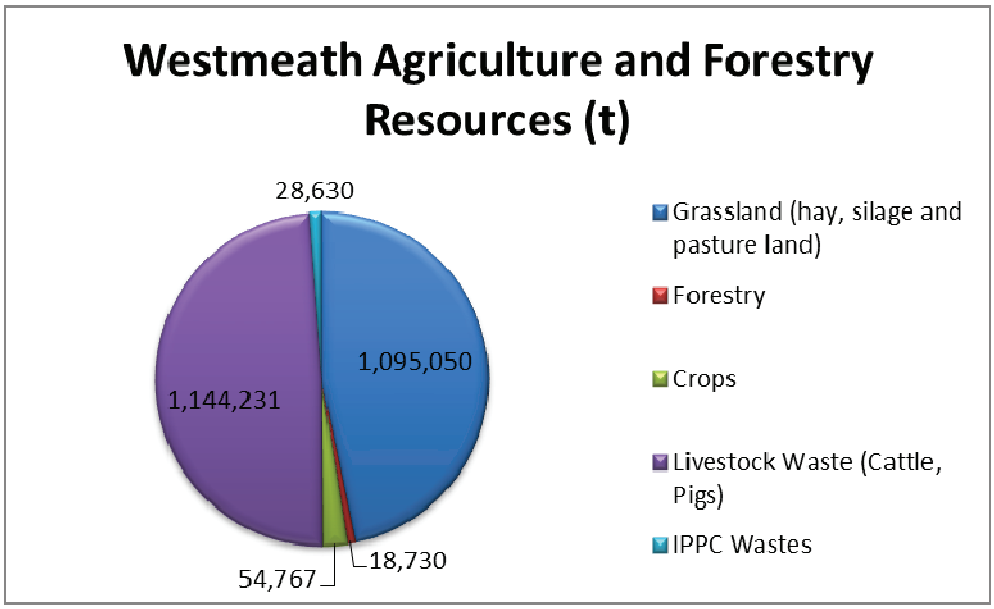

Fig 14 Showing the estimated tonnage of various agricultural outputs with some bioenergy potential in County Westmeath.

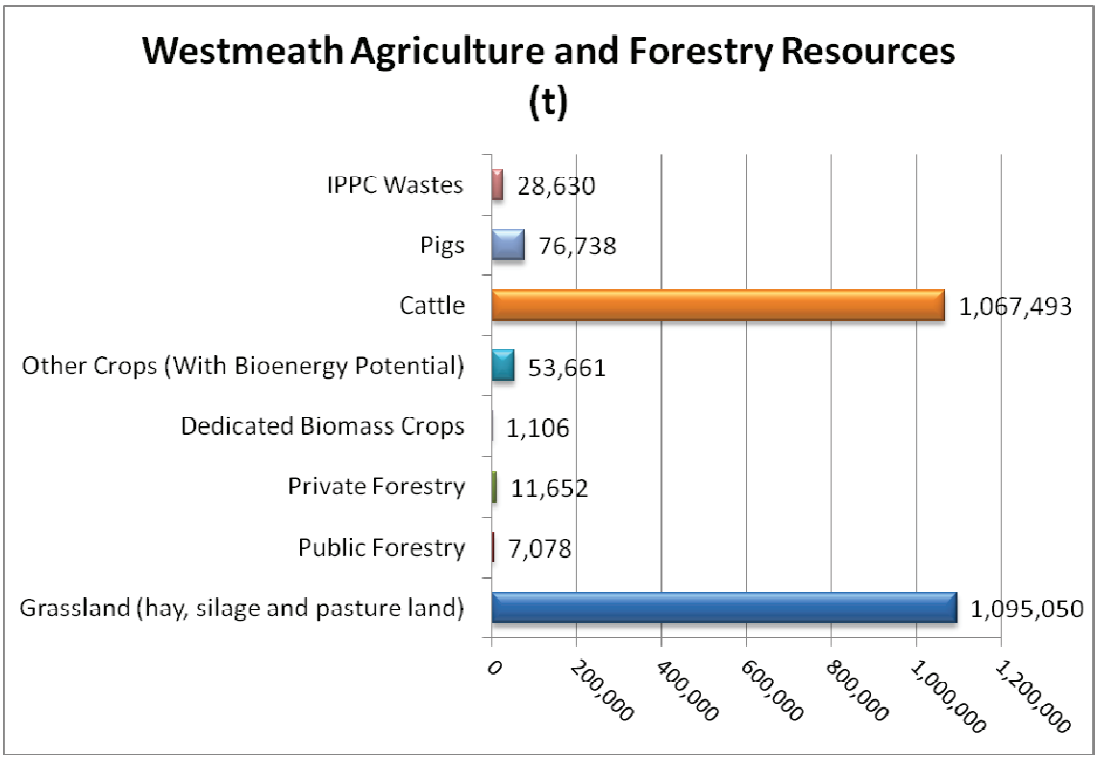

Fig 15 Showing a more detailed breakdown of the various agricultural outputs with some bioenergy potential in County Westmeath.

To assist in assessing the relationship between potential bioenergy resources and the counties total estimated energy use and the 33% target the following assessments have been done. Firstly a theoretical assessment of the energy potential of the total agricultural output of key potential resources, and secondly a more conservative theoretical assumption based on an assumed % of each available resources being utilised for energy use.

3.1.3 Bioenergy – Theoretical Energy Potential 1 – 100% Resource Allocation

An estimate of the energy potential was carried out assuming a theoretical availability of 100% of the potential bioenergy resources being utilised for energy based on simplified energy calculation / assumptions.

Grassland converted on basis of AD output of 239 kWh/tonne from SEAI data, forestry converted on basis of 3500 kWh/tonne of ODM at 30% moisture content, crops converted on variable basis per crop drawn from SEAI data, animal slurry based on AD output of 41 kWh/tonne for cattle and 24 kWh/tonne for pigs per day from SEAI data.

Table 4 presents an overview of the theoretical energy potential from allocation of all bioenergy potential resources.

Bioenergy Theoretical Potential 1 based on 100% allocation

Resource	*t*	*MWh*	*TJ*
Grassland	1,095,050	261,717	942
Animal Waste	1,144,231	45,609	164
Forestry	18,730	65,555	236
Crops	54,767	224,762	809
Totals	2,312,777	597,643	2,152

Table 4 showing theoretical resource and energy potential for 100% allocation of resource.

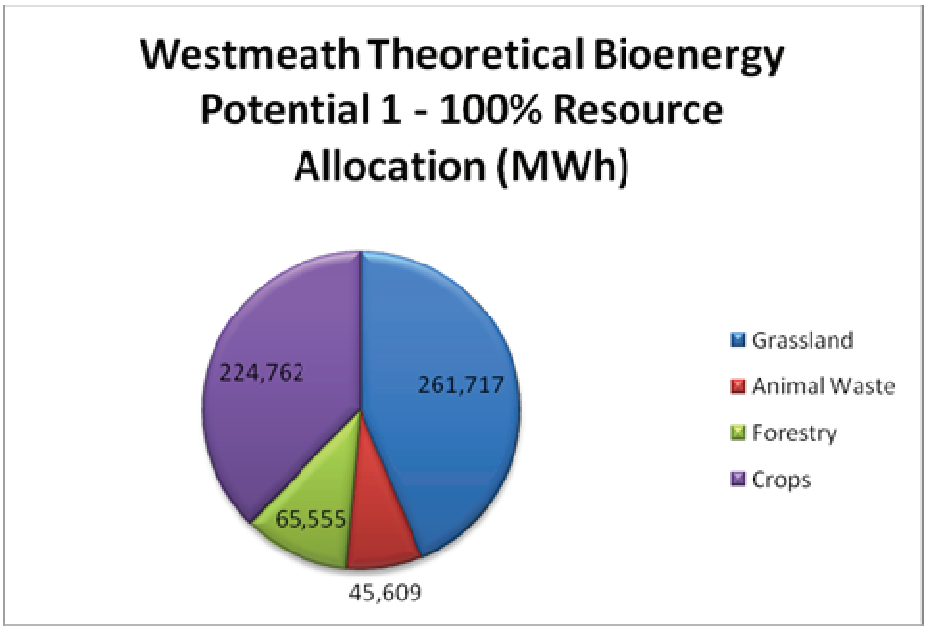

Fig 16 Showing theoretical energy potential from 100% of all bioenergy resources.

As can be seen from this study the total estimated theoretical energy potential from all available resources is an estimated 597,643 MWh per annum, which equates to some 22% of the Total Final Energy Consumption estimated for the entire county at 2,656,617 MWh/yr, or 40% of the total county final energy consumption, excluding transport, for the county at 1,507,952 MWh/yr, and exceeds the BioRegions target of 33% at 497,624 MWh/yr.

However the above is a theoretical estimate and the majority of these resources are currently directed to existing non energy needs. This highlights the resource availability and competition challenge of achieving bioenergy targets, and identifies the need for a holistic and diverse approach to achieving bioenergy targets including i) the need to prioritise and improve energy efficiency to reduce overall energy demand, ii) the utilisation of existing waste resource from current agricultural and forestry systems and iii) diversification and expansion of the resource base for dedicated bioenergy material.

One of the key indications from this study is the dominance of grassland for its energy potential, and the important energy potential from forestry and crops, despite their smaller proportion of land use (given their relatively higher energy yields) and the importance of utilising wastes from these sectors for biomass and other energy.

3.1.4 Bioenergy Theoretical Energy Potential 2 – Assumed % allocation of resources

The table below estimates potential bioenergy contribution based on an assumed % allocation of current estimated potential bioenergy resources and attempts to distinguish between bioenergy and the biomass sub market. These figures are based on simplified calculations and some assumptions and the following resource allocation to bioenergy / biomass.

15% of grassland resources
35% of animal slurry resources
15% of forestry
100% of dedicated biomass crops
And 15% of grains.

Bioenergy Theoretical Estimated Potential 2 - Assumed % Allocation of Resources

						Bioenergy		Biomass	
Resource		*t*	*MWh*	*% Allocation*	*Potential Technology*	*MWh*	*TJ*	*MWh*	*TJ*
Grassland		1,095,050	261,717	*15*	AD	39,258	141		
Animal	Cattle	1,067,493	43,767	*35*	AD	15,319	55		
Waste	Pigs	76,738	1,842	*35*	AD	645	2		
Forestry		18,730	65,555	*15*	BH			9,833	35
Crops	Biomass	1,106	3,813	*100*	BH			3,813	14
	Grains	53,088	217,174	*15*	BH			32,576	117
	Oils	573	3,775	*25*	BF	944	3		
Totals		2,312,777	597,643			56,165	202	46,223	166

Table 5 Estimated Bioenergy Potential – based on an assumed % allocation of resource. AD Anaerobic Digestion, BH – Biomass Heating, BF – Biofuel.

Based on this scenario an estimated 102,338 MWh would be available, which equates to approximately 1/5th of the Bioregional Target of 497,624 MWH at 33% of total energy consumption excluding transport. Examining the potential for biomass heating on this basis, results in an estimated total potential of 46,223 MWh which compares to an estimated Total Final Heat Consumption for the county, at 1,050,973 MWh or 4.5% of the thermal demand.

The following chart represents these results in pie chart form.

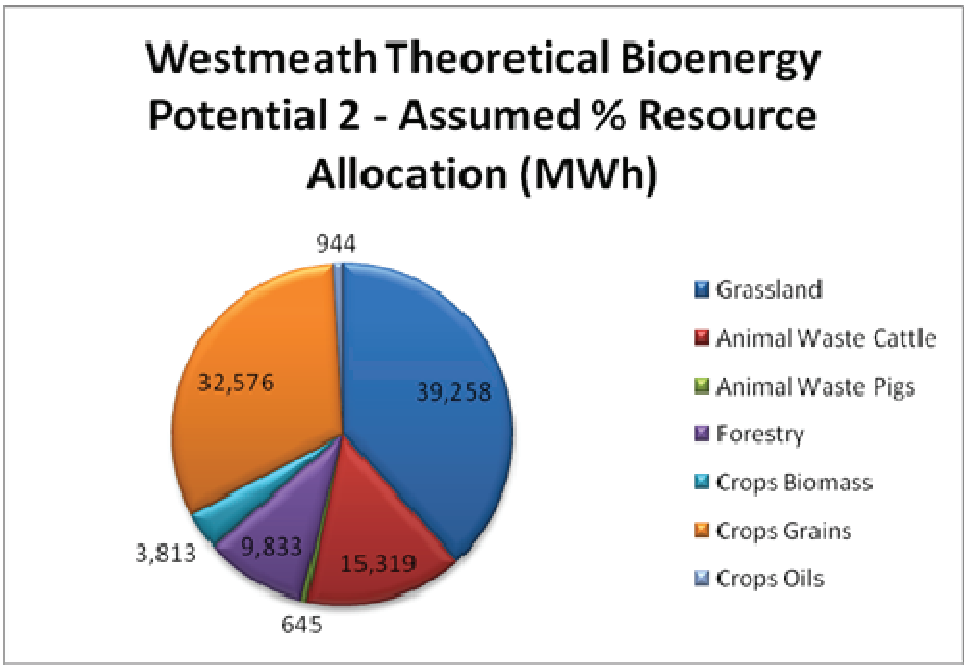

Fig 17 showing potential energy output based on assumed % allocation of various resources

3.2 Existing Biomass Market

The bio-energy market in the county is in initial stages of development. The principle emerging markets are in the biomass co-firing and heating markets, with some proposed developments in the anaerobic digestion sector and minor developments in biofuels.

This section provides an estimate of possible biomass demand in the county in terms of i) co-firing and ii) the thermal market (biomass boilers and the amount of wood fuels used in existing conventional domestic systems).

3.2.1 Biomass Demand:

a) Co-Firing:

The Energy White Paper in 2007, set out a co firing target of 30% by 2015 for peat burning power plants in Ireland. There are three regional peat burning electrical power plants in the Midlands region, Lough Ree ESB Power Station with a capacity of 100MW, West Offaly ESB Power Station with a capacity of 150 MW and Edenderry Power owned by Bord na Mona with a capacity of 128 MW. Of these only the Bord Na Mona plant in Edenderry has started the process of co-firing and used 146,800 energy tonnes (1.13 PJ) of biomass in 2011 with 2012 target of 180,000 energy tonnes (1.38 PJ).

The following table shows the capacity and energy output of each plant and an indication of potential biomass / energy requirement under 30% co-firing. If only the Bord Na Mona plant, were to achieve the 30 % target this would equate to 2.3 PJ/a or 300,000 energy tonnes of biomass. (Source Charles Shire Bord Na Mona)

Power Plant	Capacity	30% Co-firing	Peat Use	30% Co-fire	Biomass
	(MW_e)	*(MW_e)*	*(PJ/a)*	*(PJ/a)*	*(oooET/a)*
Lough Ree Power – ESB	100	30	6.5	2	255
West Offaly Power – ESB	150	45	9.5	2.8	372
Edenderry Power - BnM	128	38.4	7.7	2.3	300
Total	378	113.4	23.7	7.1	927
1 energy tonne (ET) = 7.7 GJ					
Source: Data provided by Name: Charles Shier, Strategic Development Manager, Bord na Mona Powergen					

Table 6 Midland Peat Burning Plants Output and Co-firing obligations.

b) Thermal:

i) Private Residential Boilers

Data from SEAI on domestic boilers installed under their Greener Homes Scheme (grant support scheme) for March 2006 to May 2011 indicates circa 215 biomass boilers installed for the County, which on a land area extrapolation to a 50km radius would equate to 907 biomass boilers. For comparative purposes the SEAI GIS data base indicates circa 254 biomass boilers installed in the county under the GHS and 768 on a 50 km radius.

Note – grant aided boilers make up only part of the installed boilers and while this is assumed to be a conservative figure there is no other data available, however based on experience of Next Gen Heat Ltd in the county it is assumed that GHS boilers equate to approximately 70% of domestic biomass boilers giving a total domestic biomass boiler estimate of 363 in the county and 1097 in a 50 km radius.

ii) Medium Scale Boilers

The SEAI Re-heat support programme supported 800 kW of biomass boiler installation in the county and 3428 kW in the 50 km radius during the period

iii) Industrial Scale Boilers

There are two saw mills in the Midlands region, one within the 50km radius. Data is only available from one of these which utilises biomass residue and waste from processing fuels a 3MWh boiler.

Based on the available data the following chart summarises what is a conservative estimate of the current biomass boiler demand situation based on actual county boundary.

Within Co. Westmeath								
Sector	**Support Scheme**	**No of Boilers**	**Total Capacity (kW)**	**Woodchip Capacity (kW)**	**Wood Pellet Capacity (kW)**	**Wood Waste Capacity (kW)**	**Energy Requirement (MWh/yr)**	**Biomass Requirement (t)**
Private Residential	GHS	254*	3810**	-	3810**	-	4602[a]	959[b]
Private Residential	None	109*	1635**	-	1635**	-	1975[a]	414[b]
Mid scale	Reheat	3*	800*	500*[#]	300*[#]	-	966[c]	201[c]
Mid Scale		2[Δ]	110[Δ]	-	110[##]	-	133[c]	28[c]
Industrial		-	-	-	-	-	-	-
Total			**6355**	**500**	**5855**	**0**	**7676**	**1602**

* *Source: GHS Boilers sourced from SEAI GIS system, Based on information from Next Gen Heat Ltd it is assumed that GHS boilers equate to approximately 70% of Domestic Biomass Boiler.*

Δ *Source: Bioxcell renewable energy report*

ΔΔ *Source: Data for 1 boiler supplied by Glennon Brothers Sawmills Ltd, assumed second boiler similar.*

** *Based on average boiler size of 15kW*

\# *A number of boilers use both woodchip and wood pellet, assumed 50/50 fuel split*

Fuel Unknown, assumed wood pellet

a *Based on 18.12 MWh thermal demand per dwelling derived from 2277 ktoe residential thermal energy use (SEAI: Energy in the Residential Sector 2008 report) divided by 1,462,296 no dwellings (CSO Construction and Housing in Ireland, 2008 edition)*

b *Based on fuel heating value of 4.8 kWh/kg Source: http://www.biomassenergycentre.org.uk*

c *Extrapulated from Private Residential based on Total Capacity (kW)*

Table 7 Estimated Biomass Boiler Demand County Westmeath

Based on the SEAI GIS data for number of grant aided biomass boilers installed, and assuming an additional 30% of non grant aided boilers the total biomass boiler capacity in the county is estimated to be 6,355 kW with an energy demand of 7676 MWh/yr and biomass requirement of 1,602 Tonnes.

iv) Solid Fuel Stoves and Open Fires (Both Central heating and Stand Alone Room Heaters)

There is no available data on the biomass use in open fires and stoves and little data on the extent and demand from this market. An estimate of the biomass demand of solid fuel stoves and open fires used as both central heating and stand alone secondary heating systems was carried based on an estimate of appliances and assumed biomass contribution of 15%.

A bottom up calculation estimates the number of dwellings in the county which have open fires and solid fuel stoves, both central heating and stand alone systems, and estimates the energy demand based on a typical household energy use. The Total Number of houses was established from CSO 2011 Census and the proportion of houses with open fires and solid fuel stoves was derived from percentage data for the Border, Midlands and West region given in ESRI Irish National Survey of Housing Quality 2001-2002. An energy demand was established for centrally heated houses based on 18.12 MWh thermal demand per dwelling derived from 2277 ktoe residential thermal energy use (SEAI 2008) divided by 1,462,296 no dwellings (CSO 2008). Houses with stand alone systems were estimated to require 10% of this demand based on the SEAI DEAP methodology.

System Type	Total Housing Units In Westmeath *	Percentage Houses with System Type #	No of Housing Units With System Type	Energy Requirement Per House [a]	Total Energy Requirement	Estimated Biomass Usage In System [b]	Biomass energy requirement	Biomass Requirement [c]
		%		MWh/yr	MWh/yr	%	MWh/yr	t
Open Fire As Central Heating	31,856	3.4	1,096	18.12	19,850	15	2,977	620
Solid Fuel Stove As Central Heating System		10.2	3,250	18.12	58,883	15	8,832	1,840
Stand Alone Open Fire		61.7	19,662	1.81	35,623	15	5,343	1,113
Stand Alone Solid Fuel Stove		19.3	6,156	1.81	11,153	15	1,673	349
Totals			30,164		125,508		18,826	3,922

* *Source: CSO 2011 Census*

\# *Source: Derived from Data for BMW region given in ESRI, 2003. Irish National Survey of Housing Quality 2001-2002*

[a] *Based on 18.12 MWh thermal demand per dwelling derived from 2277 ktoe residential thermal energy use (SEAI: Energy in the Residential Sector 2008 report) divided by 1,462,296 no dwellings (CSO Construction and Housing in Ireland, 2008 edition). 10% allowed for Stand alone/supplementary Systems based on SEAI DEAP methodology*

[b] *Assumed 15% of Fuel used in Open Fire And Solid Fuel Systems. No known data available*

[c] *Based on fuel heating value of 4.8 kWh/kg Source: http://www.biomassenergycentre.org.uk*

Table 8 Estimated Biomass Demand for Open Fires and Solid Fuel Stoves

This gives an estimated biomass demand of 18,826 MWh/yr or 3,922 tonnes of biomass per annum, which would be the most significant sub sector of the thermal market.

The table below summarises the estimated total biomass thermal demand in the county.

Co Westmeath Thermal Demand Summary		
	Energy	Biomass
Boilers *(Private and Med Scale),*	7676 MWh/yr	1602 tonnes
Private Open Fires / Stove (Based on assumed 15% biomass)	18,826 MWh/yr	3922 tonnes
Total	26,502 MWh/yr	5522 tonnes

Table 9 Co. Westmeath Thermal Demand Summary

Taking both boilers and an assumed biomass 15% supply in the private residential sector for open fires and stoves, there is an estimated 26,500 MWh/yr energy use which equates to circa. 2.5% of the estimated thermal energy demand in the county of 1,050,973 MWh/yr.

3.2.2 Biomass supply

a) Current supply practices of biomass

There is no publically available data on the supply of biomass. To facilitate analysis of this a market survey was undertaken of known suppliers active in the field via email and telephone

call, with five respondents of 27 firms and agencies contacted. While this was a small sample the combined no of customers being served by the respondents account to circa approx. 100 private customers in the county (40% of the boilers) and it provided a useful insight into the current supply chain.

The survey indicated a broad range of suppliers active in the supply of biomass in the county, some from related businesses, heating engineers, landscapers, etc. and others dedicated biomass suppliers, although most of the respondents were from outside the county, (Counties Leitrim, Kilkenny, Longford) with only one local respondent based in the county.

The respondents were servicing a wide number of counties and are clearly operating on an inter-regional basis. There is supply of both wood chip and pellet, with most respondents indicating their material is sourced locally (to their county) or Irish and some active in the manufacture of pellets etc. Some are supplying both to large scale users and domestic and some focusing on the domestic market only.

b) Gaps in biomass supply

The county energy profile reported in chapter 2 and the above biomass market study indicate that the current heating market is only marginally penetrated by biomass supply. On an extrapolated basis the thermal energy demand for the county is estimated at 1,050,973 MWh.

This compares to an estimated demand of 26,502 MWh for the county of Westmeath at 2.5% of the total demand and as such indicates that only a very small fraction of the heating market is currently being met by biomass, and that predominantly by wood fuel to conventional domestic boilers, with only 0.5% of the demand being met by wood chip and pellet to dedicated biomass boilers

The survey also indicated that there was little evidence of local raw material being utilised in the biomass sector and that chip and pellet suppliers were mainly from outside the county / region.

3.3 Other Bioenergy

3.3.1 Biogas

The resource analysis has indicated the significant extent of grassland in the county and the animal slurry resource that is available from its associated cattle industry. Both grass and slurry resources have potential to be utilised in biogas technology, with potential for CHP units and possibly gas grid injection.

Currently there are no known AD plants in the county but planning has been received for one 1 MW plant near Mullingar.

There is one landfill site in the county, Ballydonagh Landfill, located near Athlone with a capacity of 400,000 tonnes, which could be utilised for landfill GAS. (Source Waste Acceptance Policy For Landfill Sites Adopted by Westmeath County Council 2001)

3.3.2 BioFuels

There is no known activity in the growth of energy crops for biofuels and this remains an area for exploitation.

4. SWOT analysis

Strengths

Strong agricultural sector and excellent yields
Significant cattle sector with waste streams that could be used in bioenergy.
Established forestry sector both private and public, although small in % land use
Some land is underutilised, so there is scope for land use change to bioenergy production
Tradition of agricultural co-operatives

Weaknesses

There is limited biomass resource availability as land use dominated by pasture.
There is less tradition of tillage farming and tillage experience, which may impact on development and transition to bio crops.
Biomass logistics and supply chain is un-developed in the county.
There is limited experience in biomass logistics and technical capacity in biomass boiler plant is not well developed.

Opportunities

The economic recession has re-focused commercial interest in agriculture and also in the renewable energy sector.
There is important opportunity for job creation and improvement in local economy
There is opportunity for diversification and alternative crops for farmers
Biomass for energy could present an additional utilisation of forestry thinning's for foresters
Biomass price is generally competitive to that of oil, which is currently the regions dominant heating fuel.
Oil dependent communities (off gas grid), need viable alternative which biomass could meet.
There is opportunity to establish Biomass Trading Business and or Logistics Centres.
Biomass co-firing commenced in Edenderry peat burning power plant in region, generating significant demand for resource, especially for lower grade material.

Threats

The forestry sectors resources are mainly used for timber, pallet and pulp supply.
Agricultural food prices could restrict transition to biomass crops
Co–firing at peat plants could absorb much of the available biomass resources and limit use in thermal market or impact on price.
Forestry resource notably thinning's in private sector may not be optimised due to lack of forestry management experience in the private sector.
Supply chain could remain undeveloped
Competition from other agricultural applications is strong – grain prices, beef prices etc. are

very favourable and would negate against land transfer to alternatives. There is a conservative attitude towards land use and enterprise change

5. Setting the Bioregion Target

5.1. Overall bioenergy vision of the region

5.1.1 Developing a Bioenergy Region

The vision of the BioRegions concept is to see the emergence of a significant bioenergy sector in each target region, where up to 33% of the regional energy demand (excluding transport) would be met by sustainable bioenergy sources.

For Westmeath this represents a major challenge, especially in the short to medium term, given i) the current levels of energy consumption, ii) the existing resource base and agricultural market and iii) the current low bioenergy demand in the county. In effect the bioenergy sector is at a very early stage of development.

The county is significantly distinct from the Swedish and Bavarian best practice regions visited and studied within this project, especially in relation to the massive forestry stock and significant timber industries that these regions host. In contrast the county's land base and agricultural resources are predominantly grass and livestock based, mainly cattle for beef production, and as such these represent significant resource for potential exploitation for bioenergy.

Given same a key strategy for the region should be to capitalise on the principal agricultural activity and exploit waste to energy potential from the livestock sector and also exploring avenues to build on the existing grassland stock and management expertise as an energy feedstock. This may mean a significant focus on Anaerobic Digestion technology to utilise slurry waste, and development of grass based digestion systems.

In compliment the counties maturing forestry resource, with much of the private stock now due for first thinning, needs to be optimally managed and exploited to facilitate extraction and potential allocation of waste from that resource into the bioenergy sector in the form of woody biomass. More long term diversification of land use to other forms of bioenergy crops should be encouraged, including SRC and biofuels.

5.1.2 Building the Biomass Sector

Thermal energy, energy for heating, at an estimated 1,050,937 MWh/yr is the second largest energy demand in the county with buildings, households and entire communities dependant on price adverse fossil fuels for their main heating needs. This heating market, which in a rural context remains significantly oil based, presents an opportunity for a shift to locally produced and traded sustainable biomass, with significant environmental benefits and important positive impacts for the local economy. In addition to the thermal market, the implementation of co-firing for electrical generation in the industrial peat based power plants presents a significant resource demand and stimulus to the biomass sector.

The development of the biomass sector will require both a growth in demand, which in the thermal market will mean retrofit and installation of biomass technology, boilers, feeders, stores etc. and a parallel expansion in the supply of biomass, growing, harvesting, storage, drying etc. Such a supply chain could be facilitated by trading and logistical centres emerging in the county.

5.2. Bioenergy Targets:

The table below presents a comparative summary of the various national energy efficiency, renewable and bioenergy targets.

Table 10 Collated Summary of National Targets

	2010	2020	*Bioenergy Portion*
National Energy Efficiency Action Plan		-20% (-33% public)	
National RES Targets		16%	
Elec	15%	40%	*Circa 5.5%*
Trans	3%	10%	*Circa 9%*
Heat	5%	12%	*Circa 10%*
National Bioenergy Targets			
Heat	5%	12%	
Trans	5.7%	10%	
Elec		33%	

Taking into account the counties current high energy demand, low bioenergy resource base and low bioenergy consumption, the Bioenergy target of 33% is unlikely to be realistic in the short to medium term. As such this Action Plan is proposing to set '*establishment targets'* to support the sector in its initial phase of development over the next decade.

<u>Co Westmeath Bioenergy Establishment Targets:</u>

	By 2015	by 2020
Energy Efficiency	10-12%	17-20%
Bioenergy	5-7%	10%-12%
Heat	*5-7%*	*12%-15%*
Elec	*3-5%*	*10%-12%*

5.3 Key Objectives

The following are the principle objectives and priorities to achieve the targets.

Energy Efficiency:
Promote and prioritise energy efficiency across all sectors, (residential, commercial/public, industry, transport and agriculture). This will involve awareness raising, publications, information dissemination, education and training etc.

Waste Utilisation:
Promote and prioritise utilisation of existing waste streams from agricultural and forestry sectors. This will involve the optimisation of forestry management and first thinning's in the private forestry sector, development of appropriate scale AD plants in the region and capturing municipal waste as an energy feedstock.

Cattle Slurry:
Promote the application and uptake of technologies and solutions that utilise cattle slurry for energy extraction such as anaerobic digestion, which is a significant resource in the county.

Grass:
Promote the application and uptake of technologies and solutions that utilise grass for energy extraction such as anaerobic digestion, given its predominance in the county. Research currently being carried out by Teagasc on grass as a digestate and research being undertaken at University College Cork on grass based digester's will be reviewed and made known in the region.

Forestry:
Develop forestry management skills in the private sector and ensure optimal thinning and harvesting to ensure that the maturing resource, (much of which is due for first thinning) is utilised and generates potential biomass resource.

Biomass Supply and Diversity:
Support the expansion and diversification of potential biomass supply, notably through the promotion of SRC such as willow. This will include education and training on plantation and harvesting, as well as offers of SRC growing contracts from regional energy companies such as BnaM and Biotricity.

Market Demand for Biomass:
Promote the demand for biomass and bioenergy fuels in the county notably to penetrate the heat market. This will involve education, training, marketing and promotion of best case examples.

Supply Chain Development:
Promote and develop the local supply chain, quality, standards, sustainability and security of material and resources etc. This will involve education and training and application of standards and quality controls amongst promoters.

Co-Firing:
Support the development of biomass co-firing in the midland peat burning power plants and prioritise supply from regional and local sources.

6. Actions for the Region

6.1. Transferring the targets / objectives into actions

To achieve the targets set out in the action plan will require support by all stakeholders in the county. These are envisaged to take the following forms.

General Promotion:
General promotion and awareness raising of BioRegions project and concept and bioenergy and energy efficiency through various means.

Education and Training:
Supporting or undertaking educational and training events and activities that build capacity, develop skills and improve knowledge and understanding of bioenergy sector, markets, technologies and services.

Financial:
Providing financial support to the sector.

Bioenergy Projects:
Planning and implementing specific bioenergy projects such as growing and supply of resources, dedicated bioenergy AD or CHP plants, or converting building heating systems to bioenergy.

Policy/Planning/Guidance:
Developing policies and guidance that support the development of the bioenergy sector.

BAP Co-ordination and Monitoring
On going co-ordination and monitoring of the action plan.

Research:
Undertaking research and developing knowledge about the sector, region and solutions.

6.2 Overview of Stakeholders

There is a diverse range of relevant stakeholders impacting and effecting the bioenergy sector, some directly so and others indirectly and less obviously. Each still has a role to play in supporting the bioenergy sector.

It is envisioned that a concerted range of supportive actions by the key stakeholders should help create a positive synergy for the bioenergy sector in the region and help release the environmental, economic and jobs potential that the sector has to offer to the region.

Some of the key stakeholders in the project, who have developed specific supportive actions are;

Westmeath Community Development Ltd:
Are a rural development company for the county and administer the Rural Development Programme in the region.

Westmeath County Council
Local Authority with key responsibility for planning / development control and provision of key services, such as housing, water, sanitation, roads, etc.

Teagasc
Are the agriculture and food development authority in Ireland

Bord Na Mona
Are an Irish semi state utility with a specialism in peat extraction and power.

Irish Farmers Association (IFA)
A representative organisation for Irish Farmers

Irish Bioenergy Association (IrBEA)
A representative organisation for the bioenergy sector

Mullingar Chamber of Commerce
Business association in Mullingar town

Westmeath Forestry Growers Group
Learning and information group for private farm foresters.

Thomas Flynn and Son
Oil, Tractor and Farm Supplier

Biotricity
Commercial firm developing biomass CHP project

Next Gen Heat:
Biomass and Solar Hot water supplier / installer.

6.3 Concrete actions

In support of achieving the targets and objectives set out in the action plan, key local stakeholders have defined the following specific activities, which are planned to be implemented under the following milestones

Short Term – up to April 2013.

Medium Term – 2-5 years

Long Term – 5 to 10 years

Teasasc Schedule of Supportive Actions

Description of Action	Target Group	Organisation Contact	Term	Target Finish
Continued promotion, guidance, advise etc into the agriculture and forestry sectors on bioenergy	Agricultural Forestry	Liam Kelly	Short to long	Ongoing
Continued support, facilitation and advise to Westmeath Forestry Growers Group, WFGG	Forestry	Liam Kelly	Short to medium	Ongoing
Completion and dissemination of the Forestry Research Trial site in Westmeath on Conifer thinning's.	Forestry Energy	Liam Kelly	Medium	2013-14
Develop questionnaires and carry out survey of foresters, harvesting contractors and timber suppliers re thinning's and biomass.	Forestry Timber	Liam Kelly	Short	2012
Develop questionnaires and carry out survey of foresters etc. to determine use of broad leaf in firewood.	Forestry Energy	Liam Kelly	Short	2012
Carry out regular field days on thinning with Forest growers and WFFG.	Forestry Energy	Liam Kelly	Short to Med	2013-14
Develop and deliver in the county a 2- 3 day course on bioenergy including forestry and supply chain development	Agricultural Forestry Energy	Liam Kelly Barry Caslin	Medium	Subject to finance
Develop an educational DVD on forestry management, harvesting and bioenergy crop plantation and harvesting. (subject to funding)	Agricultural Forestry Energy	Liam Kelly Barry Caslin	Long	Subject to finance

Westmeath Community Development	**Schedule of Supportive Actions**			
Description of Action	Target Group	Organisation Contact	Term	Target Finish
Develop an information publication promoting the bioregions vision and bioenergy solutions and distribute as part of an information campaign	All		Short	2012
Develop or support the building of a Web based resource on sustainable energy, energy efficiency, bioenergy.	All		Med	2013
Developing an award scheme or competition to give recognition and media focus to successful green energy project	All		Long	2015
Supporting workshops and training bioenergy, energy efficiency etc.	All		All	
Supporting or running case study visits to example bioenergy projects and sites, SRC, Thinning, AD etc.	Agricultural Forestry Energy		Short - Med	
Undertaking a continued co-ordination role amongst the key stakeholders on the continued support for the bioregion concept and monitoring progress towards targets.	Stakeholders		Med - Long	
Providing funding and support for a range of activities including promotion, training, and capital grant aid.	Agricultural Forestry Energy Business		Short - Long	
Supporting or undertaken local / community activities that raise awareness, support or engagement from local rural communities for bioenergy.	Rural communities		Short - Medium	

Westmeath County Council Schedule of Supportive Actions				
Description of Action	Target Group	Organisation Contact	Term	Target Finish
Draft detailed policy statement in relation to sustainable energy and renewable energy including bioenergy for consideration in the review of the County Development Plan.	all	T McCague	Med/long	2012
Prepare a renewable energy issues paper for consultation to stimulate ideas and debate among the public, stakeholders and potential investors.	all	C Jordan	Med/Long	2012
Develop energy efficiency awareness programme in wider community through activities, briefings etc	all	R Maxwell / C Jordan	short	On going
Prepare Energy Efficiency Action Plan to identify the measures necessary to achieve energy savings of 30% with the organisations activities and facilities.	all	C Jordan	Medium	2020
Continue programme of energy efficiency retrofit works to social housing stock to achieve energy rating not less than C1	all	C Jordan / M Gaffney	Medium / Long	On-going
Pilot application of biomass boilers in 2 no local authority houses and review for wider application	all	C Jordan / M Gaffney	Short	2012
Undertake feasibility study of suitability of biomass boiler in local authority building	all	C Jordan	Short	2012

Irish Farmers Association Schedule of Supportive Actions				
Description of Action	Target Group	Organisation Contact	Term	Target Finish
Promote and support bioenergy solutions across the farming community and members, notably commercially viable solutions	Farmers	Paddy Donnelly	Ongoing	Ongoing
Represent the farming sector at local and national level in relation to bioenergy developments.	Farmers	Paddy Donnelly	Ongoing	Ongoing
Small Scale Digestion: Initiate a feasibility study of the energy and economic potential of small scale farm biogas plants on a representative number of local farms and farm types.	Farmers	Paddy Donnelly	Short	2012

Irish Bioenergy Association Schedule of Supportive Actions				
Description of Action	Target Group	Organisation Contact	Term	Target Finish
Continued promotion and support of the Bioregions concept and the Bioenergy sector across members and network	Agriculture Forestry Energy	Noel Gavigan	Ongoing	Ongoing
Assist in the dissemination of Bioregions information across members and network	Agriculture Forestry Energy	Noel Gavigan	Ongoing	Ongoing
Co-ordinate BTCII activities with Bioregions project.	Agriculture Forestry Energy	Noel Gavigan	Ongoing	Ongoing
Undertake BTC II feasibility study in potential of BTC in Midlands region	Agriculture Forestry Energy	Noel Gavigan	Short	2013
Host a BTC II workshop on BTC in the Midlands region	Agriculture Forestry Energy	Noel Gavigan	Short	2013

Westmeath Forestry Growers Group Schedule of Supportive Actions				
Description of Action	Target Group	Organisation Contact	Term	Target Finish
Group Development: Continue to meet and expand membership of group.	Forestry	Vincent Nally	Ongoing	Ongoing
Seek funding/training on committee and governance.	Forestry	Vincent Nally	Short	2012
Sub group to commence thinning and feedback to members on experience, learnings.	Forestry	Vincent Nally	Short	2012
Engage forestry specialist to work with group members on optimal thinning / management	Forestry	Vincent Nally	Short	2012
Scope and seek funding for study on alternatives and optimal route to market, e.g. self harvest, trade etc.	Forestry	Vincent Nally	Medium	2013
Scope and seek funding for study to undertake inventory of forestry resources in county.	Forestry	Vincent Nally	Medium	2013
Explore possibility of members developing contracting skills and equipment to serve local market.	Forestry	Vincent Nally	Medium	2013
Explore clustering of private forestry for management and resource and cost utilisation	Forestry	Vincent Nally	Medium	2013

Mullingar Chamber of Commerce Schedule of Supportive Actions				
Description of Action	Target Group	Organisation Contact	Term	Target Finish
Promote and support the bioregions concept amongst members via awareness raising and information dissemination.	Business	Tom Griffith	Short	
Promote and support energy efficiency measures amongst member via hosting information meetings and workshop in energy efficiency in business.	Business	Tom Griffith	Short - Med	
Promote and support Bioenergy solutions and opportunities for business amongst member via hosting information meetings and workshop.	Business	Tom Griffith	Short - Med	

Bord Na Mona Schedule of Supportive Actions				
Description of Action	Target Group	Organisation Contact	Term	Target Finish
BnM will continue to offer a market for locally produced biomass for use in co-firing at its Edenderry station, which lies within an economic haulage distance of the Westmeath region. Target: 300,000 tonnes by 2015	Agriculture Forestry Energy	John O'Halloran Bord na Mona	Long	Ongoing
BnM will continue to promote the establishment of willow plantations throughout the Midlands region, and offer long term contracts to growers. Target: 5,000 ha by 2015	Agriculture	John O'Halloran Bord na Mona	Medium	2015
BnM will continue to work with forest grower groups and with forestry contractors to promote the thinning of private forest plantations and the supply of pulpwood for co-firing. Target: 100,000 tonnes by 2020	Forestry	John O'Halloran Bord na Mona	Long	Ongoing
BnM will continue to work with local industrial and commercial enterprises to promote energy efficiency under the Better Energy Programme Target: 20 GWh savings	Energy	Tom Egan Edenderry Power Ltd.	Long	Ongoing

Thomas Flynn Schedule of Supportive Actions				
Description of Action	Target Group	Organisation Contact	Term	Target Finish
Develop 1 MW Anaerobic Digestion Plant Detail Design, Tender, Construction and Commission	Bio Agrigas ltd	Thomas Flynn	Medium	Jan 2014
Develop business plan to establish Biomass Trading and Logistics Centre at The Downs Site	Thomas Flynn & Sons Ltd	Thomas Flynn	Short	2013
Establish BTLC	Thomas Flynn & Sons Ltd	Thomas Flynn	Medium	2015

Biotricity Schedule of Supportive Actions				
Description of Action	Target Group	Organisation Contact	Term	Target Finish
Develop 15MWe Combined Heat and Power Biomass Plant Rhode. Detail Design, Tender, Construction, Commission	Biotricity Farmers Foresters	Briain Smith	Med	tba
Develop network of SRC farmer/growers under contract 1,500 Hectares	Farmers	Briain Smith	Med	tba

Next Gen Heat Schedule of Supportive Actions				
Description of Action	Target Group	Organisation Contact	Term	Target Finish
Assist in promotion of sector and project	All	Peter Nangle	Ongoing	Ongoing
Develop community scale biomass heating system	All	Peter Nangle	Med	Mid 2013

7. Impact Assessment

The development of the bioenergy sector in the county and wider midlands is likely to have a range of impacts, environmental, commercial, economic and social.

7.1 Environmental

The exploitation of sustainable bioenergy in the county will have a number of positive environmental benefits, including;

Potential reduction in waste - e.g. use of organic wastes in AD

Potential reduction in landfill - organics and sludge wastes being diverted to landfill

Potential reduction in Methane and CO2 emissions and reduced global warming and climate impacts - e.g. reduction in land fill off gassing, use of biomass.

Potential reduction in spreading of slurry on agricultural land and associated nitrate impacts

Potential of improvements to soil nutrients via enhanced fertiliser

Potential improvement in air quality.

Possible negative impacts or risk, which need to be assessed and managed include;

Possible impacts on biodiversity and ecological systems, which can be managed by actions such as ensuring crop diversity,

Possible soil nutrient impacts from alternative crops, which can be managed by actions such as leaving residual crop waste after harvest to maintain the balance of nutrients.

7.2 Socio Economic

There are potential significant positive impacts for local economies from the transition to local sustainable bioenergy sources, notably from the retention of finances in the county, via the creation of local production and supply chains for locally produced fuels / energies displacing the predominant imported fuels, many of which are subject to security and price fluctuation / increase issues.

A study by Patrick Daly undertaken for WCD on sustainable energy included an estimate of potential energy expenditure in the county of Westmeath, (based on national extrapolation of total energy – both direct and indirect) of circa 200 million euro, a significant portion of which is leaving the local economy. An energy efficiency reduction of 10% combined with a local bioenergy supply of 10% in the county could equate to something in the region of forty

million euro being retained in the local economy annually. (Daly P 2010) *Promoting Sustainable Energy Practice in County Westmeath Report for Westmeath Community Development Limited March 2010*

There is a growing body of research and studies showing a positive relationship between local / regional bioenergy markets and their economic and job creation potential. In particular an Irish study on the socio-economic benefits of developing the Bioenergy sector in Ireland has been recently undertaken and published by the Irish Bioenergy Association and the study has confirmed the substantial national economic benefits that can accrue by meeting the 2020 bioenergy targets, including: (Anon 2012 The Economic Benefits of the Development of Bioenergy in Ireland – Irish Bioenergy Association)

Over 3,600 new permanent jobs in the Bioenergy sector

1.5 billion direct investment in the sector

8,300 work years during construction and installation

Sustain family farm incomes in Irish agriculture

Reduce Ireland's energy import bill by 7.5%

Provide a secure and competitive energy source for Irish homes and business

In addition the bioenergy energy sector and specific bioenergy projects have the potential to help develop the counties 'green' image and assist in building an 'Eco Tourism' sector.

For the business and industrial sector, moving toward the type of efficiency and bioenergy targets proposed in the action plan will have important impacts on competitiveness with reduction in energy demand and the supply of local energy / lower heating costs due to cheaper local biomass. This will also improve energy security and higher energy independence. The bioenergy sector itself presents commercial and diversification opportunities for many business and investors.

One of the challenges for the sector lies with the competition for land and food markets.

8. Progress Monitoring and Evaluation

8.1 Monitoring

WCD, as the Irish partner, will be monitoring and reporting on early implementation of short term actions, via regular meetings and co-ordination with the key stakeholders and will produce an implementation report as part of the BioRegions project.

Post the formal completion of the EU IEE 'Bioregions' project WCD will continue to act as a co-ordinator and review and monitor progress on objectives and key actions with a working group of key stakeholder's, which will meet on a bi annual basis.

To support the monitoring towards targets WCD will commission the following key data to be collated;

A review of energy efficiency initiatives and promotional activities.

Collation of data on extent of activity in the private forestry sector including harvesting and dedicated biomass material.

Estimation of extent of dedicated bioenergy crops – notably SRC plantations.

No and capacity of proposed and operational AD plants in county.

No and capacity of proposed and operational CHP plants in county.

Estimation of biomass boilers installed in county

Update on Co Firing demands

Tonnes of biomass traded

CO2 saved

Local bioenergy revenues in the region

8.2 5 Year Review

A full review of the action plan and sector development will be commissioned by WCD within 5 years of the adoption of the plan.

9.0 Recommendations

During the various meetings, workshops and consultation events undertaken during the development of this action plan a number of recommendations and issues have been raised by stakeholders in relation to developing. These included the following

The absence of an organization, such as an energy agency, to actively promote and develop the energy efficiency and renewable energy sector across the county or region was highlighted as a weakness in the county / region, which needs to be addressed.

An income and cash flow gap of circa three years during the establishment period of willow plantation was identified as a factor / inhibitor for farmers to transition to willow.

Current REFIT tariffs were reported as being not viable to promote the uptake of farm based anaerobic digestion.

The absence or limited roll out of green procurement procedures in the public sector was identified as a factor that limited the demand for bioenergy solutions. Government centralization of purchasing was also noted as limiting local supply.

For transport, changes may be required to the Biofuels Obligation, and additional impetus given to the rollout of a national recharging network, in order to achieve the national 10% RES-T target.

For heating, additional measures may be required to achieve the national 12% RES-H target. These could include a support tariff for renewable heat, similar to the measures introduced in the UK.

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ANNEX

ADOPTION OF THE ACTION PLAN

Endorsement of Bioenergy Action Plan for Westmeath in support of the Bioenergy Sector.

BIOREGIONS is a three year European project funded by Intelligent Energy Europe 2009, which aims to stimulate and support the development of a local Bioenergy industry and market in a number of EU 'Target Regions', including Co Westmeath.

A Bioenergy Action Plan for the county has been drafted with input from key stakeholders in the region and sector in Ireland and consultancy from project partners across Europe. The Action Plan reviews the current energy and bioenergy situation in County Westmeath and establishes targets and actions to promote the bioenergy sector in the region.

It is envisaged that the implementation of this Action Plan will help establish and develop the Bioenergy sector in the County and wider midlands area and we hereby support and endorse its aims and objectives.

SIGNED

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Westmeath County Council _____

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Teagasc _____

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