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



## Case studies

### **Biomass Domestic Stove/Boilers in Co Westmeath**



## 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](http://www.bioregions.eu)



**The work for this report has been performed by Patrick Daly consultant to Westmeath Community Development based on biomass heating in County Westmeath.**

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## **Introduction:**

This report presents a case study of Biomass Stove Boilers installed in County Westmeath, examining operational, capital costs and financing factors and highlighting how they may be a positive option for housing in oil dependant areas.

Data has been provide and collated from Next Gen Heat Ltd, Westmeath County Council and Site Visits.

## **Title of the project**

Biomass Stove / Boilers in County Westmeath

## **Objectives of the project**

- Reduction of greenhouse gas emissions
- Improvement of energy efficiency
- Decrease the dependence on fossil fuels
- Decrease operational costs

## **Project Timeline**

The installations were undertaking during 2011 and 2012

## **Description of local conditions**

### Project Operator:

The installations have been undertaken by Next Gen Heating, a private commercial company providing biomass heating and fuel in the county.

### Site selection:

The stove / boilers were installed in a range of domestic housing in the Westmeath area and in particular the social housing units in question were installed in Mullingar Town.

### Technology analysis

The heating system used was a Duo wood pellet stove-with back boiler rated at 12 kW, which was integrated into existing solid fuel or oil based low pressure central heatings systems with radiators.

### Fuel Supply:

Fuel supply is generally in the form of wood pellet bags, thus avoiding the need for storage facilities, which have been problematic in Ireland due to moisture levels, and costs of same.

### **Implementation of the project**

Domestic wood pellet stoves / boilers are proving to be popular and effective in private residential housing in the County. The combined stove boilers are being installed in both town and rural homes typically replacing existing oil boilers and in some cases range/cooker stoves (solid fuel or oil). Although most of the applications are in private residences they are also being piloted in social houses (see below).

The stove-boilers are typically 12 kW and are being integrated into existing domestic low pressure hot water central heating systems for both space and water heating and in most cases are sufficient to heat the whole house and provide DHW needs.

The principle benefits and attractions to home owners are; combined stove and back boiler function giving both room heat and whole house central heating functions, low fuel costs, typically 50% that of oil, timer and controls, low ash content, no need for fuel storage or large deliveries and easy fuel budgeting.



*Photo - Trade literature image of typical stove boiler. (Source Next Gen Heating)*

In addition to private householders converting using this technology, Westmeath County Council have piloted the system in a number of houses as part of their upgrading to a number of their social housing units under Department of Environment Funding, which requires improving the houses to a Building Energy Rating) BER of C1 minimum, meaning a total energy use excluding appliances and cooking of less than 150 kWh/m<sup>2</sup>/yr.

As part of the housing upgrades, which include fabric insulation improvement measures such as attic insulation, cavity wall insulation etc. a number of the houses are also receiving installation of 12 kW domestic stove-boilers. This follows the successful installation of 13 units in neighbouring Longford County Council. Westmeath County Council are planning a trial of eight units and have installed four to date.

Feedback from the tenants has been positive in terms of fuel cost, operation and heating. Tenants have also been positive about the ease of fuel budgeting and purchase of smaller fuel volumes compared to minimum bulk oil deliveries.

The council have also been positive with little need for technical support to date.



*Photo showing typical stove boiler inset into existing fire place.*

## **Financial evaluation of the project**

### Private Households:

A typical unit costs €2800 and can be fitted for circa €300. Next Generation report an average consumption for typical three bed semi-detached house at 120 Kg / week. At a supply and install cost of circa €3000 these are well within range of many household private finances and some clients are utilising local Credit Union home improvement loans for finance.

### Westmeath County Council

The supply and install cost to the council was €3620 ex VAT, which included technical support to tenant. Operation costs are averaging 7 no 10kg pellet bags per week, at circa €20 to 25 per week, which is well within the social fuel allowance of €29 per week. Over a 40 week heating season this would equate to €800 to 1000 per year. The funding came from the Department of Environment House Improvement Grant.

## **Project Conclusions**

The case studies indicate the need for biomass heating systems that compliment the Irish context, which in rural areas tends to be oil boiler and solid fuel systems. The local technology suppliers are reporting continued and even expanded sales despite the recent curtailment of grant aid for domestic biomass boilers.

Despite this ending of grant support for biomass heating, biomass is proving financially viable compared to oil at circa 50 to 60% cheaper per kWh. The credit union seems to be the principle course of financing for such project in the domestic sector – notably under their home improvement loan.

The stove-boiler is proving to be a popular solution in the Irish residential context in terms of a low capital cost change over to biomass, notably avoiding capital costs for fuel storage and problems associated with moisture penetration of bulk biomass material in storage compared to boiler only solutions, and its simple integration into existing central heating systems.