



**Northern
Periphery
Programme**

2007–2013

Innovatively investing
in Europe's Northern
Periphery for a sustainable
and prosperous future



European Union
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**NORSJÖ
kommun**



Wood Heat and Your Opportunities

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15th November 2011

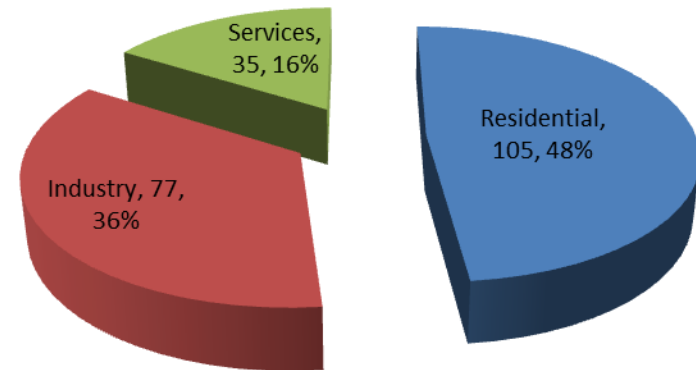
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Estimate for Heat Market Western Region 2020

- This estimate is for the heat market only
 - 217,000t ODT
- and excludes the following;
 - Co-Firing at power generation stations
 - CHP
 - If either of these were to proceed could be fuel by co-product, energy crops and/or importation

Estimated Biomass Heat Market Western Region 2020

Market Segement, '000 odt & Percentage

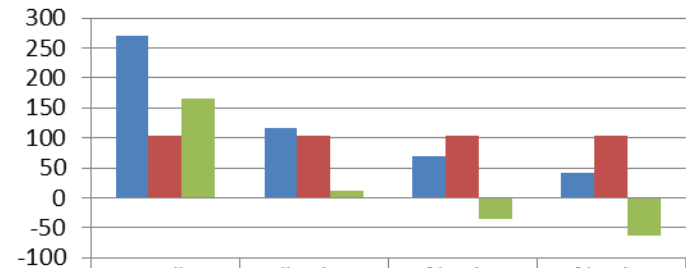


Scenarios

■ Round Logs Only

- Logs suitable for domestic and small scale commercial boilers, stoves and open fires.
- Opportunities in the firewood log and chip business

Demand and Supply Scenarios 2020
'000 odt



| | Full | Full Private | 60% Private | 35% Private |
|--------------------------|------|--------------|-------------|-------------|
| 2020 Supply | 270 | 116 | 69.6 | 40.6 |
| 2020 Demand | 104 | 104 | 104 | 104 |
| 2020 Surplus / Shortfall | 166 | 12 | -34 | -63 |

Domestic or Small Commercial

- Wood fuel is the oldest and still the most widely used source of heating and cooking
- Generally boilers of less than 120kW
- Business with small heat loads
- Domestic boiler <35kW
- Firewood Market serving log stoves and log gassifiers

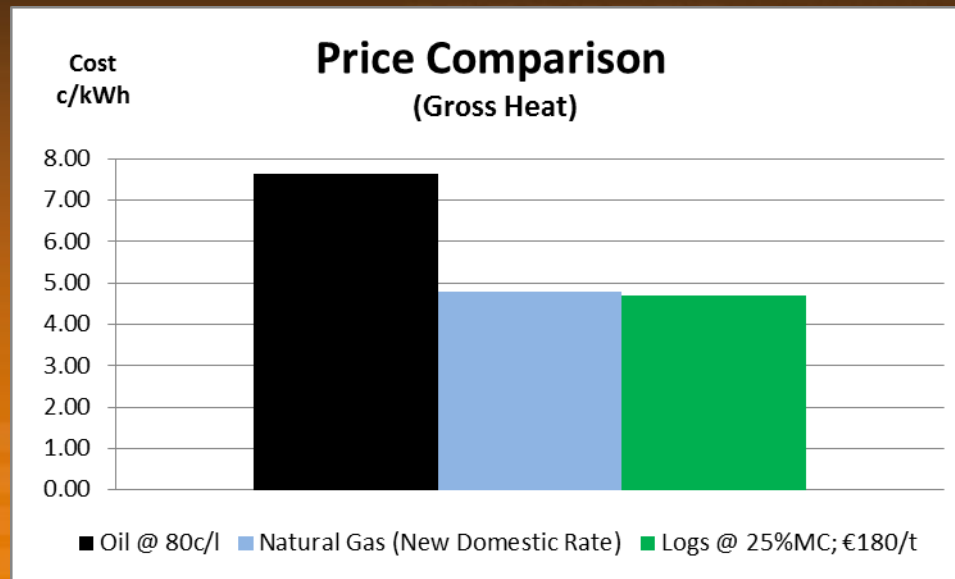


Developing the Small Scale Commercial and Domestic Market

- This sector has huge potential as there are a wide range options open to end users
- At its simplest using logs instead of oil or coal in open fires to avoid Carbon Tax - €43/1000 l to be doubled by 2014
- Using locally produced firewood or timber briquettes. There is a misconception that imported firewood is better than local logs
- 1,000t could leave €250,000 in the local economy. Similar amount of heat delivered by oil would leave c. €20,000



Savings



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Options

Owners should retain sufficient wood for their own use

Use contract mobile firewood processors to add value selling bulk firewood - car trailer loads etc.

€2.50/m³ standing v's €160 ~ €190/t seasoned

Processors give consistent sizes important particularly with small stoves and gasifier

Contract to supply Stove Merchants –

- long logs for gasifier
- various lengths to suit suppliers range of stoves



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Fuel Options



Timber Briquettes (Bale)

Volume 0.012m³ ~ Weight 10.4kg

Moisture Content 8%

kWh/kg 4.9kWh ~ kWh/Bale 51kWh

Energy Density kWh/m³ 4228 kWh

Ideal for Small Storage Space

- Apartment Small House



Hardwood Logs (Bags)

Volume 0.045m³ ~ Weight 18kg

Moisture Content 18%

kWh/kg 4.3 ~ kWh/bag 77kWh

Energy Density kWh/m³ 1700kWh

Garage or Shed - Moderate Storage Space required

Semi-detached or Detached House



Softwood Logs (Bags)

Volume 0.045m³ ~ Weight 13kg

Moisture Content 18%

kWh/kg 4.3 ~ kWh/bag 54kWh

Energy Density kWh/m³ 1200kWh

Large Storage Space required

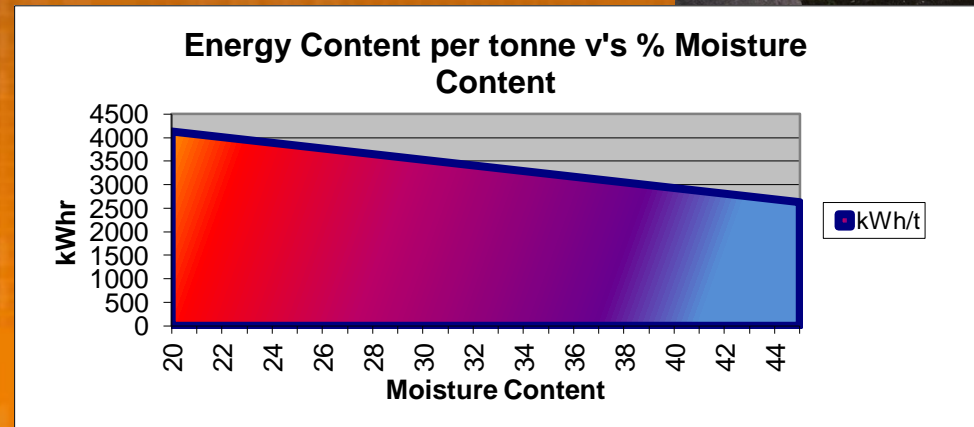
Ideal for large stand alone house or farm house with access to large shed

Selecting the right system

| Space | Option | Comments |
|---|--|--|
| Single Room | Open Fire | Charming, but inefficient most of the heat is lost through the chimney |
| | Fireplace Insert | Fits into an existing fire place and improves the efficiency of the fire. Delivers more heat to the room reduces drafts and ash |
| Small number of rooms or apartment | Wood burning stove Wood pellet stove with inbuilt hopper. | High degree of control improves efficiency to 65 to 70%. Reduced ash. |
| Small house | Wood burning stove or stove with back boiler | This combination heats water which can be circulated to radiators in adjoining rooms. |
| Large Semi-detached or standalone house | Log boiler | Very efficient 80%+. These tend to be physically large and tend to be fitted in sheds or separate boiler houses with space for buffer tanks and log storage |
| Large house or small commercial unit | Log boiler or log gasifier. | Again these are generally fitted in purpose build boiler houses or sheds due the size and ancillary equipment. In recent times manufactures of log gassifiers have produced a range of boilers suited to the large domestic or small commercial sectors. The efficiency rates for log gasifier ranges from 85 to 90%. Ensures that the maximum amount of heat is delivered to the system. There is complete combustion reducing which reduces the amount of ash generated to the absolute minimum. |

Additional Information

- Guidance on fuel requirement
- Storage
- Moisture Content



Local Impacts – 1,000odt of Firewood



Farm Families

- # 10 to 15
(1st Thinning)
- Average Return
€350/ha
- **€43,750**



Forest Roding

- 3,000m
- **€156,250**



Harvesting

- Total 6,250m³
- Pulpwood
2500m³
- Other Products
3,750m³
- **€143,750**



Road Haulage

- 6,690t
- **€45,450**



Other Processors

- 3,750m³ raw
material made
available
- Jobs



Processing Firewood

- 2,500m³ ~
1,000odt

Value in Supply Chain €389,200

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