Domestic firewood in Wales: where does it come from and how much energy does it generate?

James Walmsley, Jenny Wong & Simon Atherton

j.walmsley@bangor.ac.uk
**Firewood and Renewable Energy Reporting**

- DUKES (Digest of UK Energy Statistics), November 2013

- “statistics on domestic [fire]wood use is one of a few cases where good data are not available...detailed surveys have been unsuccessful to date”

- Current UK figures for domestic firewood are based on:
  1. A historic survey undertaken in 1989
  2. Revision in 2003 based on a 50% growth rate in sales / installations over a 2-3 year period
  3. Anecdotal information from three different sources

- NOT GOOD ENOUGH!
National trends?

Percent of all households vs. years from 2004 to 2016.

- Wales
- UK

The graph shows an increasing trend in the percentage of all households for both Wales and the UK over the years from 2004 to 2016.
EU trends

Households using firewood for heating

<table>
<thead>
<tr>
<th>Country</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>35</td>
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<tr>
<td>Estonia</td>
<td>30</td>
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<tr>
<td>Germany</td>
<td>25</td>
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<td>Belgium</td>
<td>20</td>
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<td>Finland</td>
<td>18</td>
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<tr>
<td>France</td>
<td>15</td>
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<tr>
<td>Wales</td>
<td>12</td>
</tr>
<tr>
<td>UK</td>
<td>10</td>
</tr>
</tbody>
</table>
Our story so far...

- Partnership research between Bangor University, FC Wales/NRW, LlyG, LlyG members & Wild Resources Limited
- 2012 – Kirsten Hails – GoWales
- 2014 – Simon Atherton – KESS
2012 report headlines

~ 0.5 million cu metres of solid firewood burnt per year

Sourced from:

• 25% home-grown
• 26% bought
• 18% waste
• 22% collected
• 10% scavenged
2014: Simon Atherton / Rhys Parry / James Slack

• National: Omnibus
• Dense urban: Swansea and Cardiff
• Urban: Prestatyn, Bangor and Mold
• Rural-Urban: Anglesey
Rural-Urban % households using wood heating

Anglesey ~ 50% of HH use firewood @ 3m³ per yr = 49,000 m³
Area of woodland 3.5% = 2,500 ha

Wales ~ 11%
~ 650,000 m³
Contribution to overall renewable energy generation

- Wales officially produced $2,185$ GWh$_{elec}$ from renewables in 2011 (DECC, 2013) (Rhyl flats 90 MW offshore windfarm generates $\sim225$ GWh$_{elec}$ yr$^{-1}$)

- Our 2012 survey suggests that in Wales, domestic firewood usage is (at least) $576,400$ m$^3$ yr$^{-1}$
- Assuming that $1$ m$^3$ firewood $= 5$ MWh
- $576,400$ m$^3$ yr$^{-1} \times 5$ MWh $= 2,882,000$ MWh$_{heat}$
- Domestic renewable energy generation from firewood is estimated at $2,882$ GWh$_{heat}$ yr$^{-1}$

- Huge discrepancies exist between how these two comparable resources are measured, monitored, supported and recognised.
Sourcing: Slack (2014) 154 households on Anglesey

Fire wood from different sources (m³ per year) (self reported)

- Own woodland
- Purchased from garage forecourt/DIY store
- Waste wood (e.g. pallets, offcuts etc.)
- Purchased from unregistered supplier- farmer, small scale supplier, friend
- Other sources (e.g. collect from local woods)
- Purchased from registered supplier or professional supplier- (e.g. Woodsure or HETAS Quality assured fuel)
- Friends, family or neighbours
- Own garden/property
Further surveys in 2015

- DECC Omnibus early 2015 – 17,000 HH across GB: 1,154 wood fuel users (7%)
- Forestry Commission & Natural Resources Wales Omnibus April
- Simon’s MRes thesis
- Further work in Bangor University
Concluding remarks

• Substantial number of households in rural areas use firewood
• Cumulatively, this firewood generates substantial amount of heat energy used for heating and hot water
• Households typically employ a range of sourcing strategies
• Firewood markets offer opportunities for Agroforestry but they need careful consideration – either ‘value-adding’ for niche markets e.g. aromatic ‘fruit’ firewood, and/or for on-farm energy requirements
References

• ADEME, 2013. STUDY ON HOME HEATING WOOD : MARKETS AND SUPPLY, Available at: http://www2.ademe.fr/servlet/getDoc?sort=-1&cid=96&m=3&id=90048&ref=&nocache=yes&p1=111 [Accessed May 13, 2014]
• Mantau, U., 2012. Energy Use in Domestic Households of Germany,
• Parry, R. J. 2014. Investigating the use of domestic firewood as a heat fuel in urban North Wales, unpublished MSc dissertation, Bangor University
• Slack, J. 2014. The Isle of Anglesey’s Domestic Woodfuel Market, unpublished MSc dissertation, Bangor University
Thanks for listening!

- MSc Agroforestry
- MSc Environmental Forestry
- MSc Forestry (distance learning)
- MSc Tropical Forestry (distance learning)
- MSc Conservation and Land Management
- PhD Forestry, Agroforestry