

Irish Forests and Renewable Energy

Biomass from Irish forests is a clean renewable energy source. Provided trees are replaced and forests are managed on a sustainable basis, the replacement of fossil fuels by forest-based biomass will over time lead to a reduction in greenhouse gas (GHG) in the atmosphere. Fast growing forests, such as we have in Ireland, are particularly suited to re-absorbing carbon dioxide when it is released from wood combustion.

Construction timber and wood-based panels, which are the main timber products manufactured in Ireland, also help to remove, store and lock up carbon for the lifetime of the product. When these products reach end of use they can be combusted and the energy recovered. In the long run, converting roundwood to products and combusting these products at high efficiencies ensuring low emissions at end of life provides the largest climate change mitigation benefit. But not all roundwood can be converted to solid wood products due to size, quality or distance from market and instead is directly combusted as firewood or wood chip. Also, most direct combustion is of first thinnings and harvesting residues. In fact, thinning improves overall stem quality in the trees that are left behind and the subsequent recovery of long service life timbers. Residues that are recovered would otherwise have rotted and released carbon dioxide (CO₂) in any event.

The industrial, commercial and domestic use of woodfuels is increasing year on year: currently one third of the annual roundwood harvest of three million cubic metres is used for energy generation in one form or another. There are a number of reasons for this trend, including significant rises in the price of fossil fuels, as well as national and EU policies that seek to expand the use of renewables in general.

Meeting policies and targets

On the policy side, the Renewable Energy Directive (2009/28/EC) is aimed at the promotion of energy from renewable sources and has set targets for Member States to comply with by 2020. A number of headline measures are set out in Irelands National Renewable Energy Action Plan (NREAP)¹ that describes how Ireland proposes to meet its overall target to supply 16% of energy requirements from renewables.

Progress is being made in meeting these targets, albeit from a very low base. Between 2003 and 2011, the total use of renewables nearly trebled (16% annual average growth). Ireland’s progress towards meeting its renewable energy targets for 2020 are shown in Table 1. It will be a challenge for the country to meet these targets particularly in the Renewable Heat and Transport sectors. However a sustained strategy to promote the use of wood fuels will help, particularly in the Renewable Heat sector.

After wind energy, wood fuel is the largest contributor to renewable energy generation in Ireland.

Table 1: Progress towards meeting Ireland’s renewable energy targets².

	2020 targets	2012 position	Distance to target
	% energy generated		
Renewable electricity (RES-E)	40.0	19.6	20.4
Renewable heat (RES-H)	12.0	5.2	6.8
Renewable transport (RES-T)	10.0	3.8	6.2
All renewable energy	16.0	7.1	8.9

¹ <http://www.dcenr.gov.ie/NR/rdonlyres/C71495BB-DB3C-4FE9-A725-0C094FE19BCA/0/2010NREAP.pdf>

² http://www.seai.ie/Publications/Statistics_Publications/Renewable_Energy_in_Ireland_2011.pdf

Other 2020 targets for renewable energy include:

- 30% co-firing with biomass at the three peat power plants by 2015; one of these, at Edenderry, is using considerable amounts of woodfuel, however due to technical issues it is unlikely that the others will meet this target.
- 800 megawatts (MW) of combined heat and power (CHP) by 2020, including support for up to 100MWe of biomass CHP up to 2020.
- The renewable heat sector will be largely driven by bio-energy and wood fuel will be the biggest contributor to this. The Department of Communications Energy and Natural Resources (DCENR) is currently working on a BioEnergy strategy that covers this area.

How wood fuels are contributing

In 2012, almost 36% of the roundwood harvested in the Republic of Ireland was used for energy generation, mainly (for process drying and electricity generation) within the forest products sector. Wood-biomass fuels used by the sector are shown in Table 2. Over the period 2006-2011, the use of wood biomass energy in Ireland has resulted in an estimated greenhouse gas (GHG) emission saving of 2.6 million tonnes of carbon dioxide (CO₂).

In 2012, the output of the forest-based biomass energy sector grew by 5.2% over 2011 (Table 2). In 2012, 225,000 cubic metres of firewood was used in Ireland, to a value of over €32million, showing that it is providing a steady and a growing market for first thinnings (Table 3). In addition, firewood is harvested by forest owners for their own use.

The largest single use of wood for energy is within the forest products sector itself. Overall, the use of wood fuels saved some 562,000 tonnes of CO₂ in 2012 (over and above carbon sequestered in Irish forests). This equated to greenhouse gas emission savings (GHG) in the region of €10.36 million.

Table 2: Use of forest-based biomass and as a proportion of total roundwood harvest (2010-2012) ³

End use	2010	2011	2012
	000 m ³ OB RWE		
Forest-based biomass use by Edenderry Power	79	85	152
Forest-based biomass used for energy production and process drying in sawmills and wood-based panel mills	475	487	459
Roundwood chipped for primary energy use	39	41	30
Domestic firewood use	199	214	225
Short rotation coppice	1	5	5
Wood pellets and briquettes	121	129	144
Charcoal	2	5	2
TOTAL	916	966	1,017
Roundwood harvest			
Roundwood available for processing	2,708	2,740	2,613
Firewood harvest	199	214	225
TOTAL	2,907	2,954	2,838
Forest-based biomass as a % of total roundwood harvest	31.5	32.6	35.8

³ Source: UNECE Joint Wood Energy Enquiry (JWEE) return for Ireland (2009-2013).

Table 3: Volume and value of the domestic firewood market in Ireland (2008-2012)⁴

	Volume 000 m³ overbark	Value € million
2008	171	24.83
2009	184	26.75
2010	199	28.80
2011	214	30.97
2012	225	32.56

Future demand and sustainable and secure supplies of wood fuels

A COFORD study⁵ has shown that the contribution of wood biomass required to meet the 16% renewable energy target by 2020, will double the gross demand for wood biomass (in the Republic of Ireland), from 0.952 M cubic metres in 2011 to 1.696 M cubic metres in 2020. Such a steep increase in wood biomass demand will require a high level of investment in the supply chain, and will significantly increase the competition for wood fibre.

Sustaining wood fuel production beyond 2020 from Irish forests at the increased levels envisaged is dependent on a continuation of policy measures and critically on the level of afforestation over the next two decades. As wood fuels are mainly sourced from young forests a balanced age class structure at national level is a prerequisite for sustained supply. Planting since 1990 has established almost 250,000 ha of new forests. An annual afforestation programme in the region of 15,000 ha and preferably considerably more, needs to be implemented for an extended period - up to two decades - to provide a long-term sustainable supply of wood fuels.

Quality wood fuels

Wood fuels range from firewood to wood chip, wood briquettes and pellets. Wood fuels need to be dried and processed in a way that makes their use efficient and cost effective. The Wood Fuel Quality Assurance scheme (www.wfqa.org) is an industry organised initiative to certify suppliers offering a quality product.

⁴ Source: UNECE Joint Wood Energy Enquiry (JWEE) return for Ireland (2009-2012).

⁵ http://www.coford.ie/media/coford/content/publications/projectreports/roundwooddemand2011/COFORD_demand01Mar11.pdf

