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- Including firewood, the total roundwood harvest in the Republic of Ireland in 2011 was 2.90 million m<sup>3</sup>.
- Softwood roundwood available for processing in the Republic of Ireland in 2011 was 2.74 million m<sup>3</sup>.
- There was strong demand for wood fibre across all assortments.
- In value terms, exports of wood products were un-changed over 2010 at €308 million, €173 million of which comprised wood-based panels.
- Sawn timber exports grew by 60% over the period 2008-2011.
- The Irish market for firewood has grown by 35% over the period 2006-2011.
- Sawmill output in 2011 was 761,000 m<sup>3</sup> of sawn timber and 106,000 m<sup>3</sup> of round stakes.a
- Wood-based panel output was 736,000 m<sup>3</sup>.
- Sawn timber and wood-based panel exports in 2011 were worth €256 million.
- Between 2005 and 2010, the domestic use of wood biomass grew by 18% per annum.
- In 2011, 33% of roundwood harvest was used for energy production.

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## Woodflow and forest-based biomass energy use on the island of Ireland (2011)

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### Introduction

This COFORD Connects Note provides the 2011 woodflows for the Republic of Ireland and for the island of Ireland, together with an analysis of the use of forest-based biomass for energy production. It is largely based on national wood harvest and forest product trade data, compiled on behalf of the Department of Agriculture, Food and the Marine and used to complete the annual Joint Forest Sector Questionnaire (JFSQ), run by EUROSTAT, the United Nations Economic Commission for Europe (UNECE) Timber Committee, the Food and Agriculture Organisation (FAO) and the International Tropical Timber Organisation (ITTO). JFSQ and other data sources are used to compile global forest statistics which can be accessed at the FAOSTAT website<sup>3,4</sup>.

### Sources and uses of roundwood available for processing in the Republic of Ireland

In 2011, 2.74 million cubic metres of roundwood was processed in the Republic of Ireland<sup>5</sup>, virtually un-changed on 2010. In 2011, the harvest of industrial roundwood from privately owned forests declined by 16.6% over 2010 (Table 1).

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<sup>4</sup> Domestic production of harvested wood products (mainly sawn timber and panel products) will, from 2012 onwards, form part of the national calculation of greenhouse gas (GHG) emissions and removals under the Kyoto Protocol.

<sup>5</sup> Excluding firewood and hardwood.

For information and a free on-line advisory service on the wood energy supply chain, the quality of wood fuels and internal handling visit [www.woodenergy.ie](http://www.woodenergy.ie)

**Table 1: Roundwood available for processing in the Republic of Ireland (2008-2011).**

	2008	2009	2010	2011
	000 m <sup>3</sup> OB			
Imports less exports	106	-63	28	55
Coillte harvest	2,279	2,354	2,217	2,299
Private sector harvest	118	130	463	386
<b>TOTAL</b>	<b>2,503</b>	<b>2,421</b>	<b>2,708</b>	<b>2,740</b>

Wood fibre sources for the processing and wood energy sectors and residue outturn are shown in Table 2; uses are in Table 3<sup>6,7</sup>. Wood residues are primarily used as feedstock for sawmill kilns and for process heat in the manufacture of wood-based panels (WBP). Post-consumer recovered wood (PCRW) is increasingly being used for wood energy and in the manufacture of wood-based panels.

**Table 2: Sources of wood fibre (2008-2011)<sup>a</sup>.**

	2008	2009	2010	2011
	000 m <sup>3</sup> OB roundwood equivalent (RWE) <sup>b</sup>			
Roundwood <sup>c</sup>	2,503	2,421	2,708	2,740
Sawmill residues <sup>d</sup>	846	838	842	829
Wood-based panel residues <sup>e</sup>	106	94	101	115
Harvest residues	0	0	0	40
Post-consumer recovered wood	208	200	280	270
<b>TOTAL</b>	<b>3,663</b>	<b>3,553</b>	<b>3,931</b>	<b>3,994</b>

<sup>a</sup> UNECE Joint Wood Energy Enquiry (2009-2012) & EUROSTAT Joint Forest Sector Questionnaire (2009-2012).

<sup>b</sup> RWE: roundwood equivalent

<sup>c</sup> Data is from Table 1.

<sup>d</sup> A breakdown of sawmill residues is shown in Annex A4.

**Table 3: Uses of wood fibre (2008-2011).**

	2008	2009	2010	2011
	000 m <sup>3</sup> OB			
Sawmilling	1,619	1,602	1,603	1,580
Round stakes	80	88	118	116
Wood-based panels	1,462	1,286	1,400	1,340
Wood biomass energy use by the energy and forest products sectors <sup>b</sup>	378	431	554	572
Other uses				
Horticultural bark mulch	44	54	27	34
Wood chip for commercial biomass use	30	55	39	41
Export of forest product residues	50	37	58	196
Other uses			132	115
<b>TOTAL</b>	<b>3,663</b>	<b>3,553</b>	<b>3,931</b>	<b>3,994</b>

In 2011, 736,000 m<sup>3</sup> of wood-based panels (WBP) were produced from an intake of 1.34 million m<sup>3</sup> of wood fibre<sup>8</sup>, a 2.9% reduction over 2010 (Table 4). This can be traced to Finsa Forest Products ceasing particleboard manufacture in January 2011. A very high proportion (84%) of WBP manufacture was exported; 616,000 m<sup>3</sup>, to a value of €173 million (Table 5). WBP exports mainly comprised oriented strand board (OSB) and medium density fibreboard (MDF), manufactured by Masonite, Medite and SmartPly. Key export markets were the UK and the Benelux countries.

In 2011, sawmill roundwood intake was 1.7 million m<sup>3</sup>, which was converted to 0.76 million m<sup>3</sup> of sawn timber<sup>9</sup> (Table 4).

**Table 4: Production of sawn wood and wood-based panels in the Republic of Ireland (2008-2011)<sup>a</sup>.**

	2008	2009	2010	2011
	000 m <sup>3</sup>			
Construction timber	267	294	293	289
Pallet/packaging	232	255	255	251
Square edge fencing	190	209	209	206
Other	13	14	15	15
<b>TOTAL sawn wood</b>	<b>702</b>	<b>772</b>	<b>772</b>	<b>761</b>
<b>TOTAL wood-based panels</b>	<b>779</b>	<b>709</b>	<b>758</b>	<b>736</b>

<sup>a</sup> EUROSTAT Joint Forest Sector Questionnaire (2009-2012).

## Trade in timber products and balance and self-sufficiency in sawnwood

In 2011, exports of forest products from the Republic of Ireland were valued at €308 million, un-changed on 2010. Wood-based panels accounted for €173 million, the balance comprising paper and sawn timber exports (Table 5). Export volumes of WBP declined by 6.6% over 2010. This was due to the cessation of manufacturing at Finsa Forest Products in early 2011<sup>10</sup>, which also led to WBP exports declining marginally in value (-3.4%) in 2011 (Table 5).

<sup>6</sup> UNECE Joint Wood Energy Enquiry (2009-2012) and EUROSTAT Joint Forest Sector Questionnaire (2009-2012).

<sup>7</sup> Wood fibre that is reused is counted twice in this model.

<sup>8</sup> Includes pulpwood, wood chips, sawdust and post-consumer recovered wood (PCRW).

<sup>9</sup> Includes the production of round stake.

<sup>10</sup> [http://www.clarechampion.ie/index.php?option=com\\_content&view=article&id=8526:finsa-seeking-16-redundancies&catid=63:business&Itemid=60](http://www.clarechampion.ie/index.php?option=com_content&view=article&id=8526:finsa-seeking-16-redundancies&catid=63:business&Itemid=60)

**Table 5: Timber and paper products trade, volume and value (2008-2011)<sup>a</sup>.**

	Imports							
	2008	2009	2010	2011	2008	2009	2010	2011
	000 m <sup>3</sup> UB				€ million			
Sawn timber	412	232	242	201	141	66	74	64
Wood-based panels	264	181	166	195	108	68	65	68
	000 tonnes							
Pulp products	29	32	41	54	20	22	31	45
Paper & paperboard products	526	379	370	383	520	308	313	333
<b>TOTAL</b>					<b>789</b>	<b>464</b>	<b>483</b>	<b>510</b>
	Exports							
	2008	2009	2010	2011	2008	2009	2010	2011
	000 m <sup>3</sup> UB				€ million			
Sawn timber	389	564	658	619	54	51	85	83
Wood-based panels	614	580	660	616	195	147	179	173
	000 tonnes							
Pulp products	2	0	1	0	0	0	0	0
Paper & paperboard products	77	45	33	59	69	45	44	52
<b>TOTAL</b>					<b>318</b>	<b>243</b>	<b>308</b>	<b>308</b>

<sup>a</sup> Includes import/export figures for sawn timber, wood-based panels and pulp/paper products only. Data is taken from Ireland's EUROSTAT Joint Forest Sector Questionnaire (JFSQ) returns (2009-2012). Roundwood, sawmill residues and secondary processed timber products are not included. Trade data for the JFSQ is provided by the Central Statistics Office (CSO); [www.cso.ie](http://www.cso.ie)

In value terms, Ireland became a net exporter of sawn timber in 2010. This was for the first time since 1961, when global forest products statistics began to be compiled by FAO<sup>11</sup> (Table 6). It marked the continuation of a trend apparent since 2008 (and more apparent in the case of export volumes) with the gap between the value of exports and imports closing due to the collapse of the domestic construction market and increased levels of exports, mainly to the UK.

Over the period 2008-2011, in line with the reduction in construction activity, the domestic sawn timber market declined by 53%. Over the same period, sawn timber exports grew by 60% (Table 7). In 2011, 45% of the Irish market for sawn softwood timber was supplied by domestic production with the balance being imported. Over the same period, only 3% of the Irish market for sawn hardwood was supplied domestically (Table 7).

**Table 6: Overall balance of trade in the value of timber products (2008-2011)<sup>a</sup>.**

	2008	2009	2010	2011
	€ million			
Sawn timber	-87	-15	11	19
Wood-based panels	87	79	114	105
Pulp products	-20	-22	-31	-45
Paper & paper board products	-451	-263	-269	-281
<b>TOTAL</b>	<b>-471</b>	<b>-221</b>	<b>-175</b>	<b>-202</b>

<sup>a</sup> Negative values show a surplus of imports over exports.

**Table 7: Self-sufficiency in sawnwood (2008-2011)<sup>a,b</sup>.**

	Sawn softwood				Sawn hardwood			
	2008	2009	2010	2011	2008	2009	2010	2011
	000 m <sup>3</sup> UB							
Domestic production	696	772	772	760	1	3	0	1
Exports <sup>c</sup>	387	563	658	619	2	1	1	1
Imports	346	191	205	169	65	41	37	32
<b>TOTAL consumption<sup>d</sup></b>	<b>655</b>	<b>400</b>	<b>319</b>	<b>310</b>	<b>64</b>	<b>43</b>	<b>36</b>	<b>32</b>
% of sawn timber consumption supplied by domestic production	47	52	36	45	2	7	0	3

<sup>a</sup> Central Statistics Office; [www.cso.ie](http://www.cso.ie) & EUROSTAT Joint Forest Sector Questionnaire (2009-2012).

<sup>b</sup> Due to rounding, there are slight differences between the values shown in Table 5 and Table 7.

<sup>c</sup> Sawn timber export data for 2010 has been revised. This is based on up-dated data provided by the CSO.

<sup>d</sup> Total consumption is calculated as follows: domestic production + (imports - exports).

## Woodflow for the Republic of Ireland in 2011

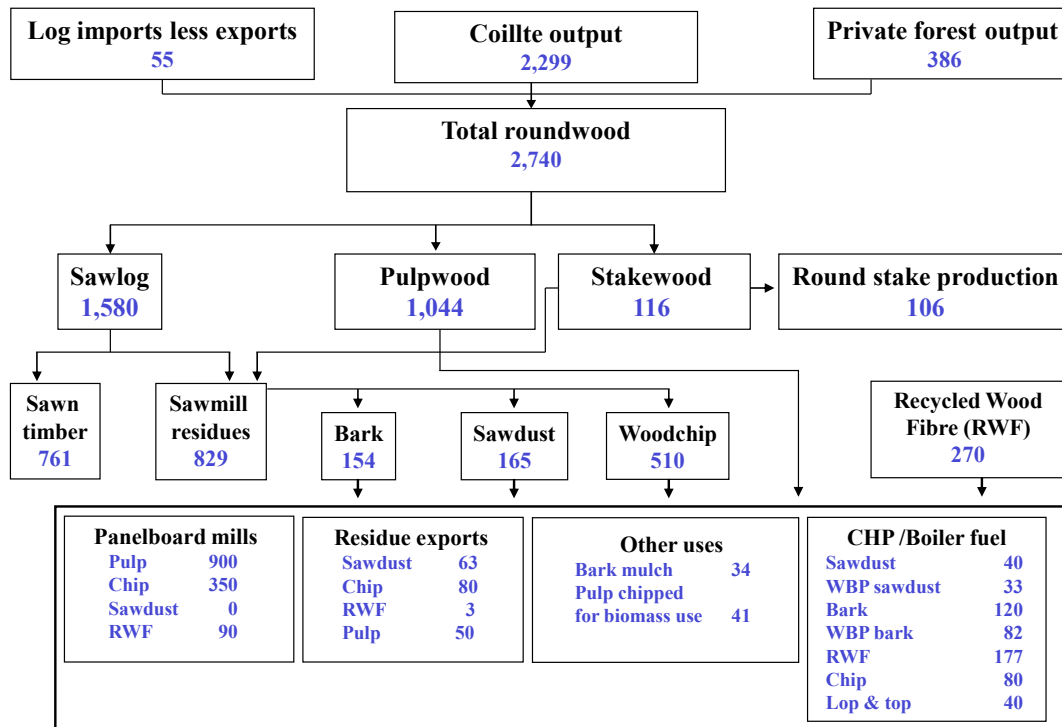
The woodflow for the Republic of Ireland in 2011 is in Figure 1.

### All island woodflow (2009-2011)

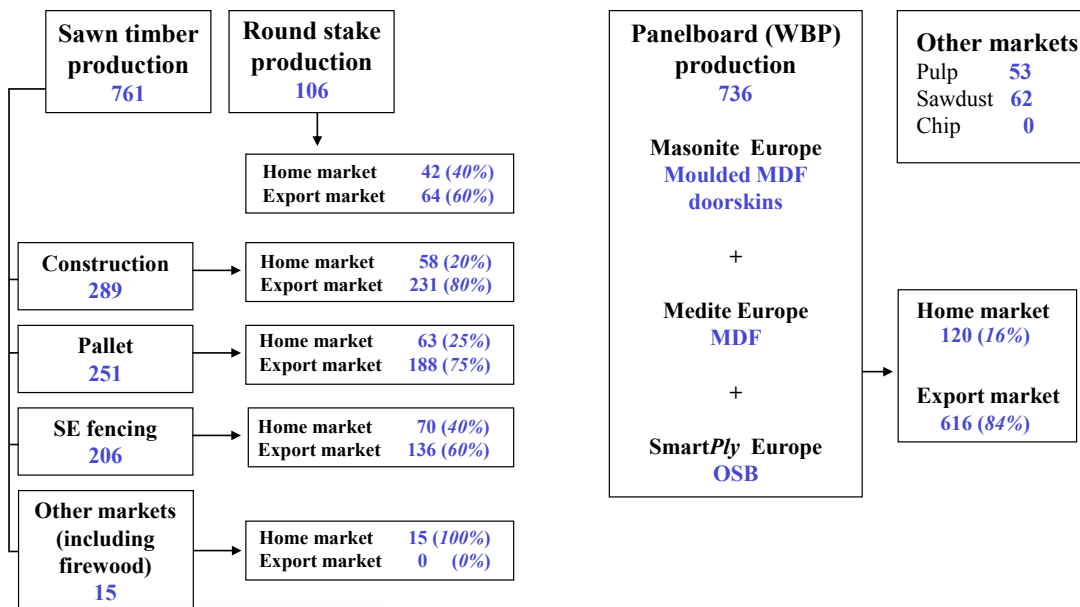
The all island woodflow for the period 2009-2011 is provided in Annex A. In 2011, the volume of roundwood processed on the island of Ireland was 3.43 million m<sup>3</sup>, virtually

<sup>11</sup> <http://faostat.fao.org/site/626/default.aspx#ancor>

**Figure 1: Republic of Ireland Woodflow, 2011 (000 m<sup>3</sup>) overbark**



**Breakdown of 2011 wood products (000 m<sup>3</sup>)**



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unchanged on 2010 (A1). Over the same period, the output of sawn timber declined by 2.6% (A2). Wood-based panel output declined marginally from 0.76 M m<sup>3</sup> in 2010 to 0.74 M m<sup>3</sup> in 2011 (A5), mainly due to the closure in 2011 of Finsa Forest Products' particleboard plant.

## Forest-based biomass use for energy production and relationship with national policies and goals

In 2011, 33% of the roundwood harvested in the Republic of Ireland was used for energy generation, mainly within the forest products sector (Table 8). Since 2006, the use of wood biomass energy in Ireland has resulted in an estimated greenhouse gas (GHG) emission saving of 2.56 million tonnes of carbon dioxide (CO<sub>2</sub>). Wood-biomass fuels used by the sector are shown in Table 9.

In 2012, the output of the forest-based biomass energy sector grew by 4.5% over 2010 (Table 10). In 2011, 214,000 m<sup>3</sup> of firewood was used in Ireland to a value of €31million, showing that it is providing a steady and a growing market for first thinnings (Table 11). In addition, firewood is also harvested by forest owners for their own use.

**Table 8: Use of forest-based biomass and as a proportion of total roundwood harvest in the Republic of Ireland (2010-2011)<sup>a</sup>.**

	2010	2011
	000 m <sup>3</sup> OB RWE	
Forest-based biomass use by Edenderry Power	79	85
Forest-based biomass used for energy production and process drying in sawmills and wood-based panel mills	475	487
Roundwood chipped for primary energy use	39	41
Domestic firewood use	199	214
Short rotation coppice	1	5
Wood pellets and briquettes	121	129
Charcoal	2	2
<b>TOTAL</b>	<b>916</b>	<b>963</b>
Roundwood harvest		
Roundwood available for processing	2,708	2,740
Firewood harvest	199	214
<b>TOTAL</b>	<b>2,907</b>	<b>2,954</b>
Forest-based biomass as a % of total roundwood harvest	31.5	32.6

<sup>a</sup> Source: UNECE Joint Wood Energy Enquiry (JWEE); 2009 -2012.

**Table 9: Wood biomass fuel use by sector in the Republic of Ireland (2008-2011)<sup>a</sup>.**

End use		2008	2009	2010	2011
		000 m <sup>3</sup> OB			
Firewood	Domestic heating	171	184	199	214
Wood chips	Commercial heating	63	53	39	41
Short rotation coppice (SRC)	Commercial heating	1	4	1	5
Wood pellets & briquettes	Domestic and commercial heating	82	110	121	129
Charcoal	Domestic use	2	2	2	5
Wood biomass use for energy <sup>b</sup> and forest products industry	Process drying/heating / combined heat & power	384	438	554	572
<b>TOTAL</b>		<b>703</b>	<b>791</b>	<b>916</b>	<b>966</b>
Use by the energy and forest products sectors (%)		55	55	60	59

<sup>a</sup> Source: UNECE Joint Wood Energy Enquiry (JWEE) return for Ireland (2009-2012).

<sup>b</sup> This includes co-firing of wood biomass at Edenderry Power; [www.edenderrypower.ie](http://www.edenderrypower.ie)

**Table 10: Output use of forest-based biomass and associated greenhouse gas emissions mitigation in the Republic of Ireland (2008-2011)<sup>a</sup>.**

Unit		2008	2009	2010	2011
		Output			
Heat	TJ	4,857	5,273	6,306	6,604
Electricity	TJ	112	240	372	378
TOTAL	TJ	4,969	5,513	6,678	6,982
CO <sub>2</sub> abated	000 tonnes	380	422	511	534

<sup>a</sup> UNECE Joint Wood Energy Enquiry (2009-2012).

**Table 11: Volume and value of the domestic firewood market in the Republic of Ireland (2008-2011)<sup>a</sup>.**

	000 m <sup>3</sup> OB	€ million
2008	171	24.83
2009	184	26.75
2010	199	28.80
2011	214	30.97

<sup>a</sup> drima market research study

### Box 1: Potential socio-economic contribution of bioenergy.

In 2012, a socio-economic study carried out by DKM Economic Consultants on behalf of the Irish Bioenergy Association (IrBEA)<sup>a</sup> stated in relation to the achievement of 2020 bioenergy targets<sup>b</sup>:

- It could create over 3,600 jobs in the bioenergy sector.
- An investment of €1.5 billion in the sector would be needed to meet Ireland's 2020 targets for renewable electricity (RES-E), renewable heat (RES-H) and renewable transport (RES-T), of which an estimated 55% would be spent in Ireland.
- It would reduce the cost of energy imports by 7.5%.
- The use of bioenergy for heating would reduce costs for domestic and industrial users.
- The achievement of biomass energy targets would reduce Ireland's greenhouse gas emissions (GHG) by over 3 million tonnes of carbon dioxide (CO<sub>2</sub>) per annum by 2020.
- The value of the emission reduction could be €94 million by 2020 (based on the level of carbon tax envisaged in the Government's National Recovery Plan 2011-2014<sup>c</sup>).

<sup>a</sup> <http://www.irbea.ie/>

<sup>b</sup> [http://www.seai.ie/Renewables/Bioenergy\\_Roadmap.pdf](http://www.seai.ie/Renewables/Bioenergy_Roadmap.pdf)

<sup>c</sup> <http://www.budget.gov.ie/The%20National%20Recovery%20Plan%202011-2014.pdf>

## Contribution of renewables to heat and electricity demand

### Renewable heat (RES-H)<sup>12</sup>

In 2011, renewable heat (RES-H) provisionally accounted for 5% of all thermal energy and was one year late in meeting the national target of 5% RES-H for 2010. RES-H grew from 2.6% in 1990 to 5.0 % in 2011.

Industrial biomass energy use (mostly in the wood, food and cement sectors) accounted for 68% of all thermal renewable energy used in 2011. This corresponds to 2.9% of all thermal energy use in Ireland. Between 1990 and 2006, industrial biomass energy use increased by 167% (6% average annual growth). However, there has recently been a decrease in industrial RES-H with an average annual reduction of 2% since 2006. The industrial biomass demand in 2011 remained unchanged at the 2010 demand level.

Residential biomass energy use increased by 9.5% between 1990 and 2011 (0.5% average annual growth). However the average annual growth rate increased in recent years to 18% between 2005 and 2010.

### Renewable electricity (RES-E)<sup>13</sup>

In 2011, the share of electricity generated from renewable energy sources (RES-E) was 17.6%. Wind energy accounted for over 13% of all electricity generation in 2011, hydro accounted for 2.6% and the remaining 2% was from bioenergy sources (mainly biomass co-firing and landfill gas). In 2011, wind power installed generating capacity reached 1,631 MW.

The EU Directive 2001/77/EC target for Ireland of 13.2% RES-E by 2010 was exceeded with RES-E at 14.8% in 2010. However, the national target of 15% RES-E by 2010 was narrowly missed, due to lower than average wind speeds and rainfall levels in that year. The breakdown of gross electrical consumption by fuel source for the period 1990-2011 is shown in Table 12.

<sup>12</sup> [http://www.seai.ie/Publications/Statistics\\_Publications/Renewable\\_Energy\\_in\\_Ireland\\_2011.pdf](http://www.seai.ie/Publications/Statistics_Publications/Renewable_Energy_in_Ireland_2011.pdf)

<sup>13</sup> [http://www.seai.ie/Publications/Statistics\\_Publications/Renewable\\_Energy\\_in\\_Ireland\\_2011.pdf](http://www.seai.ie/Publications/Statistics_Publications/Renewable_Energy_in_Ireland_2011.pdf)



**Table 12: Gross electricity consumption percentage by fuel source in the Republic of Ireland (1990-2011) (provisional)<sup>a,b</sup>.**

	1990	1995	2000	2005	2006	2007	2008	2009	2010	2011
Gross electricity consumption % by fuel source										
Coal	39.8	36.5	27.0	26.5	22.9	21.5	19.0	16.0	17.2	19.7
Peat	17.4	13.5	8.5	8.5	7.8	7.7	10.0	10.4	8.6	9.2
Oil	12.5	20.3	27.5	20.5	17.8	13.7	11.0	9.3	8.8	6.8
Gas	28.5	28.1	35.1	38.7	45.3	51.1	53.9	56.5	59.0	54.6
Renewables	1.8	1.5	1.8	2.8	3.6	4.1	5.3	6.5	5.6	8.9
Net imports	0.0	0.0	0.1	3.0	2.6	1.9	0.7	1.2	0.7	0.8
% of electrical consumption supplied by biomass <sup>c</sup>	0.0	0.0	0.0	0.04	0.06	0.04	0.12	0.25	0.50	0.61

<sup>a</sup> [http://www.seai.ie/Publications/Statistics\\_Publications/Renewable\\_Energy\\_in\\_Ireland\\_2011.pdf](http://www.seai.ie/Publications/Statistics_Publications/Renewable_Energy_in_Ireland_2011.pdf)

<sup>b</sup> [http://www.cso.ie/px/sei/Dialog/varval.asp?ma=SEI04&ti=Fuels+Used+in+Electricity+Production+\(ktoe\)+by+Fuel+Type+and+Year&path=../DATABASE/SEI/EnergyBalance/Statistics/&lang=1](http://www.cso.ie/px/sei/Dialog/varval.asp?ma=SEI04&ti=Fuels+Used+in+Electricity+Production+(ktoe)+by+Fuel+Type+and+Year&path=../DATABASE/SEI/EnergyBalance/Statistics/&lang=1)

<sup>c</sup> Data as provided by the Sustainable Energy Authority of Ireland (SEAI) does not split biomass use by type. As such, the consumption total includes electricity generated by all biomass sources, including tallow and wood-based biomass, although the latter is predominant source.

## Abbreviations

Abbreviation	Description		
AD	Anaerobic digestion	PB	Particleboard/chipboard
BF	Boiler fuel	PCRW	Post-consumer recovered wood
CHP	Combined heat & power	REFIT	Renewable energy feed in tariff
GHG	Greenhouse gas	RES	Renewable energy source
kW	Kilowatt	RES-E	Renewable energy in electricity
m <sup>3</sup>	Cubic metre	RES-H	Renewable energy for heat and cooling
MDF	Medium density fibreboard	RES-T	Renewable energy in transport
MWe	Megawatt electricity	RWE	Roundwood equivalent
MWh	Megawatt hour	SE	Square edged
MWth	Megawatt thermal	SEAI	Sustainable Energy Authority of Ireland
NA	Not available	TJ	Terajoule
OB	Overbark	TPER	Total primary energy requirement
OSB	Oriented strand board	UB	Underbark
PAO	Planed all over	WBP	Wood-based panels
		WBP SD	Sawdust produced during the sanding of wood-based panels

## Annex A: All island woodflow (2009-2011) and breakdown of use categories

### A1: Softwood fibre processed<sup>a</sup>.

Item	2009			2010			2011		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
<b>000 m<sup>3</sup> OB</b>									
<b>Roundwood source</b>									
Imports less exports <sup>b</sup>	-63	255	192	28	260	288	55	185	240
NIFS <sup>c</sup>		437	437		450	450		473	473
Coillte <sup>d</sup>	2,354		2,354	2,217		2,217	2,299		2,299
Private <sup>e</sup>	130	30	160	463	30	493	386	30	416
<b>Roundwood processed</b>	<b>2,421</b>	<b>722</b>	<b>3,143</b>	<b>2,708</b>	<b>740</b>	<b>3,448</b>	<b>2,740</b>	<b>688</b>	<b>3,428</b>
<b>Processed by category</b>									
Sawlog	1,602	447	2,049	1,603	458	2,061	1,580	427	2,007
Stakewood	88	125	213	118	128	246	116	117	233
Pulpwood	731	150	881	987	154	1,141	1,044	144	1,188
<b>Roundwood processed</b>	<b>2,421</b>	<b>722</b>	<b>3,143</b>	<b>2,708</b>	<b>740</b>	<b>3,448</b>	<b>2,740</b>	<b>688</b>	<b>3,428</b>
PCRW <sup>f,g</sup>	200	60	260	280	60	340	270	60	330
<b>Fibre total including PCRW</b>	<b>2,621</b>	<b>782</b>	<b>3,403</b>	<b>2,988</b>	<b>800</b>	<b>3,788</b>	<b>3,010</b>	<b>748</b>	<b>3,758</b>

<sup>a</sup> Roundwood available for processing excludes both hardwood and firewood.

<sup>b</sup> Sources: Coillte, NIFS, Forestry Commission (GB), trade estimates.

<sup>c</sup> Source: Northern Ireland Forest Service (NIFS).

<sup>d</sup> Source: Coillte.

<sup>e</sup> Sources: Private forest management companies, Forestry Commission (GB).

<sup>f</sup> Sources: EPA, Environment Service (NI), Trade estimates, Joint wood Energy Enquiry (JWEE) [2010-2012], WRAP UK.

<sup>g</sup> PCRW: Post consumer recovered wood.

### A2: Sawmill input/output.

Item	2009			2010			2011		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
<b>000 m<sup>3</sup> OB</b>									
<b>Input<sup>a</sup></b>									
Sawlog	1,602	447	2,049	1,603	458	2,061	1,580	427	2,007
Stakewood	88	125	213	118	128	246	116	117	233
<b>TOTAL</b>	<b>1,690</b>	<b>572</b>	<b>2,262</b>	<b>1,721</b>	<b>586</b>	<b>2,307</b>	<b>1,696</b>	<b>544</b>	<b>2,240</b>
<b>Output<sup>b,c</sup></b>									
Sawn timber	772	215	987	772	220	992	761	205	966
Round stakes	80	107	187	107	110	217	106	101	207
Sawmill residues	838	250	1,088	842	256	1,098	829	238	1,067
<b>TOTAL</b>	<b>1,690</b>	<b>572</b>	<b>2,262</b>	<b>1,721</b>	<b>586</b>	<b>2,307</b>	<b>1,696</b>	<b>544</b>	<b>2,240</b>

<sup>a</sup> Sources: Coillte, NIFS, private forest management companies, Forestry Commission (GB) and trade estimates.

<sup>b</sup> Sawmill output data checked against industry estimates

<sup>c</sup> Sources: Forestry Commission (GB) and industry expert opinion



### A3: Sawmill output by market/end use<sup>a,b,c</sup>

	2009						2010						2011								
	ROI		NI		Total		ROI		NI		Total		ROI		NI		Total				
	Hm	Exp	T	Hm	Exp	T	Hm	Exp	T	Hm	Exp	T	Hm	Exp	T	Hm	Exp	T			
Construction timber	119	175	294	42	28	70	364	53	240	293	37	38	75	368	58	231	289	35	35	70	359
Pallet timber	90	165	255	20	27	47	302	71	184	255	20	26	46	304	63	188	251	20	23	43	294
SE fencing <sup>d</sup>	59	150	209	45	47	92	301	52	157	209	47	48	95	304	70	136	206	44	44	88	294
Round stakes	20	60	80	47	60	107	187	30	77	107	50	60	110	217	42	64	106	40	61	101	207
Other markets	14	0	14	6	0	6	20	15	0	15	4	0	4	19	15	0	15	4	0	4	19
<b>TOTAL</b>			<b>852</b>			<b>322</b>	<b>1,174</b>			<b>879</b>			<b>330</b>	<b>1,209</b>			<b>867</b>			<b>306</b>	<b>1,173</b>

<sup>a</sup> Sawmill output data has been checked against industry estimates.

<sup>b</sup> Hm: home market; Exp: export market; T: total

<sup>c</sup> Sources: Forestry Commission (GB) & industry expert opinion.

<sup>d</sup> SE: Square-edged.

#### A4: Feedstock for WBP, biomass energy & other uses.

	2009			2010			2011		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
<b>000 m<sup>3</sup> OB</b>									
Pulpwood <sup>a</sup>	731	150	881	987	154	1,141	1,044	144	1,188
PCRW <sup>b</sup>	200	60	260	280	60	340	270	60	330
Sawmill residues <sup>c</sup>									
Bark	154	41	195	157	42	199	154	34	188
Sawdust	167	47	214	168	48	216	165	42	207
Woodchip	517	144	661	517	148	665	510	146	656
Woodchip from stakes	0	18	18	0	18	18	0	16	16
WBP residues <sup>d</sup>									
Bark	61	0	61	65	0	65	82	0	82
Sawdust	33	0	33	36	0	36	33	0	33
Woodchip	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>	<b>1,863</b>	<b>460</b>	<b>2,323</b>	<b>2,210</b>	<b>470</b>	<b>2,680</b>	<b>2,258</b>	<b>442</b>	<b>2,700</b>

<sup>a</sup> Source: Industry expert opinion.

<sup>b</sup> Sources: Industry expert opinion and the Environmental Protection Agency (EPA).

<sup>c</sup> Source: Industry expert opinion.

<sup>d</sup> Source: Industry expert opinion.

#### A5: WBP input/output<sup>a,b,c</sup>.

	2009			2010			2011		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
<b>000 m<sup>3</sup> OB</b>									
Pulpwood	676		676	850		850	900		900
PCRW <sup>d</sup>	70		70	70		70	90		90
Sawdust <sup>e</sup>	50		50	50		50	0		0
Woodchip <sup>f</sup>	490		490	430		430	350		350
<b>TOTAL input</b>	<b>1,286</b>		<b>1,286</b>	<b>1,400</b>		<b>1,400</b>	<b>1,340</b>		<b>1,340</b>
<b>TOTAL output<sup>g,h</sup></b>	<b>709</b>		<b>709</b>	<b>758</b>		<b>758</b>	<b>736</b>		<b>736</b>

<sup>a</sup> In March/April 2009, Spanboard ceased producing chipboard in Coleraine, Co. Derry.

<sup>b</sup> This input is for the production of wood-based panels. This excludes boiler fuels. These are detailed overleaf.

<sup>c</sup> In January 2011, Finsa Forest Products Ltd. ceased producing particleboard in Scariff, Co. Clare.

<sup>d</sup> Sources: EPA & industry expert opinion

<sup>e</sup> Source: Forestry Commission (GB) & industry expert opinion.

<sup>f</sup> Sources: Board mill survey & industry expert opinion.

<sup>g</sup> All Ireland WBP output includes the output of the all WBP plants operating on the island of Ireland. These are Masonite Europe, Medite Europe and SmartPly Europe.

## A6: Feedstock for biomass energy & other uses.

	Biomass energy 2009			Biomass energy 2010			Biomass energy 2011			Other uses 2009			Other uses 2010			Other uses 2011		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
<b>Pulpwood</b>																		
Domestic/industrial heating fuel <sup>a,b,c</sup>	55	25	80	77	25	102	41	25	66									
Bio energy <sup>d</sup>	0	75	75	0	75	75	0	75	75									
Other markets																		
Exported <sup>e</sup>	0	0	0															
TOTAL	55	100	155	77	100	177	41	100	141	0	50	50	60	54	114	103	44	147
<b>PCRW</b>																		
CHP/WBP boiler fuel (BF) <sup>f</sup>	130	20	150	208	20	228	177	20	197	0	0	0	2	40	42	3	40	43
Exported																		
TOTAL	130	20	150	208	20	228	177	20	197	0	40	40	2	40	42	3	40	43
<b>Bark</b>																		
Sawmill bark used for biomass energy <sup>g</sup>	100	31	131	130	30	160	120	25	145									
WBP bark used for biomass energy <sup>h</sup>	61	61	61	65	0	65	82	0	82									
Bark mulch <sup>i</sup>	0	0	0															
TOTAL	161	31	192	195	30	225	202	25	227	54	10	64	27	12	39	34	9	43
<b>Sawdust</b>																		
Sander line sawdust used for WBP BF	33		33	36	0	36	33	0	33									
Sawdust used as BF by sawmills	77	20	97	54	13	67	40	5	45									
Other energy use				9	9	9	0	0	0									
Exported																		
Pellet manufacture <sup>j</sup>	30	27	57	30	20	50	62	22	84	10	0	10	25	15	40	63	15	78
TOTAL	140	47	187	129	33	162	135	27	162	10	0	10	25	15	40	63	15	78
<b>Woodchip<sup>k</sup></b>																		
Woodchip used for CHP	0	44	44	52	65	117	80	60	140									
Woodchip exports																		
Pellet manufacture	0	80	80	56	56	56	0	60	60	27	20	47	33	27	60	80	26	106
Other uses including animal bedding	0	0	0	2	2	2				0	18	18	0	18	18	0	16	16
TOTAL	0	124	124	54	121	175	80	120	200	27	38	65	33	45	78	80	42	122
<b>TOTAL</b>	<b>486</b>	<b>322</b>	<b>808</b>	<b>663</b>	<b>304</b>	<b>967</b>	<b>635</b>	<b>292</b>	<b>927</b>	<b>91</b>	<b>138</b>	<b>229</b>	<b>147</b>	<b>166</b>	<b>333</b>	<b>283</b>	<b>150</b>	<b>433</b>

<sup>a</sup> Sources: SEAI survey (ROI), industry expert opinion.

<sup>b</sup> Source: Industry expert opinion.

<sup>c</sup> This includes pulp used for the manufacture of wood pellets.

<sup>d</sup> Source: Forestry Commission (GB).

<sup>e</sup> Source: Industry expert opinion.

<sup>f</sup> Sources: EPA survey & industry expert opinion.

<sup>g</sup> Sources: SEAI, Forestry Commission (GB).

<sup>h</sup> Sources: Forestry Commission (GB) & industry expert opinion.

<sup>i</sup> Sources: Industry expert opinion.

<sup>j</sup> Source: Industry expert opinion.

<sup>k</sup> Sources: Forestry Commission (GB) & industry expert opinion.

