



Processing/Products No. 48

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- Roundwood harvest (including firewood) in the Republic of Ireland in 2016 was 3.36 million m³, the highest level since records began.
- Softwood available for processing in 2016 was 3.11 million m³.
- There was strong demand for wood fibre across all assortments.
- Product output in 2016 comprised 985,000 m³ of sawn softwood, 149,000 m³ of round stakes and 774,000 m³ of wood-based panels.
- The demand for wood fibre for the production of forest-based biomass energy sector increased by 21% over 2015.
- In 2016, 34% of the roundwood available for use in the Republic of Ireland was used for energy purposes.

Woodflow and forest-based biomass energy use on the island of Ireland (2016)

Gordon Knaggs¹ and Eoin O’Driscoll²

Introduction

This COFORD Connects Note provides the 2016 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 UNECE Committee on Forests and the Forest Industry, 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^{3,4}.

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

In 2016, 3.36 million m³ of roundwood was harvested in the Republic of Ireland (Table 1)⁵, an increase of 3.2% over 2015, and represents a continuation of the trend for increased levels of harvest over the 2012-2016 period.

Table 1: Total roundwood harvest (including firewood) in the Republic of Ireland (2012-2016).

Harvest type	2012	2013	2014	2015	2016
	000 m ³ OB				
Coillte	2,485	2,588	2,517	2,470	2,733
Private	354	448	597	780	622
TOTAL	2,839	3,036	3,114	3,250	3,355

¹. gordonknaggs@eircom.net

². eoin@drima.com

³. <http://faostat.fao.org/site/626/default.aspx#ancor>

⁴. Domestic production of harvested wood products (mainly sawn timber and panel products) forms part of the national calculation of greenhouse gas (GHG) emissions and removals under the Kyoto Protocol which runs to the end of 2020.

⁵. Historic harvest and trade data for the period 1961-2015 is on the FAOSTAT website: <http://faostat.fao.org/site/626/default.aspx#ancor>

COFORD

Department of Agriculture, Food and the Marine, Agriculture House, Kildare Street, Dublin 2, Ireland.

Telephone: +353 1 607 2487

Email: fsd@agriculture.gov.ie

<http://www.coford.ie>



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

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In 2016, 3.11 million cubic metres of roundwood was available for processing in the Republic of Ireland⁶, a 1.4% increase on 2015. However, the level of harvest in the private sector was 20% lower than in 2015 (Table 2). This partly reflects market conditions and may also be related to the higher levels of harvest by Coillte.

Table 2: Roundwood available for processing in the Republic of Ireland (2012-2016).

Item	2012	2013	2014	2015	2016
	000 m ³ OB				
Commercial softwood					
Imports less exports	-18	49	68	40	-16
Coillte	2,269	2,474	2,434	2,377	2,600
Private sector	343	328	447	646	518
Commercial hardwood					
Imports less exports	-	-1	-	-	-
Coillte	1	2	6	3	5
Private sector	1	1	-	-	1
TOTAL	2,596	2,853	2,955	3,066	3,108

Wood fibre sources for the processing and wood energy sectors, and residue outturn are shown in Table 3; uses are in Table 4^{7,8}. Wood residues are primarily used as a fuel for sawmill kilns and for process heat in the manufacture of wood-based panels (WBP).

Table 3: Sources of softwood wood fibre (2012-2016)⁹.

Fibre source	2012	2013	2014	2015	2016
	000 m ³ OB RWE ¹⁰				
Roundwood ¹¹	2,594	2,851	2,949	3,063	3,102
Sawmill residues ¹²	853	897	925	949	1,007
Wood-based panel residues ¹³	104	110	114	114	115
Residue imports	-	108	49	47	144
Harvest residues	30	30	60	60	60
Post-consumer recovered wood (PCRW)	250	250	300	300	300
TOTAL	3,882	4,246	4,397	4,533	4,728

In 2016, sawmill roundwood intake was 2.14 million m³, which was converted to 0.99 million m³ of sawn timber and 0.15 million m³ of round stakes (Tables 4 & 5). In 2016, sawmill roundwood intake increased by 5.2% over 2015.

In 2016, 774,000 m³ of wood-based panels (WBP) were produced from an intake of 1.40 million m³ of wood fibre¹⁴, virtually unchanged over 2015 (Table 5). A very high proportion (81%) of WBP manufacture was exported (628,000 m³) to a value of €206 million (Table 6). WBP exports mainly comprised orientated strand board (OSB) and medium density fibreboard (MDF), manufactured by Masonite, Medite and SmartPly. Key export markets were the UK and the Benelux countries.

Table 4: Uses of softwood fibre (2012-2016).

Fibre use	2012	2013	2014	2015	2016
	000 m ³ OB RWE				
Sawmilling	1,622	1,710	1,815	1,867	1,977
Round stake	131	117	147	169	164
Wood-based panels	1,276	1,407	1,377	1,370	1,395
Wood for energy use by the power generation and forest products sector ¹⁵	611	704	760	796	844
Other uses					
Horticultural bark mulch	40	50	40	30	30
Wood chip for heating ¹⁶	30	100	100	114	117
Export of forest product residues	112	88	88	36	44
Pellet manufacture	60	70	70	151	106
Other uses including shavings and animal bedding	-	-	-	-	51
TOTAL	3,882	4,246	4,397	4,533	4,728

Table 5: Production of sawnwood and wood-based panels (2012-2016)^{17,18}.

Product	2012	2013	2014	2015	2016
	000 m ³				
Construction timber	297	313	478	491	519
Pallet/package	258	272	209	221	234
Square edge fencing	211	223	203	203	215
Other	15	16	17	16	17
TOTAL sawn wood	781	824	907	931	985
TOTAL wood-based panels	704	739	773	769	774

⁶ Firewood is excluded.

⁷ UNECE Joint Wood Energy Enquiry (2013-2017) and EUROSTAT Joint Forest Sector Questionnaire (2013-2017).

⁸ Wood fibre that is reused is counted twice in this model.

⁹ UNECE Joint Wood Energy Enquiry (2013-2017) & EUROSTAT Joint Forest Sector Questionnaire (2013-2017).

¹⁰ RWE: roundwood equivalent

¹¹ Data are from Table 1.

¹² A breakdown of sawmill residues is shown in Annex A4.

¹³ Includes bark (from the debarking lines at MEDITE & SMARTPLY and sawdust from the sanding of wood-based panels. A breakdown of WBP residues is provided in Annex A4.

¹⁴ This includes pulpwood, wood chips, sawdust and post-consumer recovered wood (PCRW).

¹⁵ Wood biomass is used by the forest products sector for process drying, heating and for the generation of electricity (s including the use of wood biomass for co-firing by Bord na Móna at Edenderry).

¹⁶ Primarily used for the production of space or production heat.

¹⁷ EUROSTAT Joint Forest Sector Questionnaire (2013-2017).

¹⁸ In 2015 and in 2016, sawmill output for 2014 and 2015 was estimated by a sawmill survey. This has provided a better estimate of products manufactured and the volume of output.

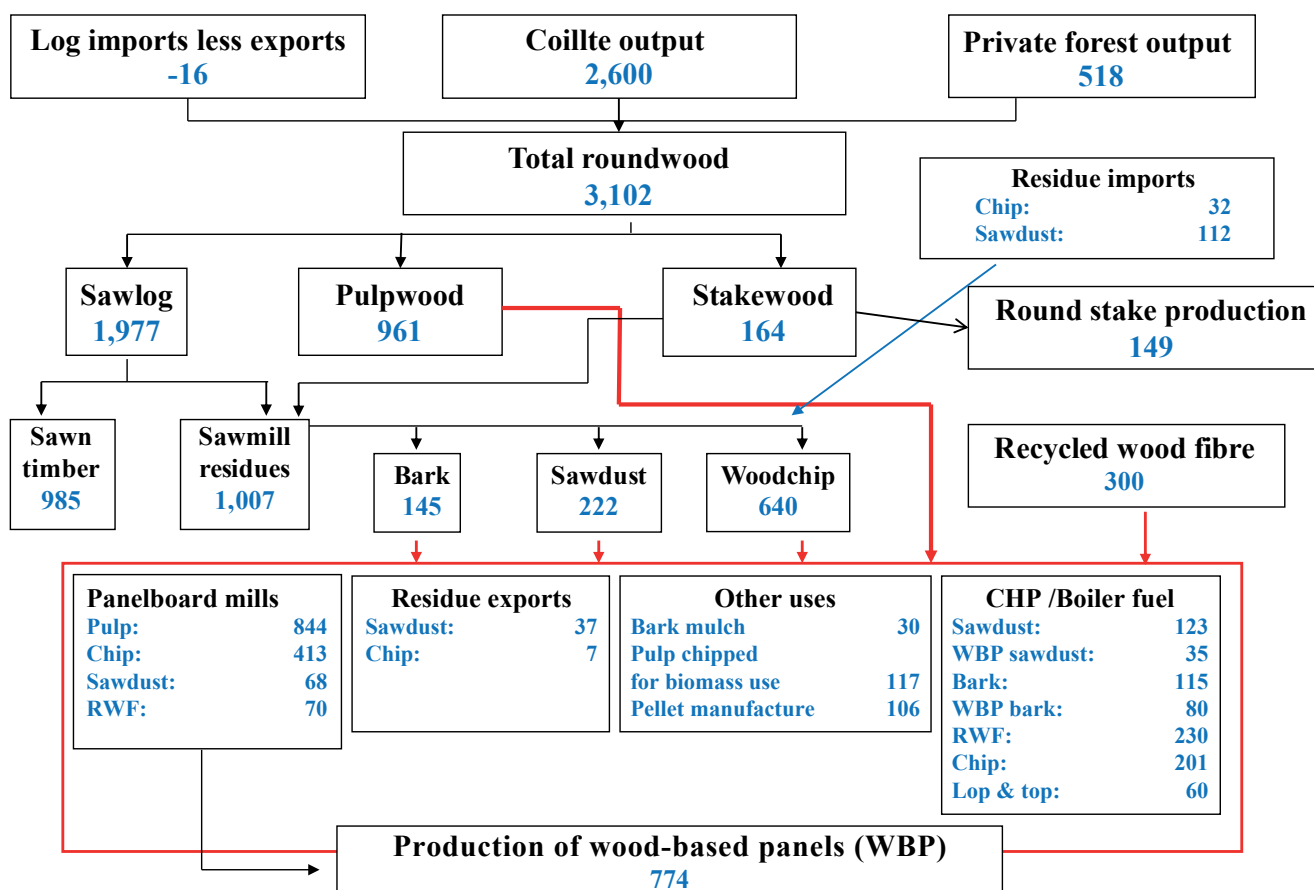
Trade in timber products, trade balance and self-sufficiency in sawnwood

Forest product trade data are under review by the Department of Agriculture, Food and the Marine and the Central Statistics Office. On completion of the review the data will be published as a Supplement to Woodflow. The following tables will be included in this supplement:

- **Table 6:** Timber and paper products trade, volume and value (2012-2016)
- **Table 7:** Overall balance of the trade in the value of primary forest products (2012-2016)
- **Table 8:** Level of self-sufficiency in sawnwood (2012-2016)¹⁹.

Woodflow for the Republic of Ireland in 2016

Figure 1: Woodflow for the Republic of Ireland for 2016 (000 m³) [overbark]



¹⁹ Central Statistics Office; www.cso.ie & EUROSTAT Joint Forest Sector Questionnaire (2013-2017).

All island woodflow (2014-2016)

The all island woodflow for the period 2014-2016 is provided in Annex A. In 2016, the volume of roundwood processed on the island of Ireland was 3.81 million m³, a 2.5 % increase over 2015 (A1). Over the same period the output of sawmill sector (i.e. sawn timber + round stakes) increased by 6.2% (A2), while wood-based panel output (WBP) increased by 0.7% over 2015 (A5).

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

In 2016, 34% of the roundwood used in the Republic of Ireland was used for energy generation, mainly within the forest products sector (Table 9).

In 2016, the output of the forest-based biomass energy sector grew by 22% over 2015 (Table 10). This increase was largely driven by a substantial increase in the use of wood biomass at Bord na Móna, Edenderry, which was largely met by imports. The use of wood for energy continued to increase, and resulted in an estimated in greenhouse gas (GHG) emission saving of 0.76 million tonnes of CO₂. Emission savings were up almost 22% on the 2015 level of 0.63 million tonnes (Table 10). As a comparison, total GHG emissions in 2015 were 59.9 million tonnes CO₂ equivalent²⁰.

In 2016, 237,000 m³ of firewood was used in the Republic of Ireland to a value of €34 million, which provides a good market for first thinnings (Table 11). A small proportion of the supply - 6,000 m³ - was imported. In addition, firewood is also harvested by forest owners for their own use. Wood-biomass fuels used by the sector are shown in Table 9.

Table 9: Use of forest-based biomass and as a proportion of total roundwood harvest (2012-2016)²¹.

Item	2012	2013	2014	2015	2016
	000 m ³ OB RWE				
Wood-biomass use by the energy ²² and forest products industry	611	704	760	796	1,049
Roundwood chipped for primary energy use ²³	30	100	100	114	117
Domestic firewood use	225	230	235	237	237
Short rotation coppice (SRC)	5	5	5	5	20
Wood pellets and briquettes	144	161	150	154	160
Charcoal	2	1	1	1	1
TOTAL	1,017	1,201	1,251	1,307	1,584
Of which supplied from domestic resources	910	1,034	1,166	1,132	1,139
Roundwood available for processing	2,594	2,852	2,975	3,016	3,104
Firewood used	225	230	235	237	237
TOTAL roundwood use²⁴	2,819	3,082	3,210	3,253	3,341
Wood-biomass use as a % of total roundwood used	32.3	33.5	36.3	34.8	34.1

²⁰ <http://www.epa.ie/pubs/reports/air/airemissions/ghgemissions/GHG%201990-2015%20April%202017.pdf>

²¹ UNECE Joint Wood Energy Enquiry (JWEE); 2013-2017

²² Includes co-firing of wood biomass at Edenderry Power; www.edenderrypower.ie

²³ Primarily used for space and process heating

²⁴ Roundwood use includes the use of domestically sourced and imported roundwood

²⁵ UNECE Joint Wood Energy Enquiry (2013-2017)

²⁶ drima market research study

Table 10: Heat and electrical energy output from forest-based biomass, and associated greenhouse gas emissions savings (2012-2016)²⁵.

Item	Unit	2012	2013	2014	2015	2016
		Output				
Heat	TJ	6,808	7,002	7,562	7,730	9,017
Electricity	TJ	477	491	530	446	932
TOTAL	TJ	7,285	7,493	8,092	8,176	9,949
CO ₂ emission savings	000 tonnes	557	573	619	625	761

Table 11: Volume and value of the domestic firewood market in the Republic of Ireland (2012-2016)²⁶.

Year	000 m ³ OB	€ million
2012	225	32.56
2013	230	33.33
2014	235	34.05
2015	237	34.34
2016	237	34.34

In 2015, more than 6 million tonnes of CO₂ emissions were avoided in the Republic of Ireland through deployed energy efficiency and renewable energy technologies²⁷. Ireland's progress towards meeting its renewable energy targets are shown in Table 12²⁸.

Table 12: Renewable energy progress to targets²⁹.

Energy type	Progress towards targets by year					Targets	
	2010	2011	2012	2013	2014	2010	2020
RES-E (normalised)	14.5	17.3	19.5	20.8	22.7	15	40
RES-T	2.4	3.8	4.0	4.9	5.2	3	10
RES-H	4.5	4.9	5.1	5.5	6.6	5	12
Directive (2009/29/EC)	5.6	6.5	7.1	7.6	8.6	-	16

Data sources & data consistency

Data for Woodflow 2016 is taken from a number of sources as follows.

Roundwood harvest

The domestic roundwood harvest in the Republic of Ireland is estimated by a survey³⁰ of: forest management companies, investment funds, producer groups and co-ops. An additional 5% is added to account for those not covered by the survey.

Roundwood imports and exports

Import and exports of roundwood are provided by survey. Those surveyed include forest management companies, Coillte, the Northern Ireland Forest Service (NIFS) and sawmills. This data is also checked with similar data provided by the Central Statistics Office (CSO).

Sawmill output

Output of the sawmill sector is estimated by survey.

Wood-based panel output

Output of the wood-based panel sector is by survey of WBP manufacturers.

Trade in forest products

Forest products trade data are provided by the Central Statistics Office (CSO)³¹.

Wood energy data

Wood energy data is from an annual energy survey by the Sustainable Energy Authority of Ireland (SEAI)³². Additional data are from the forest sector surveys and an annual survey for the production of the UNECE Joint Wood Energy Enquiry (JWEE).

Data checking and verification

Data checking and verification is carried out in collaboration with the CSO, and are reviewed by industry experts.

Actual and forecast harvest (2011-2015)

Actual and forecast harvest (net realisable volume (NRV) for the Republic of Ireland has been compared for the period 2015. NRV forecast data is taken from the All-Ireland Roundwood Production Forecast (2011-2028)³³. Actual harvest is from the COFORD Connects Woodflow Series³⁴.

Over the period 2011-2015, private sector harvest was 129% of NRV forecast, while Coillte harvest was 88% of NRV forecast. Over the same period, the combined harvest (i.e. Coillte + private) was 93% of NRV forecast (Table 13).

Table 13: Actual and forecast roundwood harvest in the Republic of Ireland (2011-2015).

Harvest type	2011			2012			2013		
	A	F	%	A	F	%	A	F	%
	000 m ³ OB								
Private	460	371	124	354	384	92	448	369	121
Coillte	2,492	2,979	84	2,485	2,737	91	2,588	2,798	92
Total	2,952	3,350	88	2,839	3,121	91	3,036	3,167	96

Harvest type	2014			2015			Total (2011-2015)			
	A	F	%	A	F	%	A	F	D	%
	000 m ³ OB									
Private	597	425	140	780	504	155	2,639	2,053	586	129
Coillte	2,517	2,906	87	2,470	2,844	87	12,552	14,264	-1,712	88
Total	3,114	3,331	93	3,250	3,348	97	15,191	16,317	-1,126	93

Notes

A: Actual harvest. F: Forecast harvest. D: Difference % = actual harvest expressed as a % of NRV forecast

²⁷ http://forecasts.seai.ie/Publications/Statistics_Publications/Energy_Modelling_Group_Publications/Ireland%E2%80%99s-Energy-Targets-Progress-Ambition-and-Impacts.pdf

²⁸ At the time of writing, neither data for 2015 nor 2016 was available.

²⁹ <http://www.dcae.gov.ie/documents/Ireland%20Third%20report%20on%20NREAP.pdf>

³⁰ Survey data are confidential and are reported in aggregate.

³¹ www.cso.ie

³² www.seai.ie

³³ http://www.coford.ie/media/coford/content/publications/projectreports/forecast_31Jan11.pdf

³⁴ www.coford.ie

Abbreviations

Abbreviation	Description
CSO	Central Statistics Office
CO ₂	Carbon dioxide
CHP	Combined heat & power
GB	Great Britain
FAO	Food and Agriculture Organisation of the United Nations
GHG	Greenhouse gas
ITTO	International Tropical Timber Organisation
JFSQ	Joint Forestry Section Questionnaire (Eurostat)
JWEE	Joint Wood Energy Enquiry (UNECE)
ktoe	Kilotonne of oil equivalent
m ³	Cubic metre
MDF	Medium density fibreboard
NI	Northern Ireland
NIFS	Northern Ireland Forest Service
NRV	Net realisable volume
OB	Overbark
OSB	Oriented strand board
PCRW	Post-consumer recovered wood. This is also known as recycled wood fibre (RWF)
ROI	Republic of Ireland
RWE	Roundwood equivalent
RWF	Recycled wood fibre. This is an alternative name for post consumer recovered wood (PCRW)
SEAI	Sustainable Energy Authority of Ireland
TJ	Terajoule
UK	United Kingdom of Great Britain and Northern Ireland
UNECE	United Nations Economic Commission for Europe
WBP	Wood-based panels
WBP B	Bark produced during the production of wood-based panels
WBP SD	Sawdust produced from the sanding of wood-based panels
WRAP	Waste and Resources Action Programme (UK)

Annex A: All island woodflow (2014-2016) and breakdown of use categories

A1: Softwood fibre processed³⁵.

Item	2014			2015			2016		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
000 m ³ OB									
Roundwood source									
Imports less exports ³⁶	68	222	290	40	253	293	-16	321	305
NIFS ³⁷	-	401	401	-	366	366	-	364	364
Coillte ³⁸	2,434	-	2,434	2,377	-	2,377	2,600	-	2,600
Private ³⁹	447	40	487	646	40	686	518	27	545
Roundwood processed	2,949	663	3,612	3,063	659	3,722	3,102	712	3,814
Sawlog	1,815	405	2,220	1,867	414	2,281	1,977	517	2,494
Stakewood	147	108	255	169	106	275	164	87	251
Pulpwood	987	150	1,137	1,027	139	1,166	961	108	1,069
Roundwood processed	2,949	663	3,612	3,063	659	3,722	3,102	712	3,814
PCRW ^{40,41}	300	60	360	300	60	360	300	60	360
TOTAL fibre including PCRW	3,249	723	3,972	3,363	719	4,082	3,402	772	4,174

A2: Sawmill input/output.

Item	2014			2015			2016		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
000 m ³ OB									
Input ⁴²									
Sawlog	1,815	405	2,220	1,867	414	2,281	1,977	517	2,494
Stakewood	147	108	255	169	106	275	164	87	251
TOTAL	1,962	513	2,475	2,036	520	2,556	2,141	604	2,745
Output ^{43, 44}									
Sawn timber	904	195	1,099	929	199	1,128	985	250	1,235
Round stakes	133	97	230	154	96	250	149	79	228
Sawmill residues	925	221	1,146	953	225	1,178	1,007	275	1,282
TOTAL	1,962	513	2,475	2,036	520	2,556	2,141	604	2,745

³⁵ Roundwood available for processing excludes both hardwood and firewood.

³⁶ Sources: Coillte, NIFS, Forestry Commission (GB), trade estimates.

³⁷ Source: Northern Ireland Forest Service (NIFS).

³⁸ Source: Coillte.

³⁹ Sources: Private forest management companies, Forestry Commission (GB).

⁴⁰ Sources: EPA, Environment Service (NI), Trade Estimates, Joint wood Energy Enquiry (JWEE) [2012-2017], WRAP UK.

⁴¹ PCRW: Post consumer recovered wood.

⁴² Sources: Coillte, NIFS, private forest management companies, Forestry Commission (GB) and trade estimates.

⁴³ Sawmill output data has been checked against industry estimates.

⁴⁴ Sources: Forestry Commission (GB) sawmill survey and industry expert opinion.

A3: Sawmill output by market/end use^{45, 46, 47}.

Product(s)	2014							2015							2016						
	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	
000 m ³ UB																					
Construction	100	377	477	36	35	71	548	113	376	489	38	39	77	566	69	450	519	45	45	90	609
Pallet/packaging	50	157	207	18	18	36	243	62	159	221	20	20	40	261	54	180	234	25	25	50	284
SE fencing ⁴⁸	19	184	203	43	41	84	287	37	166	203	41	41	82	285	42	173	215	55	55	110	325
Round stakes	60	73	133	40	57	97	230	54	100	154	40	56	96	250	74	75	149	39	40	79	228
Other markets	17	-	17	4	-	4	21	16	-	16	-	16	4	16	17	-	17	-	-	-	17
TOTAL	1,037			292			1,329	1,083			295			1,378	1,134			329			1,430

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

Item	2014			2015			2016		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
000 m ³ OB									
Pulpwood net of imports and exports ⁴⁹	987	150	1,137	1,027	139	1,166	961	108	1,069
PCRW ⁵⁰	300	60	360	300	60	360	300	60	360
Sawmill residues ⁵¹									
Woodchip imports		5	11	2	3	5	32	7	39
Sawdust imports		44	61	45	33	78	112	37	149
Bark		140	172	138	33	171	145	40	185
Sawdust		209	249	211	41	252	222	51	273
Woodchip		576	714	604	141	745	640	176	816
Woodchip from stakes		-	11	-	10	10	-	8	8
WBP residues ⁵²									
Bark		79	79	79	-	79	80	-	80
Sawdust		35	35	35	-	35	35	-	35
TOTAL	2,375	454	2,829	2,441	460	2,901	2,527	487	3,014

A5: WBP input/output^{53, 54}.

Item	2014			2015			2016		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
000 m ³ OB									
Pulpwood	822	-	822	850	-	850	844	-	844
PCRW ⁵⁵	79	-	79	70	-	70	70	-	70
Sawdust ⁵⁶	46	-	46	50	-	50	68	-	68
Woodchip ⁵⁷	430	-	430	416	-	416	413	-	413
TOTAL input	1,377	-	1,377	1,386	-	1,386	1,395	-	1,395
TOTAL output^{58, 59}	773	-	773	769	-	769	774	-	774

⁴⁵ Sawmill output data has been checked against industry estimates.

⁴⁶ Hm: home market; Exp: export market; T: total

⁴⁷ Sources: Forestry Commission (GB) & industry expert opinion.

⁴⁸ SE: Square edged.

⁴⁹ Source: Industry expert opinion.

⁵⁰ Sources: Industry expert opinion and the Environmental Protection Agency (EPA), www.epa.ie

⁵¹ Source: Industry expert opinion.

⁵² Source: Industry expert opinion.

⁵³ This input is for the production of wood-based panels. This excludes boiler fuels. These are detailed overleaf.

⁵⁴ In January 2011, Finsa Forest Products Ltd. ceased producing particleboard in Scariff, Co Clare.

⁵⁵ Sources: EPA & industry expert opinion.

⁵⁶ Source: Industry expert opinion.

⁵⁷ Source: Forestry Commission (GB) & industry expert opinion.

⁵⁸ Sources: Board mill survey & industry expert opinion.

⁵⁹ All Ireland WBP output includes the output of the all WBP plants operating on the island of Ireland. These are Masonite Ireland (Carrick-on-Shannon), Medite Europe (Clonmel) and SmartPly Europe (Waterford).

A6: Feedstock for wood-biomass energy (WBE) & other uses.

Item	WBE 2014			WBE 2015			WBE 2016			Other uses 2014			Other uses 2015			Other uses 2016		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
000 m³ OB																		
Harvest residues																		
CHP/WBP boiler fuel	-	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-	-	-
Pulpwood																		
Domestic/ industrial heating fuel ^{60, 61, 62}	100	25	125	114	25	139	117	30	147	-	-	-	-	-	-	-	-	-
Bio energy ⁶³	-	75	75	-	75	75	-	78	78	-	-	-	-	-	-	-	-	-
Other markets	-	-	-	-	-	-	-	-	-	65	50	115	63	39	102	-	-	-
Total pulpwood	100	100	200	114	100	214	117	108	225	65	50	115	63	39	102	-	-	-
PCRW																		
CHP/WBP boiler fuel (BF) ⁶⁴	221	30	251	230	30	260	230	30	260	-	-	-	-	-	-	-	-	-
Exported	-	-	-	-	-	-	-	-	-	-	30	30	-	30	30	-	30	30
Total PCRW	221	30	251	230	30	260	230	30	260	-	30	30	-	30	30	-	30	30
Bark																		
Sawmill bark used for biomass energy ⁶⁵	100	25	125	108	23	131	115	30	145	-	-	-	-	-	-	-	-	-
WBP bark used for biomass energy ⁶⁶	79	-	79	79	-	79	80	-	80	-	-	-	-	-	-	-	-	-
Bark mulch ⁶⁷	-	-	-	-	-	-	-	-	-	40	7	47	30	10	40	30	10	40
Total bark	179	25	204	187	23	210	195	30	225	40	7	47	30	10	40	30	10	40
Sawdust																		
Sander line sawdust used for WBP BF	35	-	35	35	-	35	35	-	35	-	-	-	-	-	-	-	-	-
Sawdust used as BF by sawmills	90	25	115	45	19	64	100	35	135	-	-	-	-	-	-	-	-	-
Other energy use	30	-	30	40	-	40	23	-	23	-	-	-	-	-	-	-	-	-
Exported	-	-	-	-	-	-	-	-	-	17	7	24	33	45	78	37	23	60
Pellet manufacture ⁶⁸	70	25	95	88	10	98	106	30	136	-	-	-	-	-	-	-	-	-
Total sawdust	225	50	275	208	29	237	264	65	329	17	7	24	33	45	78	37	23	60
Woodchip⁶⁹																		
Woodchip used for CHP	145	30	175	187	37	224	201	65	266	-	-	-	-	-	-	-	-	-
Woodchip exports	-	-	-	-	-	-	6	5	11	3	2	5	7	7	14	-	-	-
Pellet manufacture	-	114	114	-	109	109	-	91	91	-	-	-	-	-	-	-	-	-
Other uses including animal bedding	-	-	-	-	-	-	-	-	-	-	6	6	-	6	6	51	28	79
Total woodchip	145	144	289	187	146	333	201	156	357	6	11	17	3	8	11	58	35	93
TOTAL	870	349	1,219	926	328	1,254	1,067	389	1,456	128	105	233	129	132	261	125	98	223

⁶⁰ Sources: SEAI survey (ROI), industry expert opinion.

⁶¹ Source: Industry expert opinion.

⁶² This includes pulp used for the manufacture of wood pellets.

⁶³ Source: Forestry Commission (GB).

⁶⁴ Sources: EPA survey & industry expert opinion.

⁶⁵ Sources: SEAI, Forestry Commission (GB).

⁶⁶ Sources: Forestry Commission (GB) & industry expert opinion.

⁶⁷ Sources: Industry expert opinion.

⁶⁸ Source: Industry expert opinion.

⁶⁹ Sources: Forestry Commission (GB) & industry expert opinion.