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- Roundwood harvest (including firewood) in the Republic of Ireland in 2017 was 3.54 million m<sup>3</sup>, the highest level since records began.
- Softwood available for processing in the Republic of Ireland 2017 was 3.22 million m<sup>3</sup>.
- There was strong demand for wood fibre across all assortments.
- Product output in 2017 comprised 1,049,000 m<sup>3</sup> of sawn softwood, 135,000 m<sup>3</sup> of round stakes and 836,000 m<sup>3</sup> of wood-based panels.
- Exports of wood products reached €423 million, €224 million of wood-panels, €129 million of sawn timber and €70 million of pulp, paper & paper-board products.
- The demand for wood fibre for the production of forest-based biomass energy sector increased by 12% over 2016 to 1.78 million m<sup>3</sup>.
- In 2017, 42% of the roundwood available for use in the Republic of Ireland was used for energy purposes.

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## Woodflow and forest-based biomass energy use on the island of Ireland (2017)

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### Introduction

This COFORD Connects Note provides the 2017 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<sup>3,4</sup>.

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

In 2017, 3.54 million m<sup>3</sup> of roundwood was harvested in the Republic of Ireland (Table 1)<sup>5</sup>, an increase of 5.6% over 2016, and represents a continuation of the trend for increased levels of harvest over the 2013-2017 period.

This increase in roundwood harvest was driven by the increase in the roundwood harvest from the private forest estate (Table 1).

**Table 1: Total roundwood harvest (including firewood) in the Republic of Ireland (2013-2017).**

Harvest type	2013	2014	2015	2016	2017
	000 m <sup>3</sup> OB				
Coillte	2,588	2,517	2,470	2,733	2,714
Private	448	597	780	622	828
<b>TOTAL</b>	<b>3,036</b>	<b>3,114</b>	<b>3,250</b>	<b>3,355</b>	<b>3,542</b>

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<sup>4</sup> 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.

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

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)

In 2017, 3.24 million cubic metres of roundwood was available for processing in the Republic of Ireland<sup>6</sup>, an increase of 4.3% on 2016. In 2017, the level of roundwood harvest in the private sector was 32% higher than in 2016 (Table 2).

**Table 2: Roundwood available for processing in the Republic of Ireland (2013-2017).**

Item	2013	2014	2015	2016	2017
	000 m <sup>3</sup> OB				
<b>Commercial softwood</b>					
Imports less exports	49	68	40	-16	-65
Coillte	2,474	2,434	2,377	2,600	2,613
Private sector	328	447	646	518	676
<b>Commercial hardwood</b>					
Imports less exports	-1	-	-	-	-
Coillte	2	6	3	5	7
Private sector	1	-	-	1	11
<b>TOTAL</b>	<b>2,853</b>	<b>2,955</b>	<b>3,066</b>	<b>3,108</b>	<b>3,242</b>

Wood fibre sources for the processing and wood energy sectors, and residue outturn are shown in Table 3; uses are in Table 4<sup>7,8</sup>. 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 (2013-2017)<sup>9</sup>.**

Fibre source	2013	2014	2015	2016	2017
	000 m <sup>3</sup> OB RWE <sup>10</sup>				
Roundwood <sup>11</sup>	2,851	2,949	3,063	3,102	3,224
Sawmill residues <sup>12</sup>	897	925	949	1,007	1,142
Wood-based panel residues <sup>13</sup>	110	114	114	115	124
Residue imports	108	49	47	144	144
Harvest residues	30	60	60	60	60
Post-consumer recovered wood (PCRW)	250	300	300	300	300
<b>TOTAL</b>	<b>4,246</b>	<b>4,397</b>	<b>4,533</b>	<b>4,728</b>	<b>4,994</b>

In 2017, sawmill roundwood intake was 2.33 million m<sup>3</sup>, which was converted to 1.05 million m<sup>3</sup> of sawn timber and 0.14 million m<sup>3</sup> of round stakes (Tables 4 & 5). In 2017, sawmill roundwood intake increased by 8.6% over 2016.

In 2017, 836,000 m<sup>3</sup> of wood-based panels (WBP) were produced from an intake of 1.51 million m<sup>3</sup> of wood fibre<sup>14</sup>, an increase of 8% over 2016 (Table 5). A very high proportion (85%) of WBP manufacture was exported (711,000 m<sup>3</sup>) to a value of €224 million (Table 6). 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.

**Table 4: Uses of softwood fibre (2013-2017).**

Fibre use	2013	2014	2015	2016	2017
	000 m <sup>3</sup> OB RWE				
Sawmilling	1,710	1,815	1,867	1,977	2,178
Round stake	117	147	169	164	148
Wood-based panels	1,407	1,377	1,370	1,395	1,505
Wood for energy use by the power generation and forest products sector <sup>15</sup>	704	760	796	844	883
Other uses					
Horticultural bark mulch	50	40	30	30	30
Wood chip for heating <sup>16</sup>	100	100	114	117	49
Export of forest product residues	88	88	36	44	44
Pellet manufacture	70	70	151	106	106
Other uses including shavings and animal bedding	-	-	-	51	51
<b>TOTAL</b>	<b>4,246</b>	<b>4,397</b>	<b>4,533</b>	<b>4,728</b>	<b>4,994</b>

**Table 5: Production of sawnwood and wood-based panels (2013-2017)<sup>17,18</sup>.**

Product	2013	2014	2015	2016	2017
	000 m <sup>3</sup>				
Construction timber	313	478	491	519	553
Pallet/packaging	272	209	221	234	249
Square edge fencing	223	203	203	215	229
Other	16	17	16	17	18
<b>TOTAL sawn wood</b>	<b>824</b>	<b>907</b>	<b>931</b>	<b>985</b>	<b>1,049</b>
<b>TOTAL wood-based panels</b>	<b>739</b>	<b>773</b>	<b>769</b>	<b>774</b>	<b>836</b>

<sup>6</sup> Firewood is excluded.

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

<sup>8</sup> Wood fibre that is reused is counted twice in this model.

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

<sup>10</sup> RWE: roundwood equivalent

<sup>11</sup> Data are from Table 1.

<sup>12</sup> A breakdown of sawmill residues is shown in Annex A4.

<sup>13</sup> 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.

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

<sup>15</sup> 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).

<sup>16</sup> Primarily used for the production of space or production heat.

<sup>17</sup> EUROSTAT Joint Forest Sector Questionnaire (2013-2017).

<sup>18</sup> Over the period 2015-2017, sawmill output 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

In 2017, exports of forest products from the Republic of Ireland were €423 million, an increase of 11.3% on 2016. Wood-based panels accounted for €224 million, the balance comprising paper and sawn timber exports (Table 6). Export volumes of WBP and sawn timber increased by 5.1% and 8.6% on 2016 (Table 6).

In 2017, forest products to the value of €608 million were imported into Ireland. This trade is dominated by the importation of pulp, paper and paper-board products, and they represented 63% of forest product imports.

In 2017, net imports of forest products to the Republic of Ireland were €185 million, largely driven by the import of pulp and paper products (Table 7).

**Table 6: Timber and paper products trade, volume and value (2013-2017)<sup>19</sup>.**

Product	Imports									
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
	000 m <sup>3</sup>					€ million				
Sawn timber	134	205	227	250	266	51	74	88	92	99
Wood-based panels	194	235	240	242	260	78	98	112	112	129
	000 tonnes									
Pulp products	50	46	51	46	45	41	42	53	45	45
Paper and paper-board products	428	404	427	417	407	340	340	359	337	335
<b>TOTAL</b>						<b>510</b>	<b>554</b>	<b>612</b>	<b>586</b>	<b>608</b>
Product	Exports									
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
	000 m <sup>3</sup>					€ million				
Sawn timber <sup>20</sup>	601	718	701	806	875	81	122	121	122	129
Wood-based panels	665	662	610	628	711	179	199	190	206	224
	000 tonnes									
Pulp products	-	-	-	3	-	-	-	-	1	1
Paper and paper-board products	81	67	86	137	40	59	50	44	51	69
<b>TOTAL</b>						<b>339</b>	<b>370</b>	<b>355</b>	<b>380</b>	<b>423</b>

**Table 7: Overall balance of the trade in the value of primary forest products (2013-2017)<sup>21</sup>.**

Product	2013	2014	2015	2016	2017
	€ million				
Sawn timber	30	48	33	30	30
Wood-based panels	121	101	78	94	95
Pulp products	-41	-42	-53	-44	-44
Paper and paper-board products	-281	-290	-315	-286	-260
<b>TOTAL</b>	<b>-171</b>	<b>-183</b>	<b>-257</b>	<b>-206</b>	<b>-185</b>

<sup>19</sup> Includes import/export figures for sawn timber, wood-based panels and pulp/paper products only. Data are taken from Ireland's EUROSTAT Joint Forest Sector Questionnaire (JFSQ) returns (2013-2017). Roundwood, sawmill residues and secondary processed timber products are not included. Trade data for the JFSQ was estimated using net mass and value figures received at SITC level from the CSO: [www.cso.ie](http://www.cso.ie)

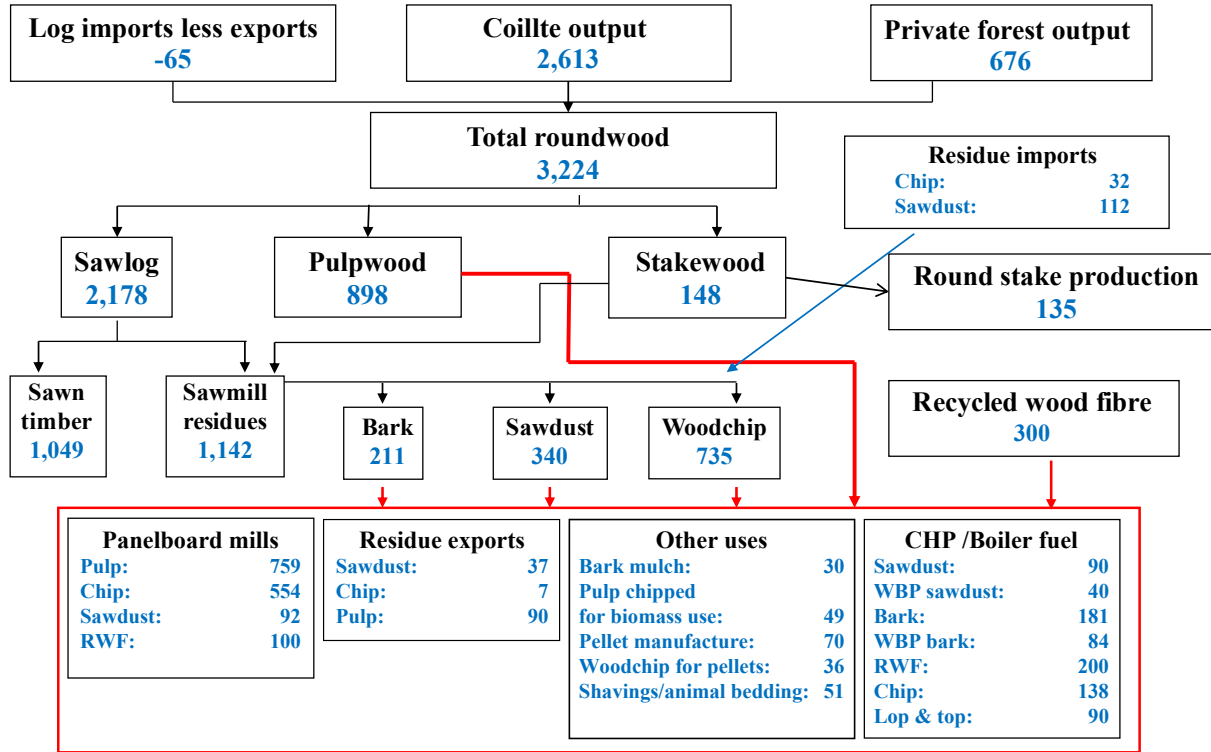
<sup>20</sup> In 2013-2014, the value of sawn timber exports grew by 51%, while volume grew 20%. The difference between value and volume may be due to a combination of changes in the euro/sterling exchange rate and increases in product prices.

<sup>21</sup> Negative values show a surplus of imports over exports.

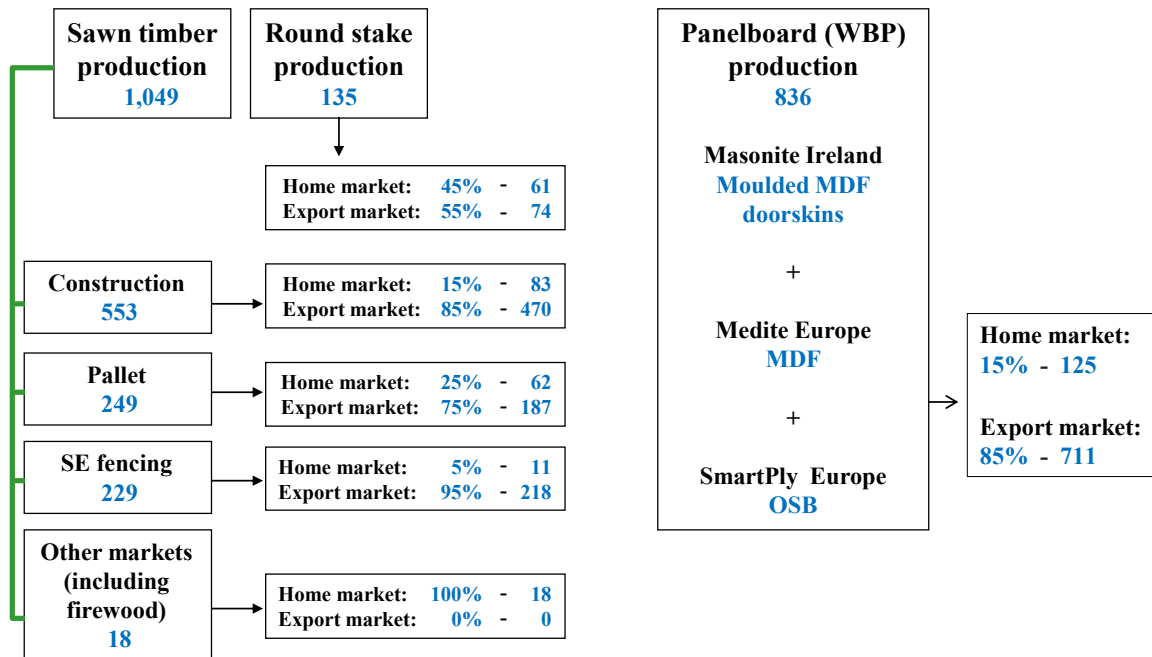
# Woodflow for the Republic of Ireland in 2017

The Woodflow for the Republic of Ireland in 2017 is in Figure 1.

Figure 1: Woodflow for the Republic of Ireland for 2017 (000 m<sup>3</sup>) [overbark].



Breakdown of 2017 wood products (000 m<sup>3</sup>).



## All island woodflow (2015-2017)

The all island woodflow for the period 2015-2017 is provided in Annex A. In 2017, the volume of roundwood processed on the island of Ireland was 4.26 million m<sup>3</sup>, a 2.0% increase over 2016 (A1). Over the same period the output of sawmill sector (i.e. sawn timber + round stakes) increased by 4.5% (A2), while wood-based panel output (WBP) increased by 8.0% over 2016 (A5). This was due to expansion at Masonite and by increased production at both Medite and Smartply.

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

In 2017, 42% of the roundwood used in the Republic of Ireland was used for energy generation, mainly within the forest products sector (Table 8).

In 2017, the output of the forest-based biomass energy sector grew by 12% over 2016 (Table 9). This increase was largely driven by a substantial increase in the use of wood biomass at Bord na Móna, Edenderry and by an increased output from both the wood-based panel (WBP) and sawmill sectors. However, over the same period, the volume of roundwood which was chipped in forest for wood-biomass energy use declined by 58%.

This resulted in greenhouse gas (GHG) emission saving of 0.99 million tonnes of carbon dioxide (CO<sub>2</sub>). Emission savings were up almost 30% on the 2016 level of 0.76 million tonnes (Table 9). As a comparison, total GHG emissions in 2015 were 59.9 million tonnes CO<sub>2</sub> equivalent<sup>22</sup>.

In 2017, 239,000 m<sup>3</sup> of firewood was used in the Republic of Ireland to a value of €35 million, which provides a good market for first thinnings (Table 10). A small proportion of the supply - 4,000 m<sup>3</sup> - 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 8.

**Table 8: Use of forest-based biomass and as a proportion of total roundwood harvest (2013-2017)<sup>23</sup>.**

Item	2013	2014	2015	2016	2017
	000 m <sup>3</sup> OB RWE				
Wood-biomass use by the energy <sup>24</sup> and forest products industry	704	760	796	1,049	1,296
Roundwood chipped for primary energy use <sup>25</sup>	100	100	114	117	49
Household firewood use	230	235	237	237	239
Short rotation coppice (SRC)	5	5	5	20	20
Wood pellets and briquettes	161	150	154	160	175
Charcoal	1	1	1	1	1
<b>TOTAL</b>	<b>1,201</b>	<b>1,251</b>	<b>1,307</b>	<b>1,584</b>	<b>1,780</b>
Of which supplied from domestic resources	1,034	1,166	1,132	1,139	1,465
Roundwood available for processing	2,852	2,975	3,016	3,108	3,242
Firewood used	230	235	237	237	235
<b>Total roundwood use<sup>26</sup></b>	<b>3,082</b>	<b>3,210</b>	<b>3,253</b>	<b>3,345</b>	<b>3,477</b>
Domestic wood-biomass use as a % of roundwood used	33.5	36.3	34.8	34.1	42.1

**Table 9: Heat and electrical energy output from forest-based biomass, and associated greenhouse gas emissions savings (2013-2017)<sup>27</sup>.**

Item	Unit	2013	2014	2015	2016	2017
		Output				
Heat	TJ	7,002	7,562	7,730	9,017	11,686
Electricity	TJ	491	530	446	932	1,208
<b>TOTAL</b>	<b>TJ</b>	<b>7,493</b>	<b>8,092</b>	<b>8,176</b>	<b>9,949</b>	<b>12,894</b>
CO <sub>2</sub> emission savings	000 tonnes	573	619	625	761	986

**Table 10: Volume and value of the domestic firewood market in the Republic of Ireland (2013-2017)<sup>28</sup>.**

Year	000 m <sup>3</sup> OB	€ million
2013	230	33.33
2014	235	34.05
2015	237	34.34
2016	237	34.34
2017	239	34.63

<sup>22</sup> <http://www.epa.ie/pubs/reports/air/airemissions/ghgemissions/GHG%201990-2015%20April%202017.pdf>

<sup>23</sup> UNECE Joint Wood Energy Enquiry (JWEE); 2013-2017

<sup>24</sup> Includes co-firing of wood biomass at Edenderry Power; [www.edenderrypower.ie](http://www.edenderrypower.ie)

<sup>25</sup> Primarily used for space and process heating

<sup>26</sup> Roundwood use includes the use of domestically sourced and imported roundwood

<sup>27</sup> UNECE Joint Wood Energy Enquiry (2013-2017)

<sup>28</sup> drima market research study

In 2016, the contribution of renewable energy to gross final consumption (GFC) was 9.5%, compared to a 2020 target of 16%. This avoided 3.9 million tonnes of carbon dioxide (CO<sub>2</sub>) emissions and saved €342 million of fossil fuel imports<sup>29</sup>. Ireland's progress towards meeting its renewable energy targets are shown in Table 11<sup>30</sup>.

**Table 11: Renewable energy progress to targets (2010-2016)**<sup>31,32</sup>.

Energy type	Progress towards targets by year						Targets	
	2010	2011	2012	2013	2014	2016	2010	2020
RES-E (normalised)	14.5	17.3	19.5	20.8	22.7	27.2	15	40
RES-T	2.4	3.8	4.0	4.9	5.2	5.0	3	10
RES-H	4.5	4.9	5.1	5.5	6.6	6.8	5	12
Directive (2009/29/EC)	5.6	6.5	7.1	7.6	8.6	9.5	-	16

## Data sources & data consistency

Data for Woodflow 2017 is taken from a number of sources as follows.

### Roundwood harvest

The domestic roundwood harvest in the Republic of Ireland is estimated by a survey<sup>33</sup> of: forest management companies, investment funds, producer groups, sawmills 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

Trade data for the JFSQ was estimated using net mass and value figures received at SITC level from the CSO<sup>34</sup>.

## Wood energy data

Wood energy data is from an annual energy survey by the Sustainable Energy Authority of Ireland (SEAI)<sup>35</sup>. Additional data are from the forest sector surveys and an annual survey for the production of the UNECE Joint Wood Energy Enquiry (JWEE).

### Data accuracy

Prior to publication data are reviewed by a group of industry experts.

## Actual and forecast harvest (2011-2017)

Actual and forecast harvest (net realisable volume (NRV) for the Republic of Ireland has been compared for the period 2011-2017. NRV forecast data is taken from the All-Ireland Roundwood Production Forecast (2011-2028)<sup>36</sup> for 2011-2015 and from the NRV forecast for 2016-2035 for the period 2016-2017<sup>37</sup>. Actual harvest is from the COFORD Connects Woodflow Series<sup>38</sup>.

Over the period 2011-2017, private sector harvest was 105% of NRV forecast, while Coillte harvest was 95% of NRV forecast. Over the same period, the combined harvest (i.e. Coillte + private) was 97% of NRV forecast (Table 12).

**Table 12: Actual and forecast roundwood harvest in the Republic of Ireland (2011-2017).**

Harvest type	2011			2012			2013		
	A	F	%	A	F	%	A	F	%
000 m <sup>3</sup> 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		
	A	F	%	A	F	%
000 m <sup>3</sup> OB						
Private	597	425	140	780	504	155
Coillte	2,517	2,906	87	2,470	2,844	87
Total	3,114	3,331	93	3,250	3,348	97

Harvest type	2016			2017			Total (2011-2017)			
	A	F	%	A	F	%	A	F	D	%
000 m <sup>3</sup> OB										
Private	622	916	68	828	859	96	4,029	3,828	201	105
Coillte	2,733	2,505	109	2,714	2,568	106	22,028	23,165	-1,137	95
Total	3,355	3,421	98	3,542	3,427	103	26,057	26,993	-936	97

#### Notes

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

<sup>29</sup> <https://www.seai.ie/resources/publications/Energy-in-Ireland-1990-2016-Full-report.pdf>

<sup>30</sup> At the time of writing, data for 2017 was not available.

<sup>31</sup> At the time of publication, data for 2017 was not available.

<sup>32</sup> <https://www.seai.ie/resources/publications/Energy-in-Ireland-1990-2016-Full-report.pdf>

<sup>33</sup> Survey data are confidential and are reported in aggregate.

<sup>34</sup> [www.cso.ie](http://www.cso.ie)

<sup>35</sup> [www.seai.ie](http://www.seai.ie)

<sup>36</sup> [http://www.coford.ie/media/coford/content/publications/projectreports/forecast\\_31Jan11.pdf](http://www.coford.ie/media/coford/content/publications/projectreports/forecast_31Jan11.pdf)

<sup>37</sup> <http://www.coford.ie/toolsservices/allirelandroundwoodproductionforecast2016-2035/>

<sup>38</sup> [www.coford.ie](http://www.coford.ie)

## Abbreviations

Abbreviation	Description	Abbreviation	Description
CO <sub>2</sub>	Carbon dioxide	OSB	Oriented strand board
CHP	Combined heat & power	PCRW	Post-consumer recovered wood
GB	Great Britain	ROI	Republic of Ireland
FAO	Food and Agriculture Organisation of the United Nations	RWE	Roundwood equivalent
GHG	Greenhouse gas	SEAI	Sustainable Energy Authority of Ireland
JFSQ	Joint Forestry Section Questionnaire (Eurostat)	TJ	Terajoule
JWEE	Joint Wood Energy Enquiry (UNECE)	UK	United Kingdom of Great Britain and Northern Ireland
ktoe	Kilotonne of oil equivalent	UNECE	United Nations Economic Commission for Europe
m <sup>3</sup>	Cubic metre	WBP	Wood-based panels
MDF	Medium density fibreboard	WBP B	Bark produced during the production of wood-based panels
NI	Northern Ireland	WBP SD	Sawdust produced from the sanding of wood-based panels
NIFS	Northern Ireland Forest Service	WRAP	Waste and Resources Action Programme (UK)
NRV	Net realisable volume		
OB	Overbark		

# Annex A: All island woodflow (2015-2017) and breakdown of use categories

## A1: Softwood fibre processed<sup>39</sup>.

Item	2015			2016			2017		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
000 m <sup>3</sup> OB									
Roundwood source									
Imports less exports <sup>40</sup>	40	253	293	-16	321	305	-65	231	166
NIFS <sup>41</sup>	-	366	366	-	364	364		407	407
Coillte <sup>42</sup>	2,377	-	2,377	2,600	-	2,600	2,613	-	2,613
Private <sup>43</sup>	646	40	686	518	27	545	676	36	712
Roundwood processed	3,063	659	3,722	3,102	712	3,814	3,224	674	3,898
Sawlog	1,867	414	2,281	1,977	517	2,494	2,178	489	2,667
Stakewood	169	106	275	164	87	251	148	83	231
Pulpwood	1,027	139	1,166	961	108	1,069	898	102	1,000
Roundwood processed	3,063	659	3,722	3,102	712	3,814	3,224	674	3,898
PCRW <sup>44,45</sup>	300	60	360	300	60	360	300	60	360
TOTAL fibre including PCRW	3,363	719	4,082	3,402	772	4,174	3,524	734	4,258

## A2: Sawmill input/output.

Item	2015			2016			2017		
	ROI	NI	Total	ROI	NI	Total	ROI	NI <sup>46</sup>	Total
000 m <sup>3</sup> OB									
Input <sup>47</sup>									
Sawlog	1,867	414	2,281	1,977	517	2,494	2,178	489	2,667
Stakewood	169	106	275	164	87	251	148	83	231
TOTAL	2,036	520	2,556	2,141	604	2,745	2,326	572	2,898
Output <sup>48,49</sup>									
Sawn timber	929	199	1,128	985	250	1,235	1,049	236	1,285
Round stakes	154	96	250	149	79	228	135	75	210
Sawmill residues	953	225	1,178	1,007	275	1,282	1,142	261	1,403
TOTAL	2,036	520	2,556	2,141	604	2,745	2,326	572	2,898

<sup>39</sup> Roundwood available for processing excludes both hardwood and firewood.

<sup>40</sup> Sources: Coillte, NIFS, Forestry Commission (GB), trade estimates.

<sup>41</sup> Source: Northern Ireland Forest Service (NIFS).

<sup>42</sup> Source: Coillte.

<sup>43</sup> Sources: Private forest management companies, Forestry Commission (GB).

<sup>44</sup> Sources: EPA, Environment Service (NI), Trade Estimates, Joint wood Energy Enquiry (JWEE) [2012-2017], WRAP UK.

<sup>45</sup> PCRW: Post consumer recovered wood.

<sup>46</sup> <https://www.forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/>

<sup>47</sup> Sources: Coillte, NIFS, private forest management companies, Forestry Commission (GB) and trade estimates.

<sup>48</sup> Sawmill output data has been checked against industry estimates.

<sup>49</sup> Sources: Forestry Commission (GB) sawmill survey and industry expert opinion.



### A3: Sawmill output by market/end use<sup>50,51,52</sup>.

Product(s)	2015							2016							2017						
	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 <sup>3</sup> UB																					
Construction	113	376	489	38	39	77	566	69	450	519	45	45	90	609	83	470	553	46	46	92	645
Pallet/packaging	62	159	221	20	20	40	261	54	180	234	25	25	50	284	62	187	249	25	65	90	339
SE fencing <sup>53</sup>	37	166	203	41	41	82	285	42	173	215	55	55	110	325	11	218	229	54	-	54	283
Round stakes	54	100	154	40	56	96	250	74	75	149	39	40	79	228	45	74	135	38	37	75	210
Other markets	16	-	16	-	16	4	16	17	-	17	-	-	-	17	18	-	18	-	18	-	-
<b>TOTAL</b>	1,083			295			1,378	1,134			329			1,430	1,184			311			1,495

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

Item	2015			2016			2017		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
	000 m <sup>3</sup> OB								
Pulpwood net of imports and exports <sup>54</sup>	1,027	139	1,166	961	108	1,069	898	102	1,000
PCRW <sup>55</sup>	300	60	360	300	60	360	300	60	360
Sawmill residues <sup>56</sup>									
Woodchip imports		2	3		32	39		32	39
Sawdust imports		45	33		112	149		112	149
Bark		138	33		145	185		211	249
Sawdust		211	41		222	273		228	276
Woodchip		604	141		640	816		703	870
Woodchip from stakes		-	10		-	8		-	8
WBP residues <sup>57</sup>									
Bark		79	-		80	80		84	84
Sawdust		35	-		35	35		40	40
<b>TOTAL</b>	2,441	460	2,901	2,527	487	3,014	2,608	467	3,075

### A5: WBP input/output<sup>58,59</sup>.

Item	2015			2016			2017		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
	000 m <sup>3</sup> OB								
Pulpwood	850	-	850	844	-	844	759	-	759
PCRW <sup>60</sup>	70	-	70	70	-	70	100	-	100
Sawdust <sup>61</sup>	50	-	50	68	-	68	92	-	92
Woodchip <sup>62</sup>	416	-	416	413	-	413	554	-	554
<b>TOTAL input</b>	1,386	-	1,386	1,395	-	1,395	1,505	-	1,505
<b>TOTAL output<sup>63,64</sup></b>	769	-	769	774	-	774	836	-	836

<sup>50</sup> Sawmill output data has been checked against industry estimates.

<sup>51</sup> Hm: home market; Exp: export market; T: total

<sup>52</sup> Sources: Forestry Commission (GB) & industry expert opinion.

<sup>53</sup> SE: Square edged.

<sup>54</sup> Source: Industry expert opinion.

<sup>55</sup> Sources: Industry expert opinion and the Environmental Protection Agency (EPA), [www.epa.ie](http://www.epa.ie)

<sup>56</sup> Source: Industry expert opinion.

<sup>57</sup> Source: Industry expert opinion.

<sup>58</sup> This input is for the production of wood-based panels. This excludes boiler fuels. These are detailed overleaf.

<sup>59</sup> In January 2011, Finsa Forest Products Ltd. ceased producing particleboard in Scariiff, Co Clare.

<sup>60</sup> Sources: EPA & industry expert opinion.

<sup>61</sup> Source: Industry expert opinion.

<sup>62</sup> Source: Forestry Commission (GB) & industry expert opinion.

<sup>63</sup> Sources: Board mill survey & industry expert opinion.

<sup>64</sup> 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 2015			WBE 2016			WBE 2017			Other uses 2015			Other uses 2016			Other uses 2017		
	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total	ROI	NI	Total
<b>000 m³ OB</b>																		
<b>Harvest residues</b>																		
CHP/WBP boiler fuel	-	-	-	60	-	60	90	-	90	-	-	-	-	-	-	-	-	-
<b>Pulpwood</b>																		
Domestic/ industrial heating fuel <sup>65,66</sup>	114	25	139	117	30	147	49	30	79	-	-	-	-	-	-	-	-	-
Bio energy <sup>67</sup>	-	75	75	-	78	78	-	72	72	-	-	-	-	-	-	-	-	-
Other markets	-	-	-	-	-	-	-	-	-	63	39	102	-	-	-	90	-	90
Total pulpwood	114	100	214	117	108	225	139	102	241	63	39	102	-	-	-	90	-	90
<b>PCRW</b>																		
CHP/WBP boiler fuel (BF) <sup>68</sup>	230	30	260	230	30	260	200	30	230	-	-	-	-	-	-	-	-	-
Exported	-	-	-	-	-	-	-	-	-	-	30	30	-	30	30	-	30	30
Total PCRW	230	30	260	230	30	260	200	30	230	-	30	30	-	30	30	-	30	30
<b>Bark</b>																		
Sawmill bark used for biomass energy <sup>69</sup>	108	23	131	115	30	145	181	28	209	-	-	-	-	-	-	-	-	-
WBP bark used for biomass energy <sup>70</sup>	79	-	79	80	-	80	84	-	84	-	-	-	-	-	-	-	-	-
Bark mulch <sup>71</sup>	-	-	-	-	-	-	-	-	-	30	10	40	30	10	40	30	10	40
Total bark	187	23	210	195	30	225	265	28	293	30	10	40	30	10	40	30	10	40
<b>Sawdust</b>																		
Sander line sawdust used for WBP BF	35	-	35	35	-	35	40	-	40	-	-	-	-	-	-	-	-	-
Sawdust used as BF by sawmills	45	19	64	100	35	135	90	37	127	-	-	-	-	-	-	-	-	-
Other energy use	40	-	40	23	-	23	-	-	-	-	-	-	-	-	-	-	-	-
Exported	-	-	-	-	-	-	-	-	-	33	45	78	37	23	60	37	24	61
Pellet manufacture <sup>72</sup>	88	10	98	106	30	136	70	24	94	-	-	-	-	-	-	-	-	-
Other uses including animal bedding	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	-	51
Total sawdust	208	29	237	264	65	329	200	61	261	33	45	78	37	23	60	88	24	112
<b>Woodchip<sup>73</sup></b>																		
Woodchip used for CHP	187	37	224	201	65	266	138	65	203	-	-	-	-	-	-	-	-	-
Woodchip exports	-	-	-	-	-	-	-	-	-	3	2	5	7	7	14	7	7	14
Pellet manufacture	-	109	109	-	91	91	36	110	146	-	-	-	-	-	-	-	-	-
Other uses including animal bedding	-	-	-	-	-	-	-	-	-	-	6	6	-	28	79	-	-	-
Total woodchip	187	146	333	201	156	357	174	175	349	3	8	11	58	35	93	7	7	14
<b>TOTAL</b>	<b>926</b>	<b>328</b>	<b>1,254</b>	<b>1,067</b>	<b>389</b>	<b>1,456</b>	<b>978</b>	<b>396</b>	<b>1,374</b>	<b>129</b>	<b>132</b>	<b>261</b>	<b>125</b>	<b>98</b>	<b>223</b>	<b>215</b>	<b>71</b>	<b>286</b>

<sup>65</sup> Sources: SEAI survey (ROI), industry expert opinion.

<sup>66</sup> This includes pulp used for the manufacture of wood pellets.

<sup>67</sup> Source: Forestry Commission (GB).

<sup>68</sup> Sources: EPA survey & industry expert opinion.

<sup>69</sup> Sources: SEAI, Forestry Commission (GB).

<sup>70</sup> Sources: Forestry Commission (GB) & industry expert opinion.

<sup>71</sup> Sources: Industry expert opinion.

<sup>72</sup> Sources: Industry expert opinion.

<sup>73</sup> Sources: Forestry Commission (GB) & industry expert opinion.