

UK Dedicated Biomass Statistics - 2019



April 2020

INTRODUCTION

This is Tolvik’s second biennial annual report on the UK “dedicated” biomass sector and sits alongside our popular annual report on Energy from Waste (“EfW”). The aim of this report is to bring together data on UK biomass from a range of different sources into a single document.

The main focus of this report is upon solid-fuelled, dedicated biomass facilities (including those which are Combined Heat and Power (“CHP”) of at least 2.5MW capacity. The report specifically excludes imported fuel consumed by large scale power station conversions e.g. Drax, Lynemouth – the tonnages of which are of a similar scale to the total market demand for UK biomass for combustion. The report also excludes facilities accepting specialist biomass fuels, anaerobic digestion and EfW facilities designed to accept municipal waste.

Given the level of competition for fuel in the market, there is a particular focus on those facilities designed for the processing of Waste Wood.

Our analysis focusses on a mix of 2018-19 data (the Ofgem reporting period) and the 2019 calendar year - the period over which facilities are generally required to submit Annual Performance Reports (“APR”) to the Environment Agency or their devolved equivalents. Where data is missing, we have used a range of methodologies to estimate tonnages so as to provide a comprehensive market overview. Please also note, that tables may not total due to roundings.

We would very much welcome feedback on this report.

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Front Cover Image: Margam, South Wales Courtesy: Glennmont Partners

1. BIOMASS MARKETS

This report considers the markets for the combustion of biomass fuels as set out in Figure 1.

Energy Crops	<i>Purpose grown crop for energy production– e.g. Miscanthus and Willow</i>
Virgin Wood	<i>Eg. Small Roundwood, brash, residues, sawdust by-product from timber production</i>
Grade A Recycled Wood	<i>Clean wood– eg from packaging, pallets and manufacturing</i>
Grades B-C Recycled Wood	<i>Non hazardous wood from construction and demolition through to municipal sources</i>
Straw	<i>Either purpose grown or by-product</i>
Poultry Litter	<i>Mix of poultry excreta, feathers and bedding material</i>
Meat and Bone Meal	<i>By product of animal rendering industry</i>
Sewage Sludge	<i>From waste water treatment operations</i>
Process Residues	<i>Any other biomass source– kernels, chaff etc</i>

Figure 1: Biomass Fuels

Biomass as a Fuel

According to Ofgem’s 2018-19 Biomass Sustainability report⁽¹⁾ adjusted to reflect specific data omissions, in 2018-19 the total consumption of biomass by dedicated biomass facilities (**excluding** imports) was **6.74** Million tonnes (“Mt”). All tonnages in this report relate to “wet” tonnes or “green” tonnes.

Facility Type, Mt	2015-16	2016-17	2017-18	2018-19
Dedicated Biomass Facilities >2.5MW Capacity	5.06	5.41	6.07	6.64
Other Reported Dedicated Biomass <2.5MW	0.01	0.08	0.09	0.10
Biomass Co-Incineration	0.19	0.18	0.00	0.00
Total Fuel Use	5.27	5.67	6.15	6.74

Figure 2: Biomass Consumption 2018-19 Source: Ofgem, Tolvik analysis

In 2018-19 there were 49 operational Biomass facilities with a reported installed capacity in excess of 2.5 Mega Watts (“MW”). Overall these processed 19% more biomass than in 2016-17.

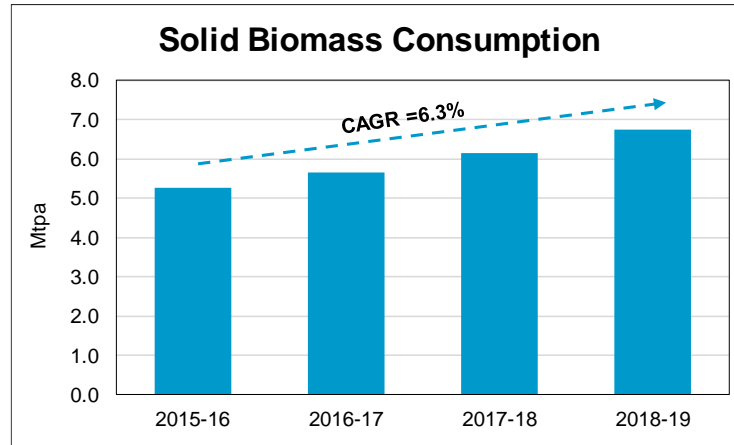


Figure 3: Growth in Biomass Consumption Source: Ofgem, Tolvik analysis

As Figure 4 illustrates, there has been a significant increase in demand for Recycled Wood and Meat and Bone Meal (“MBM”) over the last 2 years (along with “Other” – which primarily comprises of a range of biomass process residues) and declines in Straw, Poultry Litter and Energy Crops. These trends are discussed in more detail in the relevant sections of the report.

Fuel Use, kt	2015-16	2016-17	2017-18	2018-19	Change over 2 years
Virgin Wood	2,336	2,284	2,334	2,622	15%
Recycled Wood	1,310	1,567	1,891	2,296	47%
Straw	560	707	735	625	-12%
Poultry Litter	670	656	597	576	-12%
Other	80	90	275	258	187%
MBM	185	183	176	251	37%
Energy Crop	52	83	66	71	-15%
Sewage	77	98	79	41	-58%
Total Fuel Use	5,270	5,669	6,154	6,741	19%

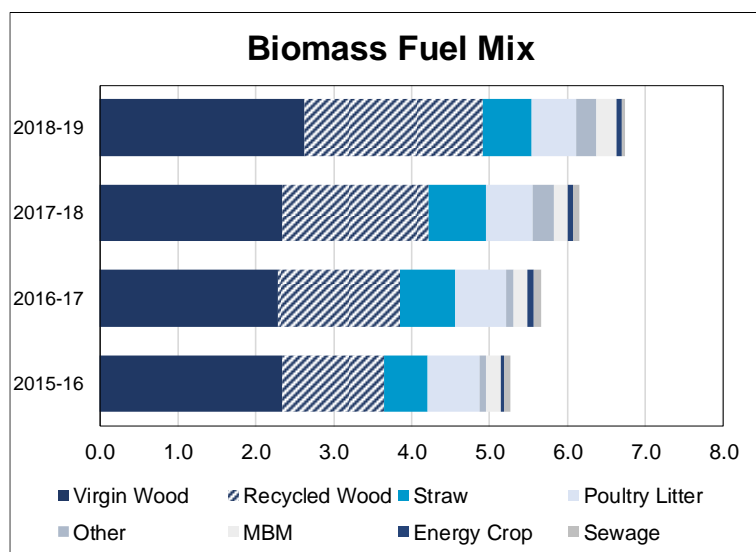


Figure 4: Change in Biomass Fuel Mix Source: Ofgem, Tolvik analysis

The power generation performance of biomass facilities (measured per tonne of biomass input) varies greatly, dependent on the fuel type, moisture content, the scale of the facility and the extent to which the facility is configured to maximise heat or power offtake. Using Ofgem data, we have sought to estimate the total subsidy- eligible power generated by UK dedicated biomass facilities over the last few years.

Biomass facilities focussing on Straw and Energy Crops as a fuel in general generate the most electricity per tonne. The apparent decline in energy production per tonne seen in Figure 5 is as a result of facilities designed primarily to process these fuels co-combusting an increasing portion of other, lower Net Calorific Value, biomass fuels.

Biomass Source	Weighted Average MWh/t of fuel input		
	2016-17	2017-18	2018-19
Straw	1.20	1.20	1.10
Energy Crops	1.14	1.09	0.92
Recycled Wood	0.84	0.82	0.87
MBM	0.75	0.64	0.68
Virgin Wood	0.60	0.59	0.65
Poultry Litter	0.57	0.60	0.59
Sewage Sludge	0.19	0.15	N/A
Total	0.74	0.72	0.77

Figure 5: Estimated Domestic Power Generation from Biomass 2016-19 Source: Ofgem, Tolvik analysis

The combustion of biomass in dedicated facilities of >2.5MW capacity in the UK generated around 5,092GWh of power in 2018-19 or based on the Digest of UK Energy Statistics⁽²⁾ around 1.5% of the total UK power generation.

Plant Availability

Across the 18 dedicated biomass facilities for which data is available from Annual Performance Reviews and which were operational for the full 12 month period, the average availability (in terms of operating hours) for 2018 was **68.7%** and in 2019 was **69.3%**. This excludes any facilities whose operational hours were below 2,500 in any one year – for which it is not clear whether or not the intention was to operate for the full year.

This availability figure is significantly below the **77.1%** recorded in the previous report which reflects a wide range of technical and supply difficulties faced by a number of facilities, particularly those processing Recycled Wood. At this low average level of availability, it is probable that a number of facilities are not profitable.

2. VIRGIN WOOD (INCLUDING ENERGY CROPS)

Virgin Wood Supply

In 2018, according to Forestry Statistics⁽³⁾ 10.7Mt of UK grown softwood was delivered to market in Great Britain. Softwood deliveries have been generally flat since 2013.

The Forestry Statistics also estimated that of this, around 1.9Mt (17%) of the total was directly used as wood fuel by the UK biomass sector – generally in the form of small roundwood.

Including modest imports, in 2016 UK sawmills consumed around 6.7Mt of softwood. Assuming across sawmills of all sizes around 45% softwood inputs were converted into sawn wood production, around 55% (circa 3.7Mt) was therefore converted into “other products”.

Of these “other products”, Forestry Statistics estimate that circa 29% (1.1Mt) was sent to the bioenergy sector or for internal heat/energy use. When this is combined with reject streams from other softwood markets – at say 15% of inputs (the equivalent to 0.4Mt), the data suggests an estimated 3.4Mt of softwood was supplied to the UK biomass sector in 2018. In 2018 Forestry Statistics also estimate a further 0.7Mt of hardwood (out of a total 0.8Mt delivered) was used as a biomass fuel. Combining these various sources, it is estimated that the total tonnage of UK Virgin Wood sent for energy recovery in 2018 was **4.1Mt**. The equivalent figure for 2016 was 3.2Mt.

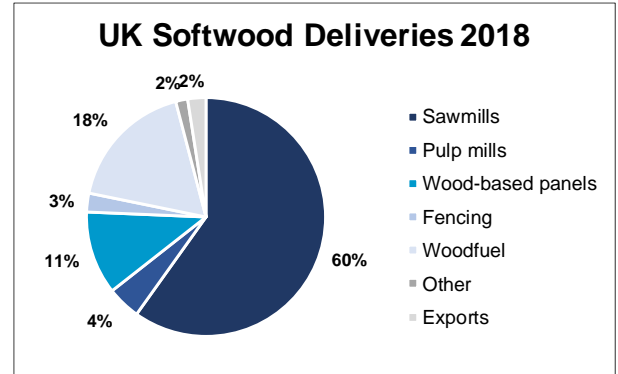


Figure 6: UK Softwood Deliveries 2018
Source: Forestry Statistics

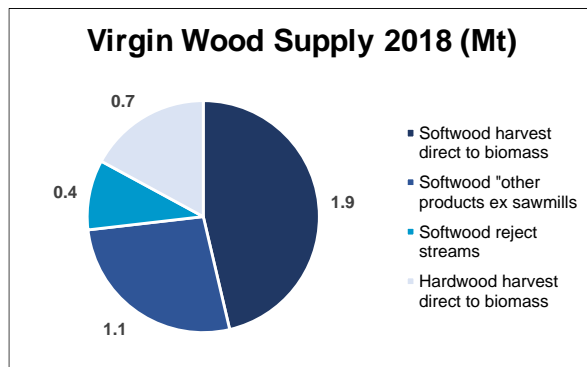


Figure 7: Virgin Wood Supply 2018
Source: Forestry Statistics

Whilst estimates vary, in 2018 around 76% of the potential available supply of softwood in Great Britain was harvested – suggesting that a further 2.0Mt of softwood could be harvested annually in the UK.

In 2018 the public sector estate harvested an estimated 85% of the maximum available supply – whilst private sector landowners saw just 72% of the available supply harvested. The actual volume of softwood which is harvested is dependent on a number of complex factors – and in practice the maximum tonnages are more theoretical than achievable.

Virgin Wood Demand

As set out in Figure 4, in 2016-17 the total demand for Virgin Wood from the biomass facilities identified in Appendix 1 was **2.62Mt**.

In addition to these facilities, it is estimated 3,900MW of installed biomass capacity was supported by the Renewable Heat Incentive (“RHI”). Using Ofgem’s assumption of an average 21% load factor it is estimated that the RHI driven demand for Virgin Wood was around **1.49Mt**.

The total demand for Virgin Wood biomass as a fuel in 2018 is therefore estimated to have been **4.11Mt**, consistent with the fuel supply estimate.

Demand (Mt)	2016/17 (Est)	2018/19 (Est)	2020/21 (Fcast)
>2.5MW	2.28	2.62	2.80
Smaller RHI	1.00	1.49	1.60
Total	3.28	4.11	4.40

Figure 8: Virgin Wood - Biomass Demand
Source: Tolvik analysis

Based on availability improvements, in the short term, demand for Virgin Wood biomass is projected to continue to increase modestly by 0.3Mt. This is part of a wider pattern, notwithstanding the potential impact of COVID-19, of increased demand for softwood across sectors, not just biomass. Figure 9 compares Tolvik’s projections with independent projections from the Confederation of Forest Industries (“Confor”).

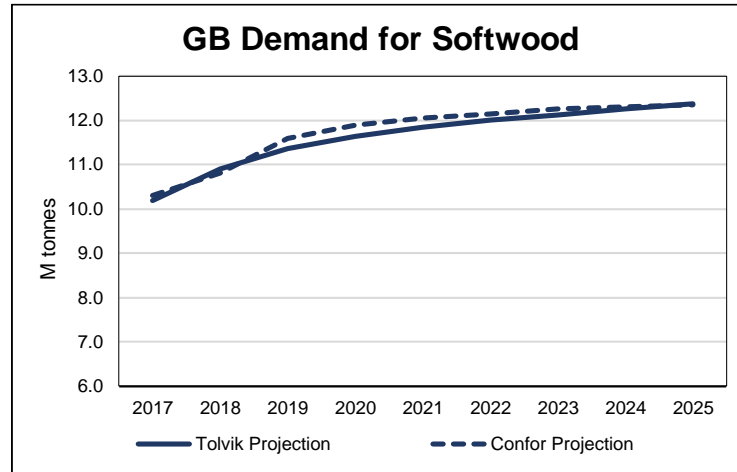


Figure 9: Projected Softwood Demand in UK Source: Confor, Tolvik analysis

Energy Crops

According to Ofgem data, in 2018/19 circa 70ktpa of Energy Crops (Miscanthus, Short Rotation Coppice such as Willow) were sent as fuel to biomass facilities. This figure has been broadly unchanged and represents less than 2% of the overall biomass fuel market.

3. RECYCLED WOOD

This report considers Grades A-C of Recycled Wood as defined in the Wood Recyclers Association (“WRA”) Grading Structure. Recycled Wood is generally regarded as a “waste” under UK waste management regulations and its combustion as biomass is subject to the requirements of Chapter 4 of the Industrial Emissions Directive (“IED”); the exception is Recycled Wood which does not contain “*halogenated organic compounds or heavy metals as a result of treatment with wood preservatives or coating*” (i.e. Grade A Recycled Wood) which may be co-incinerated alongside non-waste biomass – e.g. Virgin Wood.

Recycled Wood Supply

There have been many estimates in recent years with respect to the total tonnage of Wood Waste arising in the UK. The previous report highlighted analysis from Anthesis that the total was around **5.7Mtpa**, but this has always been regarded as an over-estimate as it is understood that it included some streams of Waste Wood which would typically be defined as “Virgin” wood. At that time, Tolvik’s estimate (and that of the WRA) was that the total was nearer **5.0Mt**.

A recent report issued by WRAP⁽⁴⁾, based on 2017 data, provides composition analysis for Residual Household and Commercial Waste. This offers an alternative way by which total Waste Wood arisings can be calculated – by adding estimates for the tonnage of Recycled Wood beneficially used in the UK to the tonnage of Waste Wood remaining in the Residual Waste stream. The only tonnages of Waste Wood which would then be omitted would be those tonnages which are either in Residual Waste streams which have been disposed illegally and “informal” routes for Recycled Wood – e.g. domestic biomass. Tolvik’s view is that these “informal” routes are likely to remain informal and are unlikely to yield material tonnages of Recycled Wood in the future

Using this information it is estimated that, excluding “informal” tonnages of Waste Wood falling outside waste regulations, the total tonnage Waste Wood generated in the UK in 2019 was **4.52Mt**. This is understood to be consistent with the WRA latest estimates.

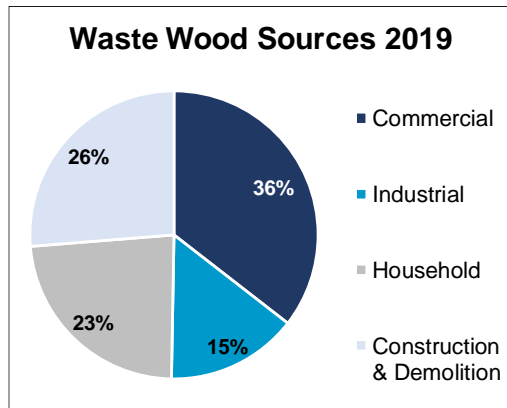


Figure 10: Sources of Waste Wood
Source: Tolvik analysis

Of this total, around 86% (or **3.89Mt**) was segregated from the Residual Waste stream as Recycled Wood.

The analysis in Figure 10 is based on 2016 data from DEFRA⁽⁵⁾ and updated to 2019. The way in which data is reported means that it is likely that some Recycled Wood generated by the Construction and Demolition sector has been processed alongside commercial waste and captured as such. We have previously estimated that this sector is the source of around 40% of total Recycled Wood. Other major sources are packaging waste (largely falling in the commercial waste stream) and tonnages of Waste Wood delivered by the public to local authority Civic Amenity sites.

Recycled Wood Demand

As Figure 11 shows, Tolvik estimates that in the calendar year 2019, **2.55Mt** of Recycled Wood was sent to UK biomass, a 6.7% increase on the 2.30Mt in 2018-19 shown in Figure 4, reflecting the progressive commissioning of new biomass assets.

During 2019 demand for Recycled Wood for panelboard was strong – through a combination of high value on Packaging Recovery Notes (“PRNs”) helping to make Recycled Wood commercially attractive to manufacturers, and the increasing cost of virgin biomass. As a result the industry has reported that a record figure of just **0.98Mt** of Recycled Wood was sent to panelboards in 2019. Exports of Recycled Wood continued to decline and were squeezed to a level last seen in 2009-10.

Demand (Mt)	2019	Data Source
Biomass	2.55	Annual Performance Reports, Ofgem
Panelboard	0.98	The Wood Panel Industries Federation
Other Recycling	0.23	Tolvik based on WRA data
Export	0.13	Export/Import data
Total	3.89	

Figure 11: Demand for Recycled Wood – 2019

Demand from biomass has been increasing steadily in recent years but whilst most facilities are now operational, a number are operating significantly below their expected performance – with an average availability for those for which Annual Performance Reports have been received of around 65% (see below).

Assuming those biomass facilities constructed for the processing of Recycled Wood which were not operational in 2019 do not operate in the future, then at an average 70% availability (this will depend on the underlying technology) it would be reasonable to infer demand for Recycled Wood from the biomass sector could increase to 3.1Mtpa. However, a review on an asset-by-asset basis, Tolvik’s modelling is that maximum demand is more likely to be nearer 2.9Mtpa.

Ignoring any short term impact from COVID-19, and assuming Recycled Wood exports reduce to zero, demand for Recycled Wood is projected to continue to rise such that there will be a **supply gap of around 0.25Mtpa by 2022**.

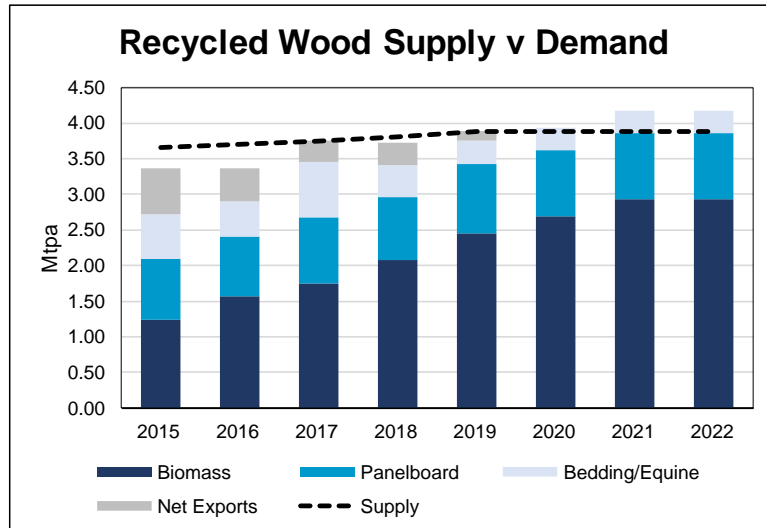


Figure 12: Projected Recycled Wood Supply vs Demand exc COVID-19 Source: Tolvik analysis

Initial modelling suggests that, as a result of the expected post COVID-19 recession, in 2021 Recycled Wood tonnages could fall by 6-15% when compared with 2019. After allowing for reduced demand from the panelboard sector this would result in a **potential supply gap of 0.4-0.7Mtpa**.

Tolvik’s analysis confirms that unless tonnages of Recycled Wood are imported, it is likely that across the UK there will be a shortfall in Recycled Wood – which, given the uneven geographical distribution of Recycled Wood fuelled biomass facilities, will be exacerbated at a regional level.

Recycled Wood Biomass Plant Performance

Tolvik’s EfW statistics provide a reasonably detailed insight into the operational performance of EfW facilities. Whilst data for Recycled Wood fuelled biomass facilities is less comprehensive, there are now sufficient data points in the APRs released under Freedom of Information Act to allow for limited analysis. This said, the relatively small number of reporting facilities (numbering between 16 to 20) means that analysis has the potential to be distorted by a single misreported figure.

Figure 13 shows the distribution of availability across reporting facilities with an average 2019 availability of 65%. Compared with the average “load factor” based on Ofgem data in Figure 14, the distribution of the two is similar – highlighting the wide range in the operational performance of Recycled Wood biomass facilities.

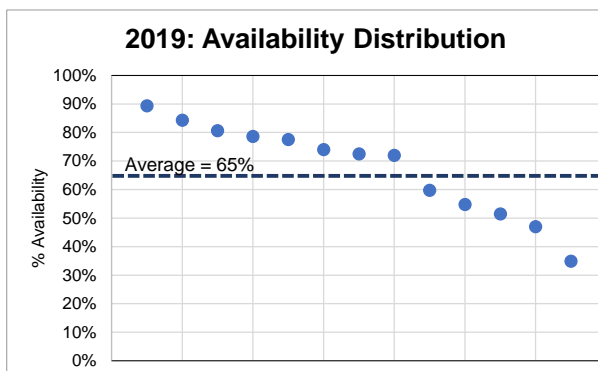


Figure 13: Recycled Wood Biomass – Availability Distribution Source: Tolvik analysis of APR

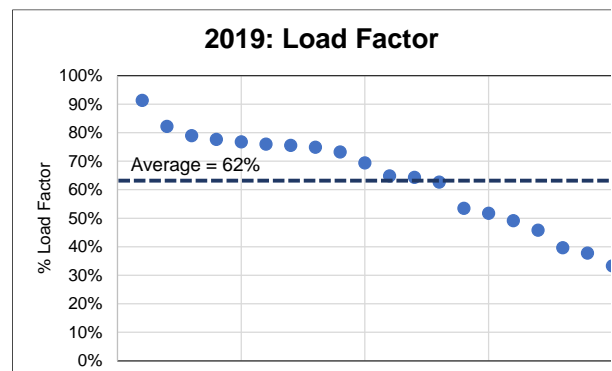


Figure 14: Recycled Wood Biomass – Load Factor Distribution Source: Tolvik analysis of Ofgem data

Figure 15 shows the distribution of net power generation per tonne of Residual Waste – which for 2019 using APR data averages to be 880KWh/t – a little higher than the 2018/19 figure based on Ofgem data in Figure 5. Once again there is a wide range of performance – although with variable technology and variable availability this is perhaps not surprising.

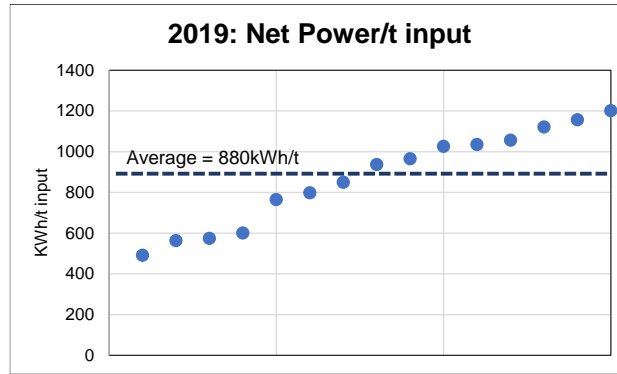


Figure 15: Recycled Wood Biomass – Net Power Export Source: Tolvik analysis of APR

Figures 16 and 17 show the distribution of Incinerator Bottom Ash (“IBA”) generation and that for Air Pollution Control residues (“APCr”). The generally hazardous nature of IBA generated by Recycled Wood biomass makes this a commercially important figure. Note that the average of 8.1% across reporting facilities has been distorted by two outliers – one figure is from a small poorly performing facility but the other looks as if it could be a reporting error. Eliminating these two the average falls from 8.1% of inputs to 4.3%.

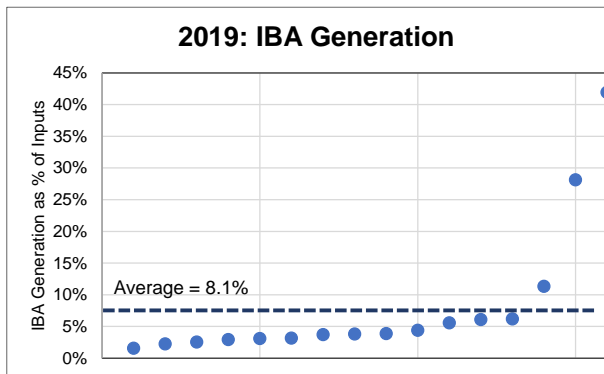


Figure 16: Recycled Wood Biomass – IBA Generation Distribution Source: Tolvik analysis of APR

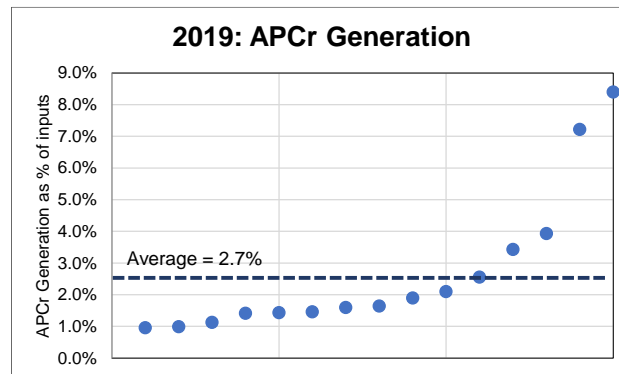


Figure 17: Recycled Wood Biomass – APCr Generation Distribution Source: Tolvik analysis of Ofgem data

4. STRAW

In the context of this report, Straw refers to both crops purpose grown as a biomass fuel and the by-product from cereal production. It is a regional market, with a clear focus of supply in the east of England.

Straw Supply

According to DEFRA data⁽⁶⁾ cereal straw availability in the UK is generally around 11-12Mtpa. In estimating the size of the market, the challenge is that if alternative markets are uneconomic, stubble is ploughed back into soil – and it is generally agreed that this can be as much as 30% of total potential production. Tolvik’s estimate is that the overall “potentially available” Straw market is therefore around 9 Mtpa.

Straw Demand

In 2017, the latest year for which data is available, animal bedding (49% of straw production) and animal feed markets (17%) were the dominant sources of demand for Straw. Other Straw markets (carrot protection, mushroom growing and export) were estimated to account for around 0.3Mtpa, this suggested around 3.5Mtpa of surplus cereal straw resource is potentially available across the UK as a whole -

including 0.73Mt reported to be used by the biomass sector at the four dedicated Straw fuelled biomass facilities (Ely, Brigg, Sleaford and Snetterton).

In recent years the biomass sector has faced challenges in securing straw at an acceptable price. As a result, as Figure 18 shows, whilst in 2015-16 Straw accounted for 97% of inputs at identified facilities, by 2018-19 it had fallen to 76% with the facilities also combusting a significant portion of Grade A Recycled Wood as a fuel.

Anecdotally, increased changing yields and farmer behaviour has also driven operators of these facilities to seek a more diversified fuel mix.

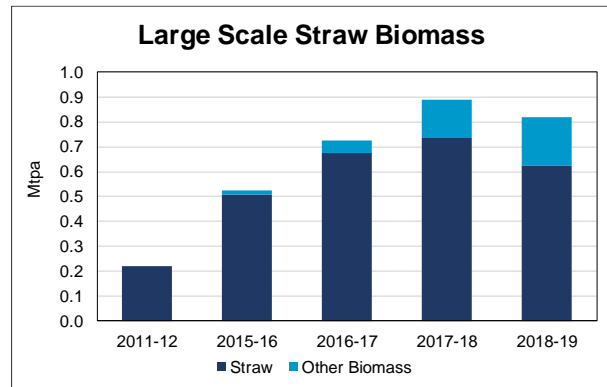


Figure 18: Biomass demand for straw
Source: Tolvik analysis

5. POULTRY LITTER

Poultry Litter is a by-product of the UK poultry industry and comprises excreta, spoiled feed, feathers and bedding material. Unlike “pure” poultry manure, it is readily combustible.

The poultry industry is regionally distributed, with particular concentrations in Northern Ireland, the East of England, Welsh borders and, to a lesser extent, the east central belt of Scotland.

Poultry Litter Supply

It is estimated, based on a range of data sources, that around 2.0Mt of Poultry Litter is produced in the UK each year. The total tonnage of Poultry Litter generated is fundamentally a function of demand for poultry (which has been rising at least as fast as the UK population) but it is noted that changes in waste management methods and regulation can also have an impact on the availability of Poultry Litter in the market.

Poultry Litter Demand

In the UK Poultry Litter is generally sent to anaerobic digestion, biomass and fertiliser markets. The anaerobic digestion market is relatively nascent, with only a limited number of plants dedicated to the (technically complex) digestion of Poultry Litter. However, a number of anaerobic digestion facilities in the UK accept modest tonnages (up to 20%) of Poultry Litter alongside a range of other (typically agricultural) feedstocks.

In 2018-19, 0.58Mt of Poultry Litter was sent to the three large-scale biomass facilities – Thetford, Eye and Westfield and it is estimated that a further circa 0.2Mtpa was sent to anaerobic digestion facilities. The remaining tonnage (c. 1.2Mt) not processed on site was used in agriculture as a fertiliser. Tolvik is not aware of any further planned UK biomass capacity for the processing of Poultry Litter.

6. MEAT AND BONE MEAL (“MBM”)

MBM is a by-product of the rendering industry, and under the Animal By-Product Regulations Category 1 MBM can only be disposed of by incineration. Category 2 can be disposed of by pressure rendering and then used at an approved composting/anaerobic digestion facility whilst Category 3 can be used in the production of pet food and organic fertilisers and soil improvers.

At present the economics are such that very little Category 2 material is processed separately from Category 1 material. The focus of the analysis is therefore on Category 1 MBM.

MBM Supply

According to Foodchain and Biomass Renewables Association (“FABRA”) the main industry body, in 2012 Category 1 MBM arisings in the UK were estimated to have been 236ktpa. Overall, the limited data available suggests a relatively small market generating around **0.2-0.3Mt** each year of MBM for combustion as biomass.

MBM Demand

In 2018/19 around 0.25Mt of MBM was combusted at four biomass facilities (Glanford, Goosey Lodge, Newark Widnes) of which 50kt was imported from Germany, Ireland and Netherlands. A very limited tonnage was also processed as an alternative fuel at cement kilns.

7. THE VALUE OF BIOMASS

This new section of the report looks to provide an overview on recent trends in the value of biomass fuel based on various indices⁽⁷⁾.

Clearly the value of fuel will be facility-specific and a function of a number of variables – not least any contract terms with suppliers as well as transport and any fuel preparation costs. These indices have September 2013 as the reference date (as this was the time at which a significant number of biomass facilities were in active development) and have been referenced against RPI – on the basis that a major source of income to biomass facilities is by way of subsidy support which is index linked.

As Figure 19 shows, the value of straw has been relatively volatile – a function in large part of underlying weather conditions throughout the growing and harvesting cycle. The Sawlog Index and Coniferous Standing Sales Price Index (“CSSI”), produced by Forestry Statistics are the main price indicators in the UK for the Virgin Wood sector. These both show a steep increase to summer 2019 and then have started to fall back. The next half year data is expected to show a further fall. The FEFPEB index – which relates to pallet timber, is a useful European price benchmark indicator.

The value of Grade A Recycled Wood (with Grades B & C historically tracking a similar price pattern) is reported to also have risen steeply in the last 12 months.

What is also particularly noticeable from Figure 19 is the volatility in prices since 2017 and the extent to which the value of biomass has generally risen.

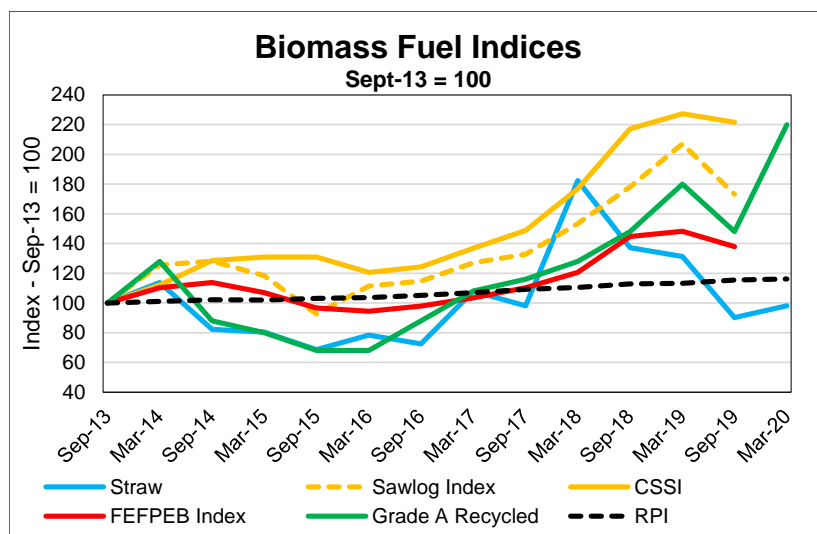


Figure 19: Biomass Fuel Indices Source: As set out in Appendix 2⁽⁷⁾

APPENDIX 1: BIOMASS FACILITIES INCLUDED IN THE REPORT

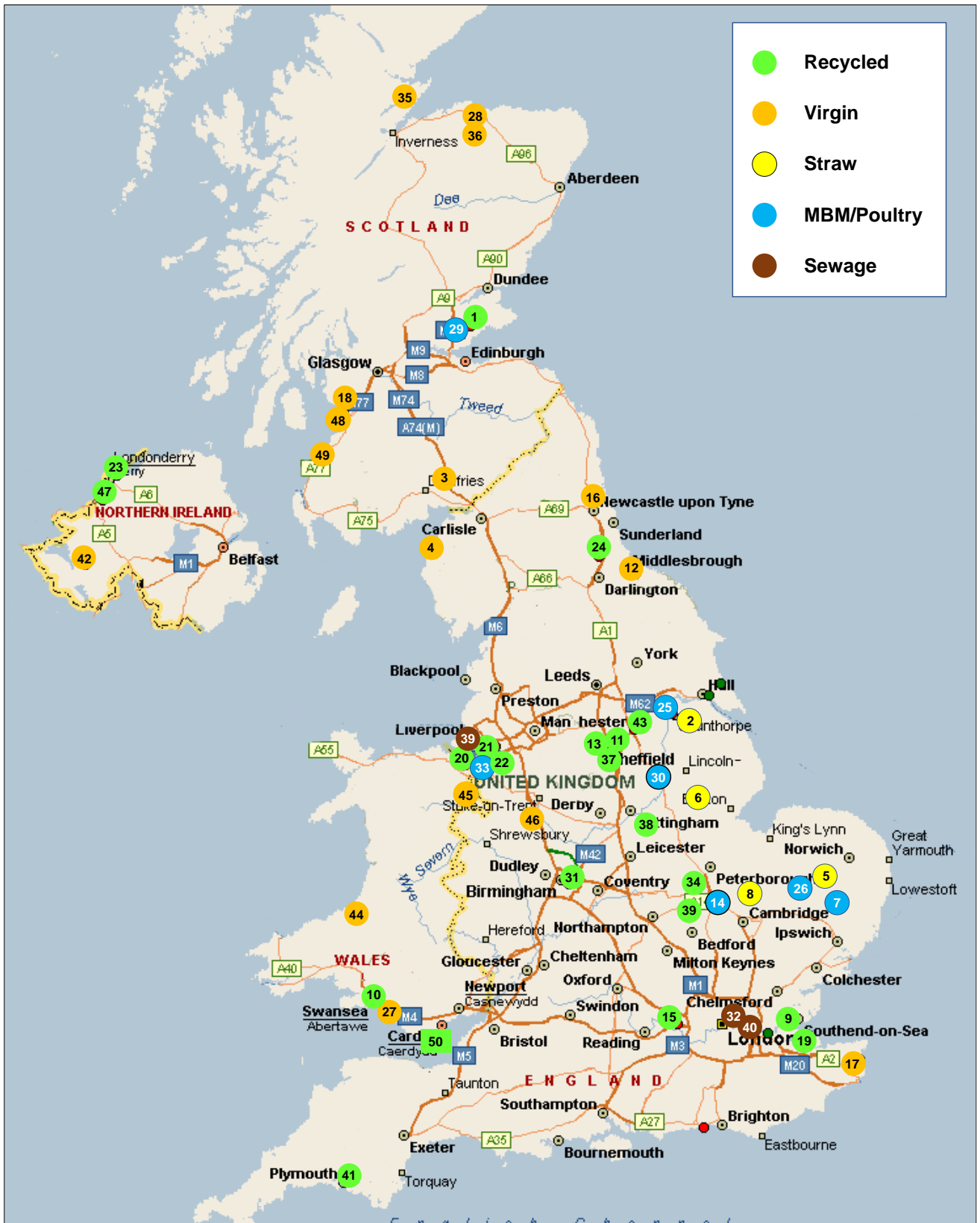


Figure 20: Location of Biomass Facilities. For further details see Figure 21

Operational Biomass Facilities in 2018-19

	Facility	Main Feedstock(s)	Operator	Installed Capacity MW	2015/16 Input (Ktpa)	2016/17 Input (Ktpa)	2017/18 Input (Ktpa)	2018/19 Input (Ktpa)
1	Markinch	Recycled Wood	RWE	61.6	325	373	315	356
2	Brigg	Straw	BWSC	54.6	72	230	222	202
3	Stevens Croft	Virgin Wood	EOn	50.7	407	393	386	390
4	Iggesund	Virgin Wood	Iggesund	50.0	584	637	639	654
5	Snetterton	Straw	BWSC	49.5	0	27	228	245
6	Sleaford	Straw	BWSC	45.0	222	248	207	160
7	Thetford	Poultry Litter	MRE	44.2	475	482	475	451
8	Ely	Straw	MRE	43.3	232	221	233	211
9	Tilbury	Recycled Wood	BWSC	40.0			70	172
10	Margam	Recycled Wood	BWV	40.0				53
11	Templeborough	Recycled Wood	BWV	40.0				103
12	Wilton 10	Virgin Wood	Sembcorp Utilities	35.2	293	243	178	245
13	Blackburn Meadows	Recycled Wood	EOn	34.0	227	189	219	208
14	Goosey Lodge	MBM	Ancilliary Comp	33.0	89	92	187	148
15	Slough	Recycled Wood	SSE	28.0	102	116	106	99
16	Cramlington	Virgin Wood	BWSC	28.0			97	210
17	Sandwich	Virgin Wood	BWSC	27.0				167
18	Caledonian	Virgin Wood	UPM	26.0	320	313	311	283
19	Ridham Dock	Recycled Wood	MVV	25.0	106	140	152	174
20	Shotton	Recycled Wood	UPM	24.8	445	342	313	327
21	Mersey Bio	Recycled Wood	BWSC	22.8	0	7	77	63
22	Ince	Recycled Wood	Thomas Hawksley	22.0				46
23	Lisahally	Recycled Wood	BWSC	18.8	53	116	85	110
24	Chilton	Recycled Wood	Veolia	17.5	77	98	114	115
25	Glanford	MBM	MRE	16.7	94	92	91	93
26	Eye	Poultry Litter	MRE	16.5	158	143	124	128
27	Western Wood	Virgin Wood	Western Wood	16.4	147	143	154	136
28	Speyside	Virgin Wood	BWSC	15.0	0	90	148	125
29	Westfield	Poultry Litter	MRE	12.5	118	116	113	112
30	Newark	MBM	JG Pears	12.0				51
31	Birmingham Bio	Recycled Wood	Engie	11.8	0	45	62	56
32	Beckton	Sewage	Thames Water	11.4	52	48	46	41
33	Widnes	MBM	Secanim	11.3	46	46	92	85
34	Welland	Recycled	MWH	10.3			55	56
35	Balcas Scotland	Virgin Wood	Balcas	9.6	78	69	81	75
36	CoRDe	Virgin Wood	CoRDe	8.6	79	77	82	84
37	Holbrook	Recycled Wood	Equitix	6.5				21
38	Widmerpool	Recycled Wood	Veolia	5.8			13	29
39	Twinwoods	Recycled Wood	Twinwoods	3.6	13	10	23	20
40	Crossness	Sewage	Thames Water	3.5	25	23	33	0
41	Dartmoor	Recycled Wood	Cogen	3.5			3	12
42	Balcas Timber	Virgin Wood	Balcas	3.0	103	99	110	106
43	Trackwork	Recycled Wood	Trackwork	3.0	7	10	15	2
44	Felinfach	Virgin Wood	Volac	3.0	1	29	61	61
45	Newbridge	Virgin Wood	Blazers	3.0			10	16
46	Eccleshall	Virgin Wood	Eccleshall	2.8	40	38	35	31
47	Tyrone Energy	Recycled Wood	Tyrone Energy	2.7	27	26	24	23
48	Troon	Virgin Wood	Adam Wilson	2.6	0	1	32	33
49	Girvan	Virgin Wood	Land Energy	2.5	47	40	45	53
			Other		206	258	87	101
			Total	1,064	5,270	5,669	6,154	6,741

Figure 21: Operational Biomass Facilities in 2018-19 Source: Various

Biomass Facilities In Construction in 2018/19

	Facility	Main Feedstock(s)	Developer	Installed Capacity MW	Installed Capacity ktpa
50	Barry	Recycled Wood	Aviva	10.0	85.0

APPENDIX 2: DATA SOURCES

- (1) <https://www.ofgem.gov.uk/publications-and-updates/biomass-sustainability-dataset-2018-19>
- (2) <https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2019>
- (3) <https://www.forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics/forestry-statistics-2019/>
- (4) <https://wrap.org.uk/content/quantifying-composition-municipal-waste>
- (5) <https://data.gov.uk/dataset/882186e7-97b0-4ad0-b253-e28607252f42/uk-statistics-on-waste>
- (6) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/856695/nonfood-statsnotice2018-08jan20.pdf
- (7) Straw (Big Square Baled Barley Straw) - <https://ahdb.org.uk/dairy/hay-and-straw-prices>
 Sawlog Index and CSSI (Nominal) - <https://www.forestresearch.gov.uk/tools-and-resources/statistics/statistics-by-topic/timber-statistics/timber-price-indices/>
 FEFPEB Index - <https://www.fefpeb.eu/wooden-packaging/timber-pallet-price-indices>
 Grade A Recycled – (Median High Grade, adjusted for estimated processing costs) - <https://www.letsrecycle.com/prices/wood/>

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APPENDIX 3: GLOSSARY

APCr	Air Pollution Control residues
APR	Annual Performance Reports
CHP	Combined Heat and Power
Confor	Confederation of Forest Industries
CSSI	Coniferous Standing Sales Price Index
EfW	Energy from Waste
FABRA	Foodchain and Biomass Renewables Association
IBA	Incinerator Bottom Ash
IED	Industrial Emissions Directive
Kt (pa)	‘000s tonnes (per annum)
MBM	Meat and Bone Meal
Mt (pa)	Million tonnes (per annum)
MW(h)	Mega Watts (Hours)
PRN	Packaging Recovery Note
RHI	Renewable Heat Incentive
WRA	Wood Recyclers Association



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