



Use of UK biomass for electricity and CHP

September 2013

Outline of slides



Department
of Energy &
Climate Change

Slide(s)	Description
1a, 1b	<u>Current</u> use of UK and imported biomass
2	<u>Current</u> availability of UK biomass
3a, 3b	<u>Future</u> UK biomass use
4	<u>Future</u> UK biomass availability
5	<u>Future</u> UK biomass use and availability

1a. Current biomass and wood used in the Renewables Obligation - Increasing demand for wood since 2009 has been met by imports.



- The table shows the aggregated data from the biomass sustainability report submitted by biomass generators under the Renewables Obligation, covering plants using solid biomass (for electricity and CHP)
- 'Wood' in this report includes virgin and recycled wood, short rotation coppice and products which are interpreted as wood such as dust, briquettes, pellets, cubes and granules. 'Solid non-wood' biomass includes straw and other agricultural residues.
- It should be noted that the Renewables Obligation (RO) data cannot be guaranteed as complete or wholly accurate because varying descriptions are used by returnees, which then requires DECC staff to interpret.
- Woodfuel demand for electricity has been increasing over the last two years. However, the demand for wood from UK sources has remained stable over this period (at approximately 1.4-1.5 million tonnes) and the increased demand has been met by increased imports.
- For UK-sourced material, which is mainly wood chip or agricultural residues, the fuels have been converted from an assumed 30% moisture content, into oven dried tonnes (odt) (i.e. the tonnes reported have been multiplied by 0.7).
- It is important to compare using a single unit: oven dried tonnes is used here (i.e. moisture content will be converted to zero – from 30% for common wood chips, from 50% for green wood, and 10% for pellets): assumptions used in AEA report on biomass supplies:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48059/1464-aea-2010-uk-and-global-bioenergy-report.pdf

	2009/10		2010/11		2011/12		
	UK	Imports	UK	Imports	UK (adjusted to include wastes)	Imports	
Wood	1.4	0.1	1.5	0.7	1.4	1.3	million odt
Percent UK vs imported	92%	8%	67%	33%	52%	48%	
Solid non-wood	0.9	0.6	1.0	0.4	0.9	0.4	million odt
Percent UK vs imported	63%	37%	71%	29%	70%	30%	
Total solid biomass (may not sum due to rounding)	2.4	0.7	2.5	1.1	2.3	1.7	million odt
Percent UK vs imported	78%	22%	69%	31%	58%	42%	

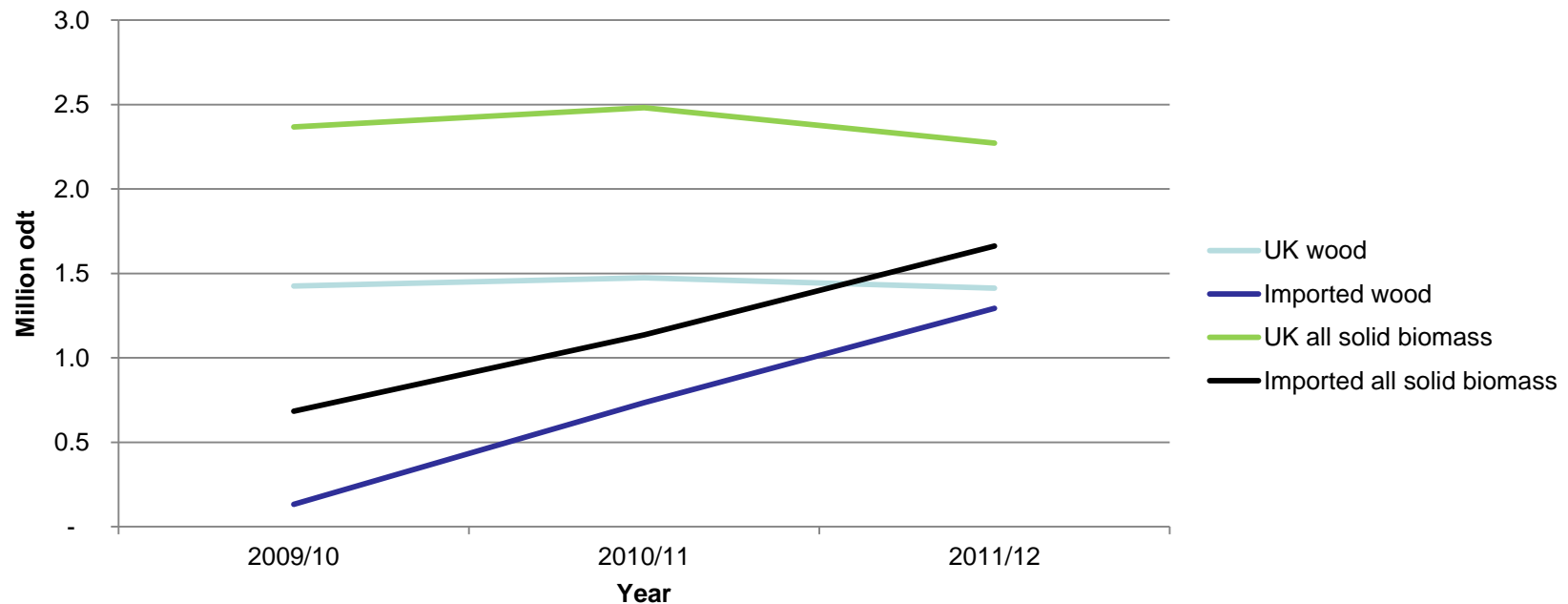
1b. Current UK and imported biomass use in Renewables Obligation - Increasing demand for wood since 2009 has been met by imports.



Table shows, based on sustainability information provided to Ofgem under the RO, the origin of wood and biomass used for electricity and CHP

- See assumptions from previous slide

Origin and use of wood in the Renewables Obligation



2. The availability of UK biomass is dependent on the ability to overcome current market constraints



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Table shows the current UK estimated woody biomass availability

- Based on Bioenergy Strategy figures: assumptions are included in Bioenergy Strategy Analytical Annex https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48338/5136-bioenergy-strategy-analytical-annex.pdf
- Displays a range - the range between the scenarios is due to assumptions around price and the ability to overcome market constraints such as: production capacity in the UK, uncertainty over sustainability standards, yields, and public acceptance. (i.e. higher end of range indicates more constraints overcome and higher biomass prices)
- This is therefore a 'constrained availability' rather than a 'technical' availability', with price and market constraints taken into account.

Current UK biomass availability for energy Million oven dried tonnes	2011
Arboricultural arisings	0.4 to 2.3
Dry Agricultural Residue	2.7 to 5.0
Forestry residues	0 to 0.5
Sawmill co-products	0.7 to 1.3
Small roundwood	0.2 to 1.8
Energy Crops	0.0 to 0.1
Waste Wood	2.2 to 4.3
Total	6.1 to 15.3

3a. Expected use of UK wood use by large scale energy generators – wood disclosure information



Table shows expected use of UK wood by large scale electricity and CHP generators

- We have gathered additional information to assess wood demand.
- We asked large scale biomass electricity generators to inform us of their planned use of UK sources of wood over the coming five years in coal and dedicated biomass plants (including with CHP).
- The questionnaire related specifically to wood.
- All companies responded to the questionnaire.
- The UK wood that the large-scale electricity generators intend to use is primarily for dedicated biomass and CHP plants.
- ‘Virgin wood’ includes by products and residues from sawmills, and ‘recovered’ refers to wood that was previously used for another purpose.
- Expected wood use by these plants is 0.8 million oven dried tonnes in 2012/13, rising to 1 million odt in 2017/18, which is within the estimates of wood and biomass requirement included in the RO Banding Review

Million Oven Dried Tonnes (Modt)	1st April 2012 - 31st March 2013	13/14	14/15	15/16	16/17	17/18
Total for Virgin (V)	0.5	0.6	0.6	0.6	0.6	0.6
Total for Recycled ®	0.3	0.3	0.4	0.4	0.4	0.4
Total V & R	0.8	0.8	1.0	1.0	1.0	1.0

3b. Expected use of UK-sourced biomass in 2016/17 is 2.5 – 3.5 Modt



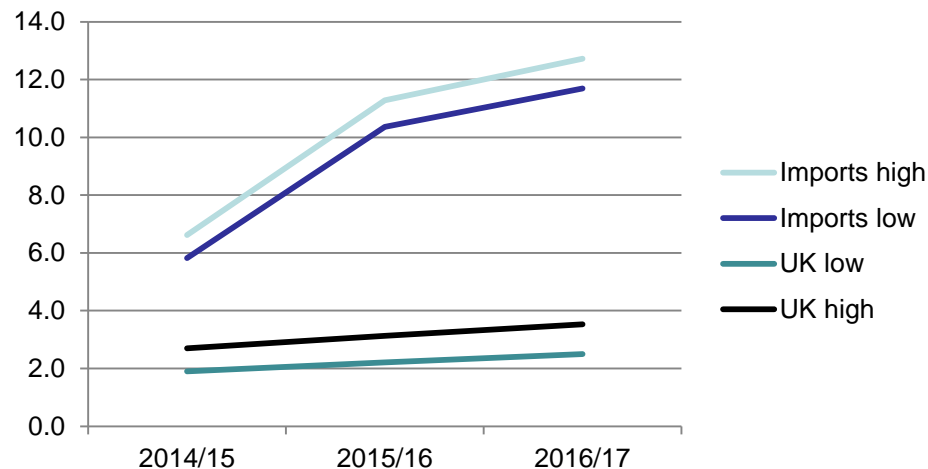
Table shows total biomass use for UK electricity and CHP (both UK feedstocks and imported)

- Based on RO Banding Review (figures here rounded to the nearest 0.1 Modt). (Assumptions underpinning the banding review modelling are provided in Table A1 of the Banding Review Government Response impact assessment)

Modt	2014/15	2015/16	2016/17
Large scale biomass (>50 MW) and conversions	5.9	10.5	11.8
Small scale biomass	2.0	2.2	2.5
CHP	0.7	0.8	0.9

Chart shows the estimates of sources of biomass use for electricity

- Expected UK biomass requirement in 2016/17 2.5 – 3.5 Modt
- Assumptions include large scale electricity generation and conversions operate on 99% imported feedstock. The upper estimate assumes all small scale biomass and CHP is from UK biomass, and the lower ranges assumes a proportion is sourced from imported biomass.



4. Future UK biomass availability depends on the ability to overcome market constraints and meet sustainability requirements



Table shows the expected UK biomass constrained availability in two future years

- Based on restricted and ambitious scenarios undertaken for UK Bioenergy Strategy
- See slide 2 for assumptions

Modt	2011 (current)	2015	2020
Arboricultural arisings	0.4 to 2.3	0.5 to 2.3	0.6 to 2.4
Dry Agricultural Residue	2.7 to 5.0	3.2 to 5.0	3.7 to 5.0
Forestry residues	0 to 0.5	0 to 0.5	0.1 to 0.5
Sawmill co-products	0.7 to 1.3	0.7 to 1.3	0.8 to 1.3
Small roundwood	0.2 to 1.8	0.3 to 1.8	0.4 to 1.8
Energy Crops	0.0 to 0.1	0.2 to 0.3	0.6 to 1.1
Waste Wood	2.2 to 4.3	3.2 to 4.3	4.2
Total	6.1 to 15.3	8.1 to 15.5	10.4 to 16.3

5. Future potential UK biomass resource and use by the electricity sector

Table shows total UK biomass use compared to expected use for electricity

- UK biomass resource supply based on modelling undertaken for Bioenergy Strategy, compared to biomass use based on RO Banding Review 2012

