

<b>TABLE I:</b>	<b>fibre sources</b>
<b>Country:</b>	<b>United Kingdom</b>
<b>Year:</b>	<b>2011</b>

Fibre SOURCES				Fibre TYPES		Unit [1 000]	For all purposes, not only energy				For EU 27 Member countries			
							Domestic production	Imports		Exports		Gross Domestic supply	Imports from EU 27 countries	
Wood Sources	Primary solid biomass	Woody Biomass from Forests	Industrial Roundwood (C & NC)	m <sup>3</sup>	8,788	O	602	O	578	O	8,811	DQ		
			Fuelwood (C & NC)	m <sup>3</sup>	1,234	O	11	O	146	O	1,099			
			... of which from short rotation coppice	m <sup>3</sup>	...	...								
		Woody Biomass Outside Forests	Industrial Roundwood (C & NC)	m <sup>3</sup>	...	...						...		
			Fuelwood (C & NC)	m <sup>3</sup>	1,438	C						1,438		
			... of which from short rotation coppice	m <sup>3</sup>	...	...								
	Industrial waste (co-products)	Forest based Industry	Solid co-products (C & NC)	Chips and particles	m <sup>3</sup>	2,309	O	116	O	234	O	2,192	116	O
				Wood residues	m <sup>3</sup>	770	O	1,527	O	516	O	1,782	189	O
				Bark	m <sup>3</sup>	1,029	C	...	...	...	...	1,029	...	...
			Liquid co-products (C & NC)	Black liquor (without crude tall oil)	t	0	...					...		
Crude tall oil				t	...	...	17	O	1	O	15	...	...	
Municipal solid waste biodegradable	Wood waste	Post consumer recovered wood	Non-hazardous wood waste	t	4,327	C	...	...	...	...	4,327	...	...	
			Hazardous wood waste	t	...	...	...	...	...	...	...	...	...	
		Wood from unknown sources	m <sup>3</sup>	...	...	...	...	...	...	...	...	...	...	

© 2012 UNECE/FAO Forestry and Timber Section - In case of any uncertainties or questions on the JWEE 2011 please contact woodenergy.timber@unece.org

Proposed Data Sources:	
	JFSQ 2011 Provisional
	Calculated - based on JFSQ data and conversion factors
	National waste statistics: <a href="#">OECD link</a> / <a href="#">Basel Co</a> / <a href="#">EUROSTAT link</a>
	National (empirical) sources / studies
	(Inter-) National energy statistics

Units:
t = metric tonnes [megagram]
m <sup>3</sup> = solid cubic metre, underbark
bv = m <sup>3</sup> bulk volume
rwe. = Roundwood equivalent in m <sup>3</sup>
L = Litre
t d.m. = Metric tonnes dry matter

<b>TABLE II:</b>	<b>processed wood-based fuels</b>
<b>Country:</b>	<b>United Kingdom</b>
<b>Year:</b>	<b>2011</b>

Fibre TYPES		Original unit	Domestic production		Import		Export		Gross Domestic supply	
				DQ		DQ		DQ		
Processed wood-based fuel production	Processed solid biofuels from wood	Wood Charcoal	t (thousand)	5	0	62	0	2	0	66
		Wood Pellets	t (thousand)	244	0	1,015	0	38	0	1,221
		Wood Briquettes	t (thousand)	...		...	...	...	...	...
	Processed liquid biofuels from wood	Pyrolysis Oils	L (million)	...	...	...	...	...	...	...
		Cellulose based ethanol	L (million)	...	...	...	...	...	...	...
		Wood based biodiesel	L (million)	...	...	...	...	...	...	...
	Gaseous Wood-based Fuels	Synthesis Gas								

For EU 27 Member countries	
Imports from EU 27 countries	
	DQ
17	0
115	0
...	...
...	...
...	...

© 2012 UNECE/FAO Forestry and Timber Section - In case of any uncertainties or questions on the JWEE 2011 please contact: [woodenergy.timber@unece.org](mailto:woodenergy.timber@unece.org)

<b>Proposed Data Sources:</b>	
	JFSQ 2011 Provisional
	Calculated - based on JFSQ data and conversion factors
	National waste statistics: OECD / Basel Conventio / EUROSTAT
	National (empirical) sources / studies
	(Inter-) National energy statistics

<b>Units:</b>
t = metric tonnes [megagram]
m <sup>3</sup> = solid cubic metre, underbark
bv = m <sup>3</sup> bulk volume
rwe. = Roundwood equivalent in m <sup>3</sup>
L = Litre
t d.m. = Metric tonnes dry matter

<b>TABLE IV:</b>	<b>energy use</b>
<b>Country:</b>	<b>United Kingdom</b>
<b>Year:</b>	<b>2011</b>

For all purposes, not only energy			
Unit [1 000]	Gross Domestic supply	Transformation (table TIII)	Net Domestic supply

<b>Primary solid biomass</b>	Woody Biomass from Forests	t d.m.	2,480	-62	2,418	
	Woody Biomass Outside Forests	t d.m.	360	0	360	
	Unspecified	t d.m.		0	0	
<b>Forest based Industry</b>	<b>Solid co-products (C &amp; NC)</b>	Chips and particles	t d.m.	514	-86	428
		Wood residues	t d.m.	390	0	390
		Bark	t d.m.	463	0	463
		Unspecified solid co-products	t d.m.		0	0
	<b>Liquid co-products (C &amp; NC)</b>	Black liquor (without crude tall oil)	t	0	0	0
		Crude tall oil	t	15	0	15
		Unspecified liquid co-products	t		0	0
<b>Processed wood-based fuel production</b>	<b>Processed solid biofuels from wood</b>	Wood Charcoal	t d.m.	62		62
		Wood Pellets	t d.m.	1,099		1,099
		Wood Briquettes	t d.m.	0		0
	<b>Processed liquid biofuels from wood</b>	Pyrolysis Oils	t	0		0
		Cellulose based ethanol	t	0		0
		Wood based biodiesel	t	0		0
<b>Post consumer recovered wood</b>	Non-hazardous wood waste	t d.m.	3,245	-16	3,230	
	Hazardous wood waste	t d.m.	0	0	0	
	Unspecified wood waste	t d.m.		0	0	
<b>Wood from unknown sources</b>		t d.m.	0	0	0	

### Energy use of wood fibres by ISIC-sectors (in 1000 t.d.m or t)

Energy Transformation Sector													
Main Activity Producer						Autoproducer Heat, CHP and Electricity (include autoconsumed heat !)							
Electricity	CHP	Heat	Total	Pulp & Paper [ISIC No.21]	Wood & wood products	Other	Total	Electricity	CHP	Heat	Total		
DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ		
506	C	...	...	506	...	62	C	68	C	...	130	...	
1	C	...	...	1	...						0	...	
				0	...						0	...	
254	C	...	...	254	...			688	C	...	688	...	
27	C	...	...	27	...						0	...	
		44	C	44	...						0	...	
				0	...			53	C	...	53	...	
				0	...						0	...	
89	C	...	...	89	...					4	C	4	...
				0	...						0	...	
				0	...						0	...	
1,188	C	...	...	1,188	...						0	...	
				0	...						0	...	
				0	...						0	...	
113	C	...	...	113	...						0	...	
				0	...						0	...	
				0	...						0	...	
				0	...						0	...	



**Data Qualities\*\*:**

<b>A</b>	Excellent data quality (e.g. empirical data from a recent study)
<b>B</b>	Good data quality (e.g. older studies with widely recognized precision or a good expert estimate -based on more than one source)
<b>C</b>	Rough estimate (about right order of magnitude),
<b>D</b>	No information on data quality available
<b>O</b>	<b>Official national statistics</b>

\*\*The "DQ" - Data Quality indicator shall enable correspondents to submit different information from different data sources which implies different qualities.

<b>FIBRE SOURCES &amp; TYPES:</b>		
<b>C &amp; NC</b>	Coniferous and non-coniferous.	
<b>m<sup>3</sup></b>	Cubic metres solid volume excluding bark.	
<b>Woody biomass</b>	Organic woody material both above-ground and below-ground, and both living and dead, measured to a minimum diameter of 0 mm (diameter breast height). Includes stem, stump, branches, bark, seeds and foliage, roots, shrubs and bushes. Excludes: litter (definition of "biomass" in FAO 2004, which is based on IPCC Good Practice Guidelines LULUCF Glossary 2003; term "woody" added, minimum diameter threshold as in TBFRA 2000).	<a href="#">MCPFE "STATE OF EUROPE'S FORESTS 2007"</a>
<b>Above-ground (living) woody biomass</b>	All living woody biomass above the soil, including stem, stump, branches, bark, seeds and foliage. (FAO 2004, based on IPCC Good Practice Guidelines LULUCF Glossary 2003; term "woody" added).	<a href="#">MCPFE "STATE OF EUROPE'S FORESTS 2007"</a>
<b>Below-ground (living) woody biomass</b>	All living woody biomass of live roots and the below-ground part of the stump. (FAO 2004, based on IPCC Good Practice Guidelines LULUCF Glossary 2003; term "woody" added).	<a href="#">MCPFE "STATE OF EUROPE'S FORESTS 2007"</a>
<b>Forest</b>	<p>Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.</p> <p>Explanatory notes:</p> <ol style="list-style-type: none"> <li>1. Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters in situ. Areas under reforestation that have not yet reached but are expected to reach a canopy cover of 10 percent and a tree height of 5 m are included, as are temporarily unstocked areas, resulting from human intervention or natural causes, which are expected to regenerate.</li> <li>2. Includes areas with bamboo and palms provided that height and canopy cover criteria are met.</li> <li>3. Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific scientific, historical, cultural or spiritual interest.</li> <li>4. Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 ha and width of more than 20 m.</li> <li>5. Includes plantations primarily used for forestry or protection purposes, such as rubberwood plantations and cork oak stands.</li> <li>6. Excludes tree stands in agricultural production systems, for example in fruit plantations and agroforestry systems. The term also excludes trees in urban parks and gardens.</li> </ol>	<a href="#">FAO 2004 - Global Forest Resources Assessment Update 2005 – Terms and Definitions</a>
<b>Short rotation coppice</b>	(coppice forest) Woodland which has been regenerated from shoots formed at the stumps of the previous crop trees, root suckers, or both, i.e., by vegetative means. Normally grown on a short rotation for small material, but sometimes, e.g. some eucalypt species, to a substantial size.	<a href="#">IUFRO Silva Term Database</a>
<b>Woody Biomass Outside Forests</b>	Any woody biomass outside areas defined as "Forest". It includes woody biomass from "Other wooded land" and "Trees outside forests".	
<b>Other Wooded Land</b>	Land not classified as "Forest", spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds in situ; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.	<a href="#">FAO 2004 - Global Forest Resources Assessment Update 2005 – Terms and Definitions</a>
<b>Trees outside forests</b>	Includes all trees found outside forests and outside other wooded lands: - stands smaller than 0.5 ha; - tree cover in agricultural land, e.g. agro forestry systems, home gardens, orchards; - trees in urban environments; - along roads and scattered in the landscape.	<a href="#">FAO 2004 - Global Forest Resources Assessment Update 2005 – Terms and Definitions</a>
<b>Industrial Roundwood (C &amp; NC)</b>	<p>Coniferous and non-coniferous Industrial Roundwood:</p> <p>All roundwood except wood fuel. It is an aggregate comprising sawlogs and veneer logs; pulpwood, round and split; and other industrial roundwood. It is reported in cubic metres solid volume under bark (i.e. excluding bark). The customs classification systems used by most countries do not allow the division of Industrial Roundwood trade statistics into the different end-use categories that have long been recognized in production statistics (i.e. sawlogs and veneer logs, pulpwood and other industrial roundwood). (...) It excludes: telephone poles.</p>	<a href="#">UNECE/FAO/EUROSTAT/ITTO</a>  <a href="#">JOINT FOREST SECTOR QUESTIONNAIRE DEFINITIONS 1.2.</a>
<b>Fuelwood (C &amp; NC)</b>	<p>Coniferous and non-coniferous Industrial Roundwood:</p> <p>Roundwood that will be used as fuel for purposes such as cooking, heating or power production. It includes wood harvested from main stems, branches and other parts of trees (where these are harvested for fuel) and wood that will be used for charcoal production (e.g. in pit kilns and portable ovens). The volume of roundwood used in charcoal production is estimated by using a factor of 6.0 to convert from the weight (t) of charcoal produced to the solid volume (m<sup>3</sup>) of roundwood used in production. It also includes wood chips to be used for fuel that are made directly (i.e. in the forest) from roundwood. It excludes wood charcoal. It is reported in cubic metres solid volume underbark (i.e. excluding bark).</p> <p><b>It includes wood fibres gained from used logging residues and thinnings.</b></p>	<a href="#">UNECE/FAO/EUROSTAT/ITTO</a>  <a href="#">JOINT FOREST SECTOR QUESTIONNAIRE DEFINITIONS 1.1.</a>
<b>Industrial waste (co-products)</b>	In JWEE 2006 defined as primary industrial residues (liquid and solid).	

<b>Chips and particles</b>	Wood that has been reduced to small pieces and is suitable for pulping, for particle board and/or fibreboard production, for use as a fuel, or for other purposes. It excludes wood chips made directly in the forest from roundwood (i.e. already counted as pulpwood, round and split). <b>It is reported in cubic metres solid volume excluding bark.</b>	<a href="#">UNECE/FAO/EUROSTAT/ITTO</a> <a href="#">JOINT FOREST SECTOR QUESTIONNAIRE DEFINITIONS 3.</a>
<b>Wood residues</b>	The volume of roundwood that is left over after the production of forest products in the forest processing industry (i.e. forest processing residues) and that has not been reduced to chips or particles. It includes sawmill rejects, slabs, edgings and trimmings, veneer log cores, veneer rejects, sawdust, residues from carpentry and joinery production, etc. It excludes wood chips made either directly in the forest from roundwood or made from residues (i.e. already counted as pulpwood, round and split or wood chips and particles). <b>It is reported in cubic metres solid volume excluding bark.</b>	<a href="#">UNECE/FAO/EUROSTAT/ITTO</a> <a href="#">JOINT FOREST SECTOR QUESTIONNAIRE DEFINITIONS 4.</a>
<b>Bark</b>	E.g. European Waste 03 01 01 Waste bark and cork <b>It is reported in cubic metres solid volume.</b>	
<b>Black liquor (without crude tall oil)</b>	Alkaline spent liquor obtained from digesters in the production of sulphate or soda pulp during the process of paper production, in which the energy content is mainly originating from the content of lignin removed from the wood in the pulping process.	<a href="#">Unified Bioenergy Terminology - UBET (FAO)</a>
<b>Crude tall oil</b>	Tall oil, also called liquid rosin or tallol, is a viscous yellow-black odorous liquid obtained as a byproduct of the Kraft process of wood pulp manufacture. The name originated as anglicization of Swedish "talloolja" ("pine oil"). Crude tall oil contains rosins, unsaponifiable sterols (5-10%), resin acids (mainly abietic acid and its isomers), fatty acids (mainly palmitic acid, oleic acid and linoleic acid), fatty alcohols, some sterols, and other alkyl hydrocarbon derivatives. By fractional distillation tall oil rosin is obtained, with rosin content reduced to 10-35%. By further reduction of the rosin content to 1-10%, tall oil fatty acid (TOFA) can be obtained, which is cheap, consists mostly of oleic acid, and is a source of volatile fatty acids. The rosin finds use as a component of adhesives, rubbers, and inks, and as an emulsifier. The pitch is used as a binder in cement, an adhesive, and an emulsifier for asphalt. TOFA is a low-cost alternative to tallow fatty acids for production of soaps and lubricants. When esterified with pentaerythritol, it is used as a compound of adhesives and oil-based varnishes. All the above tall oil components should be reported under this category, despite the fact that a very limited number of countries may have different tax schemes for each tall oil	<a href="#">Wikipedia</a>
<b>Post-consumer recovered wood</b>	Used wood arising from construction of buildings or from civil engineering works. Recovered wood from transport (pallets), private households, as well as used wood arising from construction or demolition of buildings or from civil engineering works.	<a href="#">Unified Bioenergy Terminology - UBET (FAO)</a>
<b>Municipal solid waste biodegradable</b>	Waste produced by households, industry, hospitals and the tertiary sector which contains biodegradable materials (...).	<a href="#">IEA Balance builder</a>
<b>Non-hazardous wood waste</b>	Post-consumer recovered wood generated by any ISIC Sectors (Rev. 3.1) <b>EXCEPT</b> wood wastes generated by <b>ISIC 02, ISIC 2010 and ISIC 21</b> (corresponding to European Waste Classification 21.03 01 01 Waste bark and cork; 03 01 02 Sawdust; 03 01 03 Shaving, cuttings, spoiled timber/particle board/veneer; 03 01 99 Wastes not otherwise specified)  This comprises: <b>PACKAGING:</b> (e.g. European Waste Classification (EWC) 15 01 03) Wooden packaging;  <b>CONSTRUCTION AND DEMOLITION WASTES (INCLUDING ROAD CONSTRUCTION):</b> (e.g. EWC) 17 02 01 Wood  <b>MUNICIPAL WASTES AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES INCLUDING SEPARATELY COLLECTED FRACTIONS:</b> (e.g. EWC 20 01 07) Wood Please note that wood in mixed-waste streams that are burnt should be included where possible.	<a href="#">European Waste List</a>
<b>Hazardous wood waste</b>	Same definition and scope as non-hazardous wood waste.  Hazardous waste as defined in ANNEX I & II in the Basel convention on transboundary movements of hazardous wastes and their disposal (www.basel.int). This definition shall be expanded to national waste classifications, if possible.	<a href="#">Basel Convention</a>

## PROCESSED-WOOD BASED FUELS:

	<p>Secondary (processed) biofuels in the form of solids (e. g. charcoal), liquids (e. g. alcohol, vegetable oil), or gases (e. g. biogas as a mixture of methane and carbon dioxide), can be used for a wider range of applications with higher efficiency rates on average, including transport and high-temperature industrial processes.</p>	<p><a href="#">Unified Bioenergy Terminology - UBET (FAO)</a></p>
<b>Wood Charcoal</b>	<p>Wood carbonized by partial combustion or the application of heat from external sources. It includes charcoal used as a fuel or for other uses, e.g. as a reduction agent in metallurgy or as an absorption or filtration medium. It is reported in metric tonnes.</p> <p><b>ATTENTION:</b> In CA and US wood charcoal is often referred to as "Briquettes" - This must not be confused with Wood Briquettes as defined below!</p>	<p><a href="#">UNECE/FAO/EUROSTAT/ITTO</a></p> <p><a href="#">JOINT FOREST SECTOR QUESTIONNAIRE DEFINITIONS 2.</a></p>
<b>Wood Pellets</b>	<p>Wood pellets is a fuel product compressed from milled wood. Raw materials are cutter shavings and sawdust, which are by-products of the mechanical wood-processing industry. ( Combined Nomenclature 2009)</p> <p>Introduction of a new additional note to (Combined Nomenclature) chapter 44:</p> <p>For the purposes of (CN) subheading 4401 30 20, the expression 'pellets' means cylindrical products which have been agglomerated either directly by compression or by the addition of a small quantity of binder, having a diameter not exceeding 25 mm and a length not exceeding 45 mm.</p>	<p>Eurostat / CN 2009</p>
<b>Wood Briquettes</b>	<p>Densified biofuel made with or without pressing aids in the form of cubiform or cylindrical units, produced by compressing pulverized biomass. The raw material for briquettes can be woody biomass (...) are usually manufactured in a piston press. The total moisture of the biofuel briquette is usually less than 15 % of mass. (The JWEE assumes water content of 8 %)</p> <p><b>ATTENTION:</b> In the US/CA this item is often referred to as "Pressed Logs" or any other compressed wood products for burning purposes. 2002 NAICS No. 321999: "Pressed logs of sawdust and other wood particles, nonpetroleum binder, manufacturing."</p>	<p><a href="#">Unified Bioenergy Terminology - UBET (FAO)</a></p>
<b>Biofuel</b>	<p>Any solid, liquid or gaseous fuel produced from biomass.</p>	<p><a href="#">FAO Forestry Paper 154 Forests and energy</a></p>
<b>Second-generation biofuel</b>	<p>Fuels produced from cellulosic materials, crop residues and agricultural and municipal wastes.</p>	<p><a href="#">FAO Forestry Paper 154 Forests and energy</a></p>
<b>Pyrolysis</b>	<p>Pyrolysis is thermal degradation either in the complete absence of oxidizing agent, or with such a limited supply that gasification does not occur to an appreciable extent or may be described as partial gasification. Relatively low temperature are employed of 500 to 800 °C, compared to 800 to 1000 °C in gasification.</p>	<p><a href="#">FAO 1996</a></p>
<b>Pyrolysis Oil</b>	<p>Bio-oil produced by fast pyrolysis of biomass. A dark brown, mobile liquid containing much of the energy content of the original biomass, with a heating value about half that of conventional fuel oil. Can be burned directly, either alone or co-fired with other fuels, gasified or otherwise upgraded. Conversion of raw biomass to pyrolysis oil represents a considerable increase in energy density and it can thus represent a more efficient form in which to transport it.</p>	<p><a href="#">UK Biomass Energy Centre</a></p>
<b>Cellulose based ethanol</b>	<p>Biogasoline (IEA) - Includes bioethanol (ethanol produced from (woody) biomass (...), biomethanol (methanol produced from (woody) biomass(...), bioETBE (ethyl-tertio-butyl-ether produced on the basis of bioethanol; the percentage by volume of bioETBE that is calculated as biofuel is 47%) and bioMTBE (methyl-tertio-butyl-ether produced on the basis of biomethanol; the percentage by volume of bioMTBE that is calculated as biofuel is 36%). Biogasoline includes the amounts that are blended into the gasoline - it does not include the total volume of gasoline into which the biogasoline is blended.</p>	<p><a href="#">IEA Balance builder</a></p>
<b>Wood based biodiesel</b>	<p>Includes biodiesel (a methyl-ester produced from woody biomass, of diesel quality), biodimethylether (dimethylether produced from biomass), Fischer Tropsch (Fischer Tropsch produced from biomass), (...) and all other liquid biofuels which are added to, blended with or used straight as transport diesel. Biodiesel includes the amounts that are blended into the diesel - it does not include the total volume of diesel into which the biodiesel is blended.</p>	<p><a href="#">IEA Balance builder</a></p>
<b>Synthesis Gas</b>	<p>A mixture of carbon monoxide (CO) and hydrogen (H2) which is the product of high temperature gasification of organic material such as biomass. Following clean-up to remove any impurities such as tars, synthesis gas (syngas) can be used to synthesize organic molecules such as synthetic natural gas (SNG - methane (CH4)) or liquid biofuels such as synthetic diesel (via Fischer-Tropsch synthesis).</p>	<p><a href="#">UK Biomass Energy Centre</a></p>



ENERGY USE:		
<b>ISIC Rev. 3.1</b>	International Standard Industrial Classification of all economic activities. Revised version 3.1.	<a href="#">United Nations Statistical Division</a>
<b>NACE 1.1</b>	Statistical Classification of Economic Activities in the European Community, Rev. 1.1 (2002) - corresponds to ISIC at 4 digit level	<a href="#">Commission of the European Communities (Statistical Office/Eurostat)</a>
<b>CN</b>	8 digit code - The Combined Nomenclature(CN) is comprised of the Harmonized System (HS) nomenclature with further Community subdivisions. The CN also include preliminary provisions, additional section or chapter notes and footnotes relating to CN subdivisions. Each CN subdivisions has an eight digit code number, the CN code, followed by a description.	<a href="#">European Commission Taxation and Customs Union</a>
<b>HS</b>	6 digit code - The Harmonized Commodity Description and Coding Systems generally referred to as "Harmonized System" or simply "HS" is a multipurpose international product nomenclature developed by the World Customs Organization (WCO). - corresponds to CN at 6 digit level.	<a href="#">World Customs Organization - WCO</a>
<b>Energy Transformation Sector</b>	The transformation sector comprises the conversion of primary forms of energy to secondary and further transformation (e.g. coking coal to coke, crude oil to petroleum products, heavy fuel oil to electricity).	<a href="#">IEA Balance builder</a>
<b>Electricity</b>	Electricity generated shows the total number of GWh generated by thermal power plants separated into electricity plants and CHP plants, as well as production by nuclear and hydro, geothermal, etc. - To be converted to TJ in the Joint Wood Energy Enquiry.	<a href="#">IEA Balance builder</a>
<b>Heat</b>	Heat generated shows the total amount of TJ generated by power plants separated into CHP plants and heat plants.	<a href="#">IEA Balance builder</a>
<b>CHP</b>	Combined Heat and Power generation. Combined heat and power plants (refers to plants which are designed to produce both heat and electricity). UNIPEDA refers to these as co-generation power stations. If possible, fuel inputs and electricity/heat outputs are on a unit basis rather than on a plant basis. However, if data are not available on a unit basis, the convention for defining a CHP plant noted above should be adopted.	<a href="#">IEA Balance builder</a>
<b>Main Activity Producer</b>	Main Activity Plants plants refers to plants which are designed to produce electricity/CHP or Heat only. If one or more units of the plant is a CHP unit (and the inputs and outputs can not be distinguished on a unit basis) then the whole plant is designated as a CHP plant. Main activity supply undertakings generate electricity and/or heat for sale to third parties, as their primary activity. They may be privately or publicly owned. Note that the sale need not take place through the main activity grid. <b>This includes district heating by communities, and small producers.</b>	<a href="#">IEA Balance builder</a>
<b>Autoproducer</b>	Autoproducer undertakings generate electricity and/or heat, wholly or partly for their own use as an activity which supports their primary activity. They may be privately or publicly owned.	<a href="#">IEA Balance builder</a>
<b>Final consumption</b>	The term final consumption (equal to the sum of end-use sectors' consumption) implies that energy used for transformation and for own use of the energy producing industries is excluded. Final consumption reflects for the most part deliveries to consumers (see note on stock changes). In final consumption, petrochemical feedstock are covered under industry as an of which item under chemical industry for those oil products that are principally used for energy purposes. Separated from these are the other oil products that are mainly used for non-energy purposes (see non-energy use), which are shown in the rows for non-energy uses and included only in total final consumption. Backflows from the petrochemical industry are not included in final consumption.	<a href="#">IEA Balance builder</a>
<b>Paper, Pulp and Print:</b>	[ISIC Divisions 21 and 22].	<a href="#">IEA Balance builder</a>
<b>Wood and Wood Products:</b>	Wood and wood products (other than pulp and paper) [ISIC Division 20].	<a href="#">IEA Balance builder</a>
<b>Residential</b>	All consumption by households, excluding fuels used for transport. Includes households with employed persons (ISIC Division 95) which is a small part of total residential consumption.	<a href="#">IEA Balance builder</a>
<b>Agriculture, Forestry and Fishing</b>	Agriculture/Forestry includes deliveries to users classified as agriculture, hunting and forestry by the ISIC, and therefore includes energy consumed by such users whether for traction (excluding agricultural highway use), power or heating (agricultural and domestic) [ISIC Divisions 01 and 02]. Fishing includes fuels used for inland, coastal and deep-sea fishing. Fishing covers fuels delivered to ships of all flags that have refueled in the country (including international fishing) as well as energy used in the fishing industry [ISIC Division 05]. Previously fishing was included with agriculture/forestry and this may continue to be the case for some countries.	<a href="#">IEA Balance builder</a>
<b>Commercial and Public services</b>	All activities coming into ISIC Divisions 41, 50, 51, 52, 55, 63, 64, 65, 66, 67, 70, 71, 72, 73, 74, 75, 80, 85, 90, 91, 92, 93 and 99.	<a href="#">IEA Balance builder</a>
<b>Transport Sector</b>	Consumption in the Transport sector covers all transport activity (in mobile engines) regardless of the economic sector to which it is contributing [ISIC Divisions 60, 61 and 62].	<a href="#">IEA Balance builder</a>

## CONVERSION FACTORS:

<b>Bulk Volume:</b>	Loose volume of a material including space between the particles.	<a href="#">Unified Bioenergy Terminology - UBET (FAO)</a>
<b>Dry Matter (d.m.)</b>	Dry matter refers to biomass that has been dried to an oven-dry state, often at 70°C.	<a href="#">IPCC. 2003. Good Practice Guidance for LULUCF – Glossary</a>
<b>Higher heating value - of dry matter (d.m.) :</b>	Higher heating value (HHV) of dry matter (d.m.) [MJ/kg] The higher heating value (HHV) of coniferous wood is around 20.4 MJ/kg d.m. Due to a lower resin and lignin content, the higher heating value of non-coniferous wood is somewhat lower than the HHV of coniferous wood and is around 19.3 MJ/kg d.m. For the calculation of the higher heating value of bark (coniferous wood, non-coniferous wood), the worksheet of the Austrian Energy Agency uses the same values as for coniferous wood and non-coniferous wood. However, in case of a high content of resin or other extractive compounds the higher heating value of bark can be up to 2.5 MJ/kg higher than that of the wood. Source: ÖNORM M 7132. For the conversion between MJ/kg and kWh/kg, a factor of 3.6 (1 kWh = 3.6 MJ) is used. => Further details see <i>klima:aktiv</i> publication (page 14).	<a href="#">Klima:aktiv Austrian Energy Agency Manual Wood Fuel Parameters Version 1.6. english</a>
<b>Lower heating value of dry matter:</b>	The lower heating value (LHV) of a fuel can be derived from the higher heating value (HHV) via an approximation depending on moisture and hydrogen content. Details of the conversion from HHV to LHV are explained in the manual. According to the Austrian standard ÖNORM, the lower heating value of coniferous wood is 19.0 MJ/kg d.m.. Due to a lower resin and lignin content, the lower heating value of nonconiferous wood is somewhat lower than the LHV of coniferous wood and is 18.0 MJ/kg d.m. according to ÖNORM. For the calculation of the lower heating value of bark (coniferous wood, non-coniferous wood), the worksheet of the Austrian Energy Agency uses the same values as for coniferous wood and non-coniferous wood. However, in case of a high content of resin or other extractive compounds the lower heating value of bark can be up to 2.5 MJ/kg higher than that of the wood. Source: ÖNORM M 7132. For the conversion between MJ/kg and kWh/kg, a factor of 3.6 (1 kWh = 3.6 MJ) is used. => Further details see <i>klima:aktiv</i> publication (page 14).	<a href="#">Klima:aktiv Austrian Energy Agency Manual Wood Fuel Parameters Version 1.6. english</a>
<b>Mean oven-dry density [kg/m³] (at 0 % H2O)</b>	Mean oven-dry density [kg/m³] (at 0 % H2O) The specified mean oven-dry densities refer to 1 m³ oven-dried solid wood mass. The oven dry density values used for the calculation and the respective data sources can be found in the data sheet (of the Austrian Energy Agency).	<a href="#">Klima:aktiv Austrian Energy Agency Manual Wood Fuel Parameters Version 1.6. english</a>
<b>Metric Tonne:</b>	1000 Kilograms.	
<b>Moisture Content - wet basis</b>	The proportion of water in a sample of biomass, defined as the weight of water as a percentage of the weight of biomass. This can be defined on either a wet basis, as a percentage of the total (wet) weight of the sample, or a dry basis, as a percentage of the oven dry weight of biomass. Wet basis is usually used for fuel purposes.	<a href="#">UK Biomass Energy Centre Klima:aktiv (Austrian Energy Agency) Unified Bioenergy Terminology - UBET (FAO)</a>
	$Moisture_{wet\ basis} = 100 \times \left( \frac{WetWeight - DryWeight}{WetWeight} \right)$	
<b>Tonne of oil equivalent</b>	Is the amount of energy released by burning one tonne of crude oil, which is commonly defined as 41.868 GJ. For the conversion from 1000m³ to ktoe, a factor of 0.208 (=8.72 / 41.868) is used.	
<b>#REF!</b>	Ratio between oven dry mass and fresh stem-wood volume without bark. It allows calculation of woody biomass in dry matter mass. <b>NOTE:</b> The Basic Wood Density shown in Table "T VI Conversion Factors Energy" has been <b>calculated</b> by using the "Mean oven-dry density" and <b>shrinkage factors</b> from the Austrian Energy Agency.	<a href="#">IPCC. 2003. Good Practice Guidance for LULUCF – Glossary</a>
<b>MISCELLANEOUS:</b>		
<b>EWC</b>	European Waste Classification	<a href="#">COMMISSION DECISION of 3 May 2000</a>
<b>FAO</b>	Food and Agriculture Organization of the United Nations	<a href="http://www.fao.org">www.fao.org</a>
<b>IEA</b>	International Energy Agency	<a href="http://www.iea.org">www.iea.org</a>
<b>IPCC</b>	Intergovernmental Panel on Climate Change	<a href="http://www.ipcc.ch">www.ipcc.ch</a>
<b>IUFRO</b>	International Union of Forest Research Organizations	<a href="http://www.iufro.org">www.iufro.org</a>
<b>LULUCF</b>	Land Use and Land Use Change and Forestry	<a href="http://www.unfccc.int">www.unfccc.int</a>
<b>NAICS</b>	North American Industry Classification System (NAICS)	<a href="#">NAICS 2007</a>
<b>TBFRA</b>	Temperate and Boreal Forest Resource Assessment	