

## **PRO Fact Sheet 5**

### **TYPES OF ENERGY SOURCES AND TECHNOLOGIES**

The attached table sets out the permissible energy sources and technologies.

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Source	Technology	Type	Sub-type	Combustible?	CO <sub>2</sub> <sup>1</sup> Kg/GJ	New Code <sup>2</sup>	Old Code
Wind	Wind turbine	Onshore		No	0.0	01	
		Offshore		No	0.0	02	
Solar	Photovoltaic			No	0.0	03	
	Thermal			No	0.0	04	
Energy from water (excluding electricity used for pumping hydro)	Hydro power			No	0.0	05	
	Tidal energy	Onshore		No	0.0	06	
		Offshore		No	0.0	07	
	Wave energy	Onshore		No	0.0	08	
		Offshore		No	0.0	09	
<b>Geothermal</b>				No	0.0	10	
Biomass <sup>3</sup>	Combustion from SOLID fuel	Wood fuels, including forestry products, by- products and waste <sup>4</sup>	Forestry products	Yes	0.0	18	11, 30
			Forestry by-products & waste	Yes	0.0	19	12, 30
		Agricultural biomass,	Agricultural products	Yes	0.0	20	12, 30

<sup>1</sup> This reflects the IPCC statistics where these are available, and otherwise the Dutch table of standard CO<sub>2</sub> emission factors for energy production

<sup>2</sup> Note that:

- (1) Codes associated with production devices should be assigned when the production device is (re-)certificated;
- (2) These new codes come into operation on 1<sup>st</sup> January 2010; and
- (3) The following codes are required by annex 1 of Commission Decision of 21 December 2006 concerning the CHP Directive [C(2006)6817]: 18-29, 50, 58-61, 64, 68 and 70

<sup>3</sup> As variously defined in the Renewable Energy, Large Combustion Plants and Waste Combustion Plants Directives; and annex 1 of Commission Decision of 21 December 2006 concerning the CHP Directive [C(2006)6817]

<sup>4</sup> **Wood fuels:** Firewood, wood chips, bark, wood pellets, briquettes, sawdust, shavings, chips, purpose grown crops like willow, industrial wood waste, demolition wood

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		including agricultural products, by-products and waste <sup>5</sup>	Agricultural by-products & waste	Yes	0.0	21	12, 30
		Biodegradable waste <sup>5</sup>	Municipal	Yes	0.0	22	12, 30
			Industrial and commercial	Yes	0.0	23	12, 30
	Combustion from LIQUID fuel	Biofuels		Yes	0.0	24	33
		Biodegradable waste	Municipal	Yes	0.0	25	16
			Industrial and commercial	Yes	0.0	26	32
	Combustion from GASEOUS fuel	Biogas	Landfill gas	Yes	0.0	27	13, 34
			Sewage gas	Yes	0.0	28	14, 34
			Other	Yes	0.0	29	15, 34
	<b>Fossil</b>	<i>Solid fuel</i>	Hard coal / coke	Anthracite	Yes	98.3	50
Coking coal				Yes	94.0	51	
Coking coal (used in coke oven)				Yes	95.4	52	
Coking coal (used in blast furnace)				Yes	89.8	53	
Other bituminous coal				Yes	94.7	54	
Sub-bituminous coal				Yes	96.1	55	

<sup>5</sup> **Agricultural biomass:** solid agricultural crops (perennial and annual herbaceous crops), residues and waste (straw, rice husks, nut shells, poultry litter, crushed grape dregs etc)

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		BKB and Patent Fuel		Yes	94.6	56		
		Coke Oven / Gas Coke		Yes	111.9	57		
		Oil shale		Yes	106.7	58		
		Lignite / lignite brickettes		Yes	101.2	59		
		Peat / peat brickettes		Yes	106.0	60		
	Gases	Natural gas		Yes	56.1	61		
		Carbon monoxide		Yes	155.2	62		
		Methane		Yes	54.9	63		
		Hydrogen (fossil sourced)		Yes	56.1	64		
		Phosphor gas		Yes	149.5	65		
		Oxy gas		Yes	191.9	66		
		Blast furnace gas		Yes	247.4	67		
		Coke oven gas		Yes	41.2	68		
	Liquid fuel	Oil	Gas/diesel oil		Yes	74.3	70	
			Residual fuel oil		Yes	77.4	71	
			LPG		Yes	66.7	72	
		Other oils	Crude oil		Yes	73.3	73	
			Orimulsion		Yes	80.7	74	
			Natural gas liquids		Yes	63.1	75	
			Gasoline		Yes	72.0	76	
Jet kerosene			Yes	71.5	77			
Other kerosene		Yes	71.9	78				

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			Shale oil	Yes	73.3	79	
			Ethane	Yes	61.6	80	
			Naphtha	Yes	73.3	81	
			Bitumen	Yes	80.7	82	
			Lubricants	Yes	73.3	83	
			Petroleum coke	Yes	100.8	84	
			Refinery feedstocks	Yes	73.3	85	
			Refinery gas	Yes	66.7	86	
			Chemical waste gas	Yes	66.7	87	
			Other oil	Yes	73.3	88	
		Non-renewable proportion of waste		Yes	73.6	89	
<b>Nuclear</b>				No	0.0	90	
<b>Other</b>				Yes <sup>6</sup>	User specified	95 <sup>7</sup>	

<sup>6</sup> **Other** might include both combustible and non-combustible energy sources, but defaults to “combustible” to provide necessary safeguards

<sup>7</sup> Code “95” – Other” is only used for reporting purposes and will represent certificates with technology codes not listed in this document.