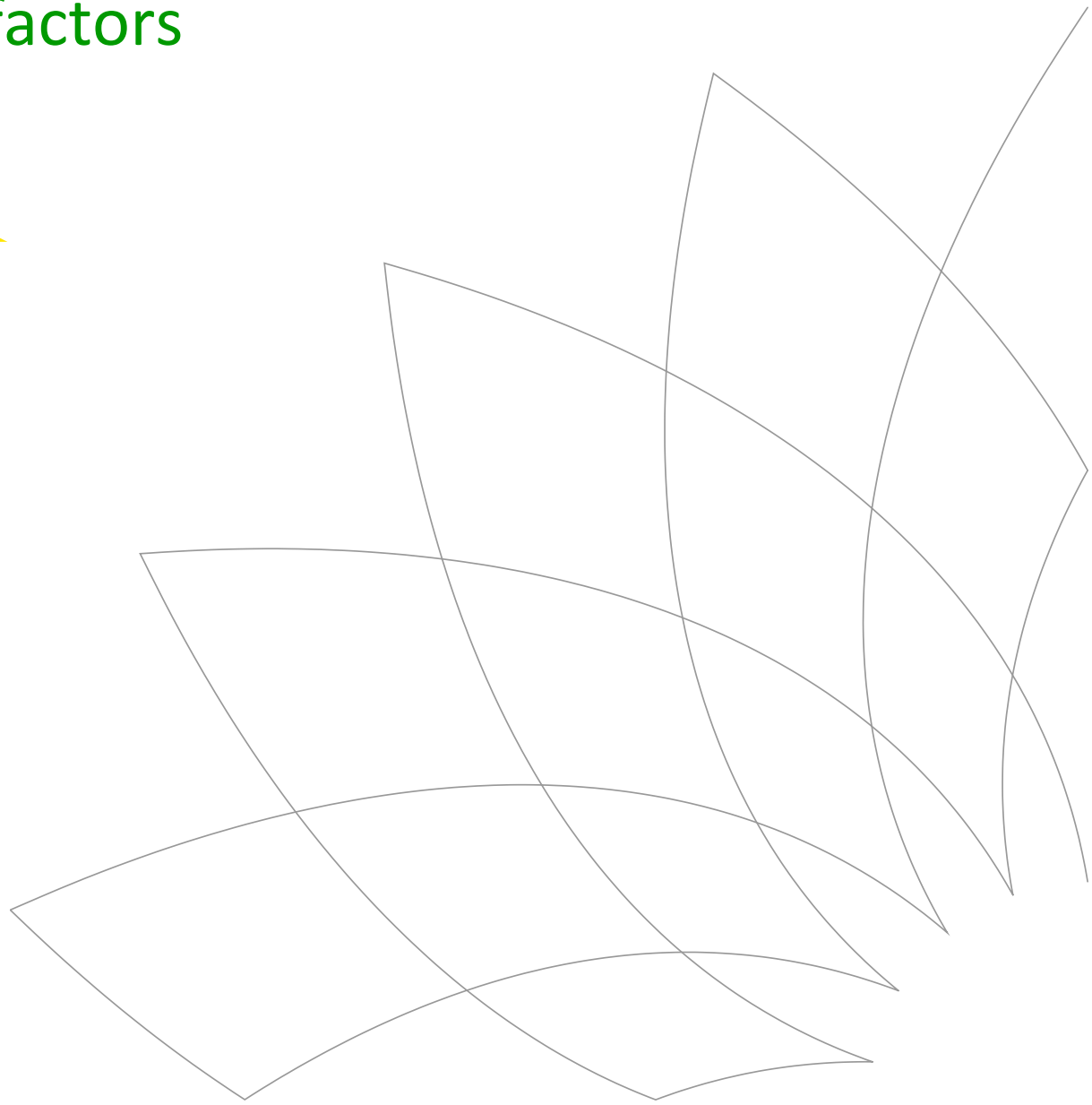


Approximate conversion factors

Statistical Review of World Energy



Crude oil*	To convert				
	Tonnes (metric)	Kilolitres	Barrels	US gallons	Tonnes/year
From	Multiply by				
Tonnes (metric)	1	1.165	7.33	307.86	–
Kilolitres	0.8581	1	6.2898	264.17	–
Barrels	0.1364	0.159	1	42	–
US gallons	0.00325	0.0038	0.0238	1	–
Barrels/day	–	–	–	–	49.8

*Based on the worldwide average gravity

Products	To convert					
	Barrels to tonnes	Tonnes to barrels	Kilolitres to tonnes	Tonnes to kilolitres	Tonnes to gigajoules	Tonnes to barrels oil equivalent
From	Multiply by					
Ethane	0.059	16.850	0.373	2.679	49.400	8.073
Liquified petroleum gas (LPG)	0.086	11.600	0.541	1.849	46.150	7.542
Gasoline	0.120	8.350	0.753	1.328	44.750	7.313
Kerosene	0.127	7.880	0.798	1.253	43.920	7.177
Gas oil/diesel	0.134	7.460	0.843	1.186	43.380	7.089

Residual fuel oil	0.157	6.350	0.991	1.010	41.570	6.793
Product basket	0.124	8.058	0.781	1.281	43.076	7.039

Natural gas and LNG	To convert						
	Billion cubic metres NG	Billion cubic feet NG	Petajoules NG	Million tonnes oil equivalent	Million tonnes LNG	Trillion British thermal units	Million barrels oil equivalent
From	Multiply by						
1 billion cubic metres NG	1.000	35.315	36.000	0.860	0.735	34.121	5.883
1 billion cubic feet NG	0.028	1.000	1.019	0.024	0.021	0.966	0.167
1 petajoule NG	0.028	0.981	1.000	0.024	0.021	0.952	0.164
1 million tonnes oil equivalent	1.163	41.071	41.868	1.000	0.855	39.683	6.842
1 million tonnes LNG	1.360	48.028	48.747	1.169	1.000	46.405	8.001
1 trillion British thermal units	0.029	1.035	1.050	0.025	0.022	1.000	0.172
1 million barrels oil equivalent	0.170	6.003	6.093	0.146	0.125	5.800	1.000

Units		
1 metric tonne	= 2204.62 lb	= 1.1023 short tons

1 kilolitre	= 6.2898 barrels		
1 kilolitre	= 1 cubic metre		
1 kilocalorie (kcal)	= 4.1868 kJ	= 3.968 Btu	
1 kilojoule (kJ)	= 0.239 kcal	= 0.948 Btu	
1 petajoule (Pj)	= 1 quadrillion joules (1 x 10 ¹⁵)		
1 exajoule (EJ)	= 1 quintillion joules (1 x 10 ¹⁸)		
1 British thermal unit (Btu)	= 0.252 kcal	= 1.055 kJ	
1 tonne of oil equivalent (toe)	= 39.683 million Btu		
1 tonne of oil equivalent (toe)	= 41.868 million kJ		
1 barrel of oil equivalent (boe)	= 5.8 million Btu	= 6.119 million kJ	
1 kilowatt-hour (kWh)	= 860 kcal	= 3600 kJ	= 3412 Btu

Calorific equivalents	
One exajoule equals approximately	
Heat units	<ul style="list-style-type: none"> • 239 trillion kilocalories • 948 trillion Btu
Solid fuels	<ul style="list-style-type: none"> • 40 tonnes of hard coal • 95 tonnes of lignite and sub-bituminous coal

Gaseous fuels	<ul style="list-style-type: none"> • See natural gas and LNG table
Electricity	<ul style="list-style-type: none"> • 278 terawatt-hours

All fuel energy content is net or lower heating value (i.e., net of heat of vaporisation of water generated from combustion)		Other terms Tonnes: metric equivalent of tons
1 barrel of ethanol	= 0.58 barrels of oil equivalent	
1 barrel of biodiesel	= 0.86 barrels of oil equivalent	
1 tonne of ethanol	= 0.68 tonne of oil equivalent	
1 tonne of biodiesel	= 0.88 tonne of oil equivalent	

Thermal equivalent efficiency factors used to convert non-fossil electricity to primary energy	
Years	Efficiency factor
1965-2000	36%
2001	36.20%

2002	36.50%
2003	36.70%
2004	36.90%
2005	37.20%
2006	37.40%
2007	37.60%
2008	37.90%
2009	38.10%
2010	38.40%
2011	38.60%
2012	38.80%
2013	39.10%
2014	39.30%
2015	39.50%
2016	39.80%
2017	40.00%
2018	40.20%
2019	40.40%