

Worldwide Estimated Yearly Energy Costs

In order to estimate the yearly worldwide cost of energy, both the cost of fuel and the cost of new investments, such as new power plants, refineries or additional infrastructure, must be taken into account. These additional investments are added to the consumers monthly bill and therefore, ultimately paid for by the consumer. Therefore, the cost can be placed approximately between the amount paid for fuel and the money paid by consumers (industrial and private) for fuel and energy.

These estimates are based upon figures from the BP Statistical Review of World Energy for the Year 2008.

Fossil Fuel and Nuclear Fuel Use 2008:

Fuel	Usage 2008	Percentage used for electricity generation
Oil	30.8 Billion Barrels	7%
Natural Gas	3020 Billion m ³	39%
Coal	6780 Billion t	68%
Uranium	67 Million kg	100%

Electricity	20200	Billion. kWh (Contains 82% fossil/nuclear fuel)
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The annual mean energy prices, according to BP Statistical Review of World Energy, are as follows (the annual Uranium price comes from The Ux Consulting Company, LLC):

Average Energy Prices 2008:

Oil	\$97.28/bbl	(Brent Spot Price)
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Natural Gas			
	USA	\$8.85/mil. BTU	\$0.32/ m ³
	Canada	\$7.99/mil. BTU	\$0.28/m ³
	UK	\$10.79/mil. BTU	\$0.39/m ³
	EU	\$12.61/mil. BTU	\$0.45/m ³
	Japan	\$12.55/mil. BTU	\$0.45/m ³

Coal	
	Japan Steel Coal \$122.81/t
	Japan Coking Coal \$179.03/t
	US Central Appalachian \$116.14/t
	NW Europe(marker price) \$149.78/t

Uranium	Approx. \$65/lb U308
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Estimates for the cost of fossil fuels and nuclear energy and their allocation:

If the price of oil is set at \$97, natural gas at \$0.40/ m³, coal at \$120/t and Uranium at \$55/lb U308, the sum of these energies is \$5000 billion annually. Over a 20 year period that would add up to \$100,000 Billion. The total cost would be even more than this, because the cost of new energy technology and costs paid to the energy sector must be taken into account.

Estimates for the cost of fossil fuels and electricity:

An upper limit can therefore be the final cost of the energy to the consumer. However, because a certain portion of fossil fuels is used in electricity production, these amounts can be withdrawn.

7% of oil, 39% of natural gas, 68% of coal, and 100% of uranium is used for the generation of electricity. In the year 2007 approximately 20,200 TWh of energy was generate 18% of which came from non-fossil and non- nuclear sources. (source: WEO 2009, for the year 2007 and 2008)

Therefore the following numbers are considered the correct numbers for worldwide consumption:

Type	Usage 2008
Oil	28.6 Billion Barrels
Natural Gas	1842 Billion m ³
Coal	2170 Billion t
Electricity	16564 Billion kWh

Based upon figures from the BP Statistical Review of World Energy for the Year 2008.

Consumption Price (Energy prices and Taxes III/2008):

Oil(OECD Average)		
	Household	\$117/bbl
	Industry	\$90.8/bbl
	Diesel	\$156/bbl
	Diesel(non-commercial)	\$180.9/bbl
Coal		
	Industry	\$71.86/t
Electricity		
	Household	\$0.127/kWh (Europe: \$0.17/kWh)
	Industry	\$0.09/kWh (Europe: \$0.106/kWh)

Projected prices:

Petroleum	\$117-156/bbl
Natural Gas	\$0.3-0.45/ m ³
Coal	\$70-140/t
Electricity	\$0.09-0.13/kWh

Total Costs:

Petroleum	3350-4475 bil. \$/yr.
Natural Gas	550-830 bil. \$/yr.
Coal	150-300 bil. \$/yr.
Electricity	1490-2150 bil. \$/yr.

Sum: 5500 – 7750 bil. \$/year

In 2008, between \$5,500 and \$7,750 billion were paid for fuel and electricity worldwide (taxes not included).

This is a rough estimate based on the cost of fuel and electricity. This is approximately 10-20% over the cost of generation. Therefore, however, the consumer expenditures for new energy technology are not considered.

Therefore, between \$5000-7750 billion annually should be a sufficiently accurate estimate.

Even with just a 20% rise in energy prices the annual cost of energy would climb to \$10,000 billion. This would be double the price of which Prof. Jacobson calculated would be needed to change the worlds' energy sector to 100% renewable energy.

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