# World Energy Consumption

# A Database

# 1820-2018

(2020 revision)

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The present statistical reconstruction would have been impossible without my cooperation, in the last twenty to twentyfive years, with the following scholars: Astrid Kander, Paul Warde, Ben Gales, Mar Del Mar Rubio, Silvana Bartoletto, Sofia Teives Henriques, Richard W. Unger, John Thistle. In particular, for the present *Database* I could also exploit the generosity of César Yáñez, Peter A. O 'Connor, David Streets, who provided me with materials on specific topics. My thanks to everyone. The errors are, of course, only mine.

In the present revision of the Database (1820-2016), the series have been updated with the inclusion of the years 2017 and 2018. Some errors have been corrected.

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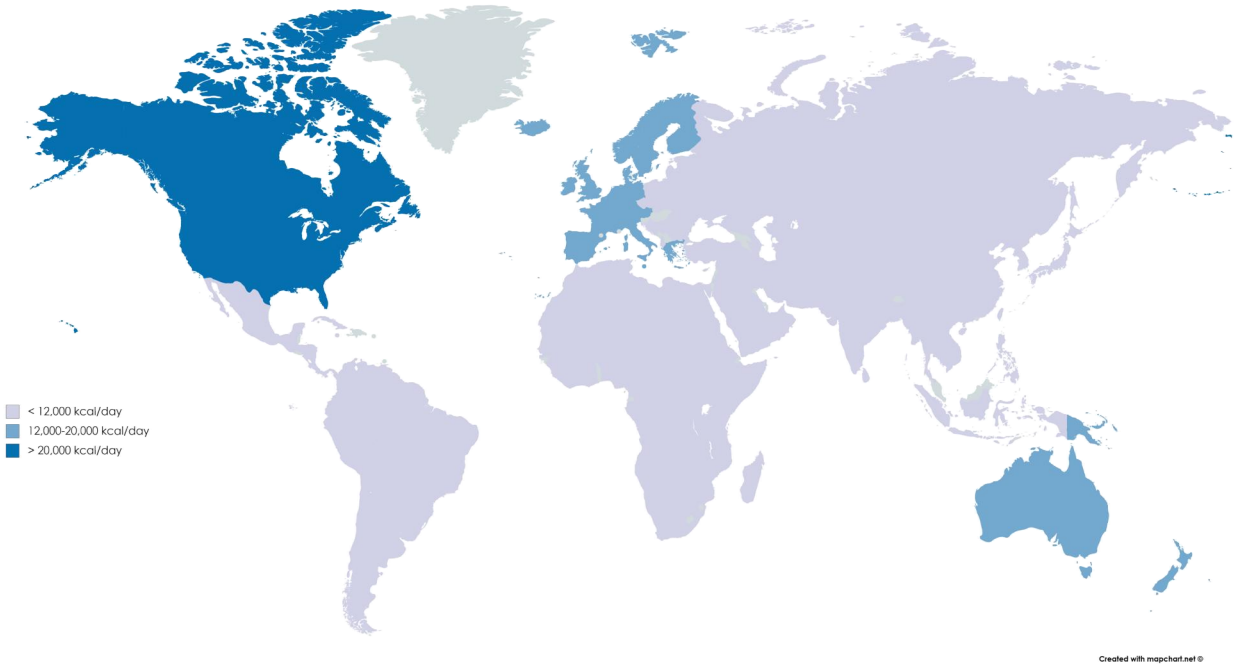
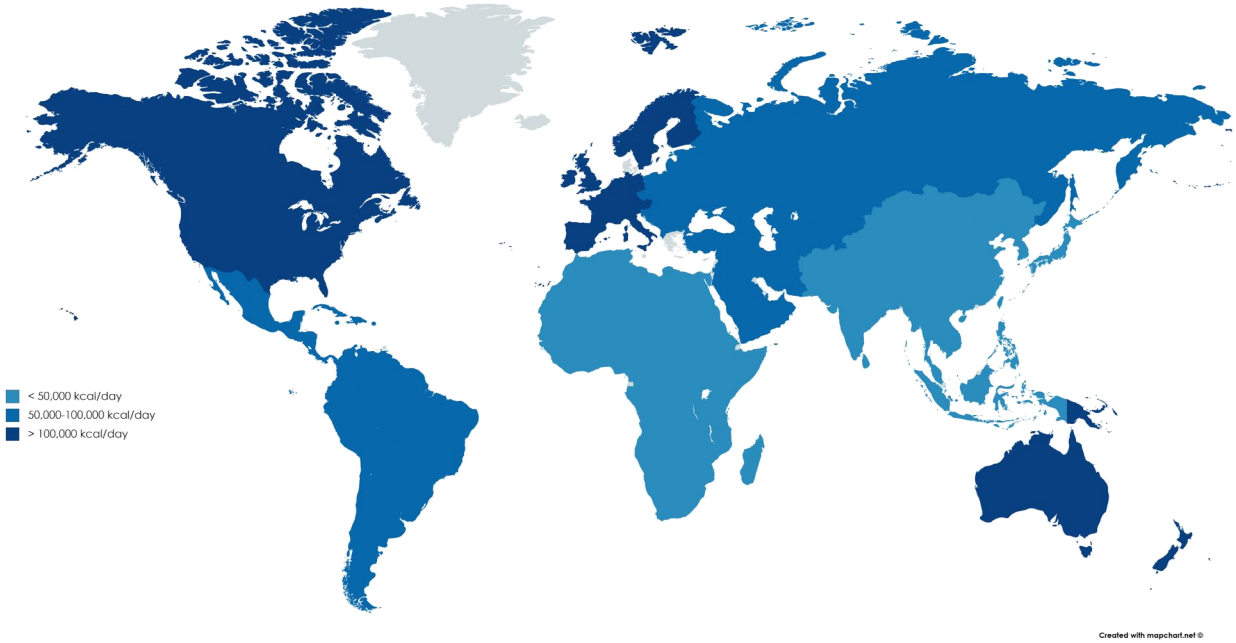



**Map 2.** World per capita energy consumption in 2000 (Kcal/day)



# Materials and Methods

The present work is divided into five sections. The first is devoted to the geographic coverage of the series of energy consumption; the second to total and per capita consumption per source; the third to traditional sources of energy; the fourth to modern sources; the fifth to the comparison between my results and other series of energy consumption. The time frame of any series is the last two centuries, that is from 1820 to 2018.

## 1. The geographic coverage

While traditional sources have been calculated per 8 macro-areas on the whole, each series of modern sources is computed for 72 nations (Table1).

**Table 1.** The macro-areas

| | | |
|---|---|---|
| **1** | **WE** | Western Europe |
| **2** | **EE** | Eastern Europe |
| **3** | **NA** | Northern America |
| **4** | **LA** | Latin America |
| **5** | **O** | Oceania |
| **6** | **As** | Asia |
| **7** | **ME** | Middle East |
| **8** | **Af** | Africa |

The macro-areas include the following 72 countries (always within the same present national borders; with the exceptions of Czechoslovakia, URSS and Yugoslavia, always within pre-1989 borders; URSS includes all the countries of former URSS and the Asian share of the country)(Table 2).

**Table 2**. Countries per macro-area

| **Western Europe** | **Eastern Europe** | **Latin America** | **Asia** | **Africa** |
|---|---|---|---|---|
| 1 Austria | 1 Bulgaria | 1 Argentina | 1 China | 1 Algeria |
| 2 Belgium | 2 Czechoslovakia | 2 Bolivia | 2 India | 2 Congo RD |
| 3 Denmark | 3 Hungary | 3 Brazil | 3 Indonesia | 3 Egypt |
| 4 Finland | 4 Poland | 4 Chile | 4 Japan | 4 Ethiopia Eritrea |
| 5 France | 5 Romania | 5 Colombia | 5 Malaysia | 5 Libya |
| 6 Germany | 7 URSS (and former URSS) | 6 Costa Rica | 6 Philippines | 6 Malawi |
| 7 Greece | 6 Yugoslavia (and ex-Yug.) | 7 Cuba | 7 Thailand | 7 Morocco |
| 8 Ireland | | 8 Dominican R. | | 8 Nigeria |
| 9 Italy | **North America:** | 9 Ecuador | **Middle East:** | 9 South Africa |
| 10 Netherlands | 1 Canada | 10 El Salvador | 1 Iran | 10 Tunisia |
| 11 Norway | 2 USA | 11 Guatemala | 2 Iraq | 11 Zambia |
| 12 Portugal | | 12 Haiti | 3 Israel | 12 Zimbabwe |
| 13 Spain | **Oceania:** | 13 Honduras | 4 S. Arabia | |
| 14 Sweden | 1 Australia | 14 Mexico | 5 Syria | |
| 15 Switzerland | 2 New Zealand | 15 Nicaragua | 6 Turkey | |
| 16 UK | | 16 Panama | | |
| | | 17 Paraguay | | |
| | | 18 Peru | | |
| | | 19 Uruguay | | |
| | | 20 Venezuela | | |

The inhabitants of these 72 nations represent a percentage of total World population between 92, in 1820, and 81, in 2018 (Table 3).

**Table 3**. Percentage of population in our sample of 72 countries on World population (in the series of modern sources) and on total population per macro-area in 1820, 1900, 2018

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | **WE** | **EE** | **NA** | **LA** | **O** | **As** | **ME** | **Af** | **WORLD** |
| **1820** | 100.0 | 99.5 | 100.0 | 96.6 | 26.7 | 94.3 | 84.6 | 53.3 | 92.4 |
| **1900** | 100.0 | 99.6 | 100.0 | 96.9 | 82.1 | 92.2 | 85.1 | 62.3 | 92.6 |
| **2018** | 99.8 | 97.6 | 99.9 | 98.1 | 71.5 | 81.3 | 78.1 | 54.3 | 80.8 |

The choice of the eight macro-regions depends in part on the geography and in part on practical reasons. For example, Mexico shares a large land border with the United States and is not part of South America. The reasons for its inclusion in Latin America have been widely discussed by Bertola, Ocampo (2012), pp. 1-7. I followed their suggestion. The Middle East is separated from the rest of Asia because of its special characteristics from the viewpoint of a history of energy. Africa could be divided in North and Sub-Saharian Africa, but from the viewpoint of energy (given the inter African flows) there are good reasons for considering the continent on the whole. Western and Eastern Europe present different developments, when energy is taken into account (although the borders between these macroregions are not so easy to define). In any case, in the *Database* I report the series for 72 countries. These national series allow different aggregations. Actually both for WE and NA the population of some countries such as Channel Islands, Iceland, Liechtenstein, Luxembourg (WE) and Bermuda, Virgin Islands (NA) is excluded.

Population per macro-area (*The Database. Per macro-area* Tables A and *The Database. Per country* Tables B) is derived from:

1. Maddison (2010), *Historical Statistics of the World Economy* (until 2008).
2. My series per country have been updated with the UN, *World population prospects: the 2017 Revision* and UN, *World Urbanization Prospects: the 2018 Revision*, and UN, *World Population Prospects 2019.*
3. Data per country for LA in 1900-2010 are from *Latin American Population. Moxlad Database*, and after 2010 by the UN series.
4. Data of Czech population are from Srb (1962) until 1960 and then from the UN databases (quoted in 2).
5. Population data for seven Western European countries (France, Germany, Italy, The Netherlands, Portugal, Spain, Sweden), whose energy series are included in the *Energy History* database, is computed from national series (total consumption/per capita consumption) and is updated with Eurostat data until 2016.
6. For Oceania prior 1950, data per country by Maddison have been completed with data from Caldwell, Missingham, Marck (2001), pp. 3-5.
7. For the following African countries in the 19th and early 20th centuries, I used the database by Jan Lahmeyer, *Population Statistics*, http://www.populstat.info, completed with: Congo RD (UN database from 1950), Nigeria (UN database from 1950), Zambia (Maddison (2010) from 1993), Zimbabwe (Maddison (2010) from 1993). From 2010 UN, *World Urbanization Prospects: The 2018 Revision.*

***Data on total energy consumption (in the Database. Per macro-area, Tables A 1-13) has always been adjusted to total population of any macro-area, multiplying per capita figures from our sample of 72 countries by the total population of any macro-area (with the exception of Oceania; see the following section* 4. Modern Sources*. Oceania). E.g.: data on energy consumption in the Middle East in 2018 does not refer to 78.1 percent of the population (Table 3, col. 7) of those countries included in my reconstruction per nation, but to the entire population of the macro-area. The column Total in the* Database. Per country, Table B 2, *refers, instead, to total consumption by the 72 countries and then data is lower than that per macro-area.***

## 2. Total and per capita energy consumption per macro-area and per source

Databases of energy consumption deal always with *primary sources of energy*, that is inputs of energy which have only been superficially transformed by human work, or are not transformed at all, before

entering the productive or domestic exploitation. By contrast, *secondary energy carriers* are those heavily transformed from their natural form. Otherwise stated: "the term primary energy is used to designate an energy source that is extracted from a stock of natural resources or captured from a flow of resources and that has not undergone any transformation or conversion other than separation and cleaning" (Bhattacharyya (2011), p. 10). For instance: charcoal is a secondary source of energy. In our series of energy consumption, is computed as the firewood (specifically its caloric content) utilized to produce such charcoal; similarly electricity produced in coal-fired power stations is included in the series as the coal used to produce such electricity (for Primary Electricity see the following section § 4). For a definition of primary energy and the methods for a quantification of traditional sources of energy, see Kander, Malanima, Warde (2013), ch. 1 and 2, Malanima (1996, 2006), Kander (2002), Warde (2007), Teives Henriques (2009, 2011), Unger, Thistle (2013). On definitions and measurements in the field of energy, see UN (1987).

Energy consumption by weapons (from gun powder to nuclear energy) is excluded.

Primary energy sources included in the *Database* are:

1. food for humans
2. fuelwood
3. fodder for working animals
4. coal
5. oil
6. natural gas
7. electricity (from water, wind, geo, Sun and other renewables)
8. nuclear

The series in the following *Database* are the summary tables with total yearly consumption per macro-area (per year) and decadal per country including both traditional and modern sources of energy (*Database. Per macro-area, Database. Per country*). The criteria for the calculation are reported in section 3 (traditional sources) and 4 (modern sources).

Data on energy in the *Database* are in Mtoe per year. This unit of measurement is the most used in the available international databases and is a multiple of Cal or Kcal.

A Toe is the caloric equivalent of a ton of oil and then a Million kcal. A Mtoe is a million of Toe. In some of the following Figures is used the Koe as well, equal to the caloric content of a kg of oil, that is 10,000 kcal.

In summary, the measures utilised in this *Database*, and their equivalent in Joules and multiples of Joule, are:

| | | |
|---|---|---|
| Mtoe | $10^{13}$ Kcal | = 41.868 Petajoules (Pj) |
| Toe | $10^{7}$ Kcal | = 41.868 Gigajoules (Gj) |
| Koe | $10^{4}$ Kcal | = 41,868 Kilojoules (Kj) |
| Kcal | 1 | = 4186.8 Joules (J) |

For a conversion from Mtoe into a variety of different sources, see:
http://www.onlineconversion.com/energy.htm
https://www.iea.org/statistics/resources/unitconverter/

**Given the difficulties in reconstructing traditional sources, they have been calculated only for the macro-areas (with the exceptions of part of Western Europe and North America), while the series of modern sources are the sum of national series for each carrier in our sample of 72 countries (then adjusted to macro-areas).**

Generally speaking, throughout the preparation of the series of total energy consumption, two different procedures are followed for primary traditional and primary modern sources:

1. *Traditional sources*: I collected scattered information for any macro-area on the three traditional sources, established per capita consumption and finally multiplied it by total population of any macro-area. The exceptions are part of Western Europe and Northern America, well documented by specific researches. For these countries I exploited the already available annual series per source (such as specified in the following notes).

2. *Modern sources*: I reconstructed annual series of total consumption for any of our five modern sources for 72 countries over 198 years for any of the five modern sources (in some cases, I employed interpolations as it will be shown in the following information on any country).

For any country (with the exceptions of the same Western European countries and North America) total energy consumption is the sum of the traditional energy consumption of the macro-area (adjusted to the population of the macro-area) and the modern energy consumption of the specific country.

## 3. Traditional sources

The following are the three traditional sources of energy included in the *Database*:

1. *food* for human beings; the original input of energy;
2. *fuel* –ordinarily firewood-; which is the main energy carrier since the start of its exploitation through fire between 1 and 0.5 million years ago;
3. *fodder* consumed by working animals (considering working animals as biological machines and fodder as their input of energy), exploited since the neolithic agricultural revolution.

The exploitation of water (by mills and other engines) and wind (by sail ships and mills) is excluded from the following series of traditional sources. For WE and NA we could avail of direct measurements (such as those in Kander, Malanima, Warde (2013), ch. 1 and 2, Malanima (1996, 2006), Kander (2002), Warde (2007), Teives Henriques (2009, 2011), Unger, Thistle (2013), O'Connor, Cleveland (2014), Gales, Kander, Malanima, Rubio (2007)). Yet information for the other macro-areas is not enough for a quantification. In any case, while water and wind are remarkable in terms of power (that is energy delivered in the unit of time), in terms of energy consumption they represented less that 1 percent of total consumption and often less than 0.5 percent (see Kander, Malanima, Warde (2013), pp. 64-70). Their exclusion from the present estimates does not compromise the results. Water and wind included in the series of modern sources are those used to produce electricity (then they are included in *Electricity*).

The availability of traditional energy sources in the past agrarian economies was subject to sharp volatility due to yearly changes in the harvests (both of grains and firewood) and epidemics of working animals. Since our series refer to wide macro-areas, we can assume that bad harvests (and other accidents) in a region or nation were compensated by good harvests elsewhere and that the curve of energy consumption per macro-area was more stable than for a nation. An average of grain prices for Western Europe is less volatile than a series for a small Western European region.

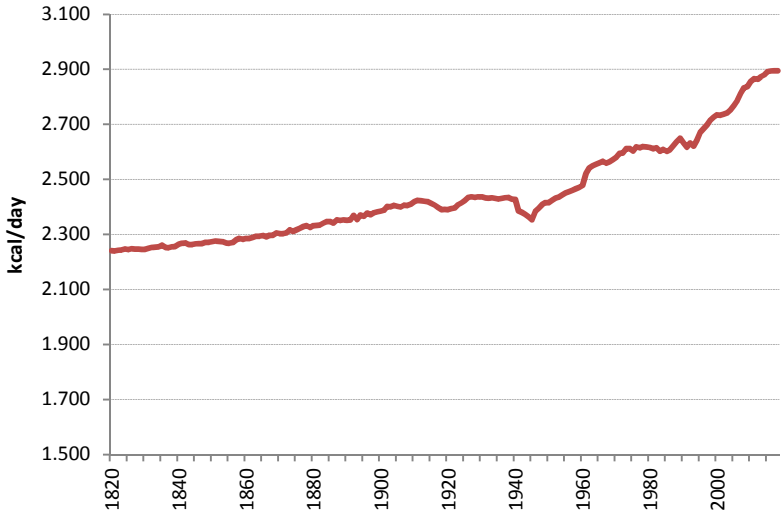
Only for France, Germany, Italy, The Netherlands, UK, Portugal, Spain, Sweden, USA and Canada we can avail of national estimates of traditional sources. Then, WE total consumption is the sum of consumption of these nations. For Finland and Norway per capita consumption of traditional sources is assumed equal to that of Sweden. For the other West-European countries, per capita consumption is assumed equal to the average of France, Germany, Italy, The Netherlands, Portugal, Spain (England has been excluded since firewood consumption ran out after 1848, as shown by Warde (2007). For NA, total consumption is the sum of the consumption of US plus Canada. For the remaining six macro-areas it is not yet possible to compute national estimates of traditional sources and therefore neither total consumption for any macro-area. We may, however, estimate magnitudes of per capita consumption per macro-area following the criteria explained below. Per capita calculations for these six macro-areas (EE, LA, O, As, ME, Af) have been then multiplied by the population of any macro-area.

The margins for error of the estimate of traditional sources are certainly wider than those of modern commercial sources. These margins of uncertainty diminish for food as we approach modern times, but do not diminish for working animals and wood fuels, which are hard to estimate even in the 21$^{st}$ century. In any case, as written by A. Robinson in Deane (1948), p. IX: "there is no reason to regard zero as a closer approximation to the truth than a reasonable guess."

***Food***

Following FAO's tables on age and sex-specific food requirements (Dary, Imhoff-Kunsch, (2010), p. 5 and https://www.cnpp.usda.gov/sites/default/files/usda_food_patterns), we could proxy food consumption in the past with a modest margin of error. After all, the historical range of food intake by a human being is relatively narrow. I tried, however, to specify, whenever possible, food consumption on the basis of available quantitative evidence. For *Oceania, Latin America, Asia, Middle East, Africa,* however, we lack direct information until a recent period. Decadal estimates are, then, based on cross-section regressions of food as a function of income for the last two decades, following Bodirsky, Rolinski, Biewald, Weindl, Popp, Lotze-Campen (2015). For per capita GDP, I used the series in *Maddison Project Database* (2013 edition) for the regressions. Since 1961, we can avail of FAO's database on food consumption. On the World scale, in the years 1961-2013, the correlation between present series and that by FAO is 0.91. Present series is higher than that by FAO between 1961 and 1980, but aligns from then onward. My results tally with those in 1970-2015 by Kearney (2010), p. 2794. The apparently high standards of caloric intake in 1820-50 fit the FAO's standards, as shown by Humphries (2013), pp. 698-99. The amount of 2,000 kcal per day has been suggested as a reliable average for pre-modern populations by Livi Bacci (1987), p. 43. Figure 1 presents the series for the World on the whole.

**Figure 1**. World daily food intake per capita 1820-2018 (kcal/day)




**Sources**: see text.

*Western Europe (WE):* rough estimates of food consumption are available for the following countries: Italy, Spain, Portugal, France, Germany, England and Wales, The Netherlands and Sweden (*Energy History* database). These series have been completed for the years from 2000 through the database *Daily per capita supply of calories* and *Food consumption (Eurostat Database)*. For the other Western European countries, not included in this sample, I assumed the same average per capita consumption of those eight countries. Floud, Fogel, Harris, Chul Hong (2011), p. 268 (Tab. 5.5) record the available information for Western European countries since 1800. This information has been used to check my results.

*Eastern Europe (EE):* for the period from 1961, I exploited *FAO's database* (the average of Poland, Bulgaria, Czechoslovakia –and Czechia plus Slovakia-, Hungary, Romania, Russia –and nations of former URSS-, Yugoslavia -and former Yugoslavian countries-). For the previous period, I regressed per capita consumption of food (FC in kcal) in Western Europe on per capita GDP (y) from *Maddison Project Database* (2013 edition). The result is: FC= 730.64 + 243.28ln(y) ($R^2$=0.85). I used the equation with per capita GDP of Eastern Europe from *Maddison Project* and computed the entire series.

*Northern America (NA)*: for the US I made use of the series by Floud, Fogel, Harris, Chul Hong (2011), p. 314; and for Canada I took the series from Unger, Thistle (2013). Since the level and trend of both series are similar, for the macro-area on the whole I computed the arithmetic average.

*Oceania (O), Latin America (LA), Asia (As), Middle East (ME), Africa (Af):* in order to establish a relationship caloric intake-income, I took data on per capita GDP in PPP dollars 2011 for 2007 from World Bank WDI and food consumption from FAO's database for the years 2007-09 (154 countries), and regressed food consumption (FC in Kcal) on per capita GDP (y) with a power equation (the best fit). The estimated equation is: $FC = 1078y^{0.1028}$ ($R^2 = 0.4966$). I used the historical series of per capita GDP in Europe from *Maddison Project Database* (2013 edition) (in PPP 1990 Geary-Khamis $); that is I converted the series into 2011 $ PPP, multiplying by 1.77, and using the previous equation in order to estimate the whole series. For the last decades I followed FAO's series. The database *Daily per capita supply of calories* was exploited to check my results. The estimates by CEPAL (1976), p. 47 for LA in 1961, 1965, 1970-73 are very close to mine.

My results per macro-area per decade are summarised in Table 4.

**Table 4.** Daily food intake per decade (in kcal per capita) 1820-2016

| kcal Food | **WE** | **EE** | **NA** | **LA** | **O** | **As** | **ME** | **Af** | ***WORLD*** |
|---|---|---|---|---|---|---|---|---|---|
| **1820** | 2.485 | 2,257 | 2,905 | 2,217 | 2,161 | 2,189 | 2,232 | 2,159 | *2,241* |
| **1830** | 2.476 | 2,276 | 2,912 | 2,227 | 2,256 | 2,188 | 2,239 | 2,172 | *2,246* |
| **1840** | 2.553 | 2,296 | 3,005 | 2,236 | 2,376 | 2,186 | 2,246 | 2,185 | *2,265* |
| **1850** | 2.627 | 2,315 | 2,630 | 2,246 | 2,480 | 2,184 | 2,253 | 2,198 | *2,274* |
| **1860** | 2.611 | 2,326 | 2,838 | 2,256 | 2,588 | 2,182 | 2,260 | 2,211 | *2,285* |
| **1870** | 2.624 | 2,338 | 3,032 | 2,266 | 2,625 | 2,181 | 2,267 | 2,224 | *2,303* |
| **1880** | 2.607 | 2,385 | 3,224 | 2,296 | 2,694 | 2,199 | 2,287 | 2,242 | *2,332* |
| **1890** | 2.618 | 2,409 | 3,125 | 2,327 | 2,704 | 2,217 | 2,308 | 2,260 | *2,352* |
| **1900** | 2.635 | 2,470 | 3,196 | 2,359 | 2,686 | 2,235 | 2,328 | 2,278 | *2,385* |
| **1910** | 2.753 | 2,501 | 3,063 | 2,415 | 2,757 | 2,254 | 2,349 | 2,297 | *2,420* |
| **1920** | 2.613 | 2,309 | 3,239 | 2,451 | 2,740 | 2,257 | 2,376 | 2,302 | *2,391* |
| **1930** | 2.691 | 2,533 | 3,351 | 2,476 | 2,730 | 2,253 | 2,406 | 2,300 | *2,437* |
| **1940** | 2.611 | 2,591 | 3,280 | 2,503 | 2,805 | 2,249 | 2,436 | 2,299 | *2,428* |
| **1950** | 2.533 | 2,722 | 3,176 | 2,500 | 2,868 | 2,253 | 2,446 | 2,298 | *2,425* |
| **1960** | 2.803 | 3,051 | 3,088 | 2,566 | 2,916 | 2,320 | 2,584 | 2,338 | *2,516* |
| **1970** | 3.025 | 3,303 | 3,194 | 2,638 | 2,948 | 2,325 | 2,730 | 2,396 | *2,586* |
| **1980** | 3.084 | 3,440 | 3,193 | 2,733 | 2,975 | 2,362 | 3,106 | 2,427 | *2,631* |
| **1990** | 3.065 | 3,382 | 3,467 | 2,705 | 3,080 | 2,370 | 3,325 | 2,412 | *2,651* |
| **2000** | 3.188 | 3,022 | 3,879 | 2,667 | 2,937 | 2,549 | 3,031 | 2,433 | *2,738* |
| **2010** | 3.195 | 3,154 | 3,841 | 2,793 | 3,169 | 2,687 | 3,024 | 2,594 | *2,861* |
| **2016** | 3.163 | 3,219 | 3,818 | 2,870 | 3,269 | 2,781 | 3,044 | 2,636 | *2,852* |

**Source:** see text.

### *Fuel*

The range of error for any quantification of fuelwood consumption is more remarkable than that of food consumption. Any estimate, even for present economies, suggests mere magnitudes of fuelwood consumed. Certain data is not available. The widest database is provided by *FAO fuelwood statistics* and is based on estimates rather than on direct information. For eight countries in Western Europe (France, Germany, England, Italy, The Netherlands, Portugal, Spain, Sweden), my sources are Kander (2002), Malanima (2006, 2013), Warde (2007), Teives Henriques (2009, 2011), and the database is *Energy History*. For the UK, I multiplied per capita consumption in England & Wales from Warde (2007) by the population of the UK. For Finland and Norway, I assumed the same per capita value of Sweden; for Austria, Belgium, Denmark, Greece, Switzerland I took the average for the eight countries for which the series are available. For NA, data comes from O'Connor, Cleveland (2014) and Unger, Thistle (2013). The very high fuelwood consumption in US 1820-50 is confirmed both by U.S. Energy Information Administration Annual Energy Review, Tables 1.3, 10.1, and E1 https://www.eia.gov/totalenergy/data/annual/, and Netschert, Schurr (1960), p. 48. Higher estimates for Spain are proposed by Iriarte-Goñi, Infante-Amate (2017 and 2019).

The caloric intake of wood depends on several variables and primarily quality of wood and moisture. I assumed the caloric content of 3,000 Kcal per kg (which is an average of the plausible data). See, on the topic: UN (1987), pp. 32-35. A remarkable contribution on the topic of wood during the energy transition is represented by Warde (2019).

Since the available series for WE and NA confirm data elaborated, with an indirect method, by Fernandes, Trautmann, Streets, Roden, Bond (2007), the present series exploit the estimates of their article for my macro-areas. Fernandes et al. combined "estimates of per capita biofuel use with population data, taking into account country-specific factors that might have caused per capita consumption rates to change over time". Given that in the article by Fernandes et al. data refers to total consumption and are presented in Teragrams per macro-area (and their macro-areas do not correspond to mine), to compute per capita values I exploited the original data of the article for population (provided by one of the authors, David Streets, whom I thank for his generosity). Thanks to population data, I recalculated consumption in kg per day per capita for my eight macro-areas. For the three decades 1820-50, I assumed for EE, LA, O, As, ME, Af a stable consumption (kg per day per person), equal to that of 1850. The assumption seems plausible in the light of the long-term stability in average fuelwood consumption per capita (at least before the energy transition).

The years 1961-2015 are covered by *FAO Fuelwood consumption statistics*. In order to compare the results of the FAO database with data from the article by Fernandes et al., I computed for any year 1961-2015 the sum, for any country, of coniferous and nonconiferous wood, charcoal, wood residues and pellets, provided by *FAO Fuelwood consumption statistics*. FAO data results lower for than those available for the eight European countries covered by the *Energy History* database and lower than those by Fernandes et al. (see also the FAO results in Johnson, Tella, Israilava, Takama, Diaz-Chavez, Rosillo-Calle, et al. (2010), pp. 14-5). A ratio between the estimates by FAO and those by Fernandes et al. is provided in Table 5.

**Table 5**. Ratio between the series by FAO and those by Fernandes et al. 1961-2000

| | WE and EE | NA | LA | O | As | ME | Af | World |
|---|---|---|---|---|---|---|---|---|
| **1961** | 0.78 | 0.41 | 1.02 | 0.35 | 0.77 | 0.27 | 0.83 | *0.83* |
| **1970** | 0.80 | 0.34 | 1.05 | 0.35 | 0.67 | 0.31 | 0.86 | *0.79* |
| **1980** | 0.78 | 0.43 | 1.13 | 0.36 | 0.63 | 0.29 | 0.86 | *0.77* |
| **1990** | 0.94 | 0.57 | 1.05 | 0.32 | 0.54 | 0.14 | 0.94 | *0.74* |
| **2000** | 0.58 | 0.70 | 1.16 | 0.30 | 0.46 | 0.08 | 0.95 | *0.70* |

**Sources**: see text.

For EE, LA, O, As, ME, Af, I procured data from Fernandes et al. from 1850 until 2000. For the years 2001-16 I used the annual rates of growth by *FAO Fuelwood consumption statistics* on the estimate by Fernandes et al. for 2000 (Table 6). For 2017-18 I assumed the same per capita data of 2016. In order to compute kgs per day from FAO's dataset, I used the following coefficients:

1 kg of charcoal = 7,000 kcal = 5 kgs of wood
1 kg of wood = 3,000 kcal
1 kg of pellets = 4,500 kcal
1 cubic metre of wood = 650 kgs
1 cubic metre of pellets = 650 kgs
1 cubic metre of wood residues = 300 kgs

Data on food consumption per capita based on data by FAO are presented in Table 6.

**Table 6**. Data of fuelwood consumption in kgs per capita per day by FAO 2000-15

| | WE | EE | NA | LA | As | ME | Af | O | World |
|---|---|---|---|---|---|---|---|---|---|
| **2000** | 0.15 | 0.19 | 0.91 | 1.16 | 0.42 | 0.06 | 1.58 | 0.78 | *0.59* |
| **2010** | 0.18 | 0.31 | 0.81 | 0.96 | 0.38 | 0.05 | 1.52 | 0.57 | *0.57* |
| **2015** | 0.24 | 0.41 | 0.87 | 0.98 | 0.36 | 0.04 | 1.44 | 0.53 | *0.58* |

**Sources**: see text.

The results of my calculations in kcal per capita per day are summarised in Table 7.

Notice the increase of fuelwood consumption in Europe 2000-16 (due mainly to the spread of pellets and the economic policy of EU in favour of biofuels).

**Table 7.** Kcal per capita per day from fuelwood 1820-2016

| kcal Fuelwood | WE | EE | NA | LA | O | As | ME | Af | WORLD |
|---|---|---|---|---|---|---|---|---|---|
| **1820** | 6,096 | 6,782 | 61,811 | 4,580 | 16,867 | 4,330 | 3,869 | 7,175 | *5,564* |
| **1830** | 5,673 | 6,782 | 63,454 | 4,580 | 16,867 | 4,330 | 3,869 | 7,175 | *5,701* |
| **1840** | 5,628 | 6,782 | 64,057 | 4,580 | 16,867 | 4,330 | 3,869 | 7,175 | *5,911* |
| **1850** | 5,190 | 6,782 | 63,085 | 4,580 | 16,867 | 4,330 | 3,869 | 7,175 | *6,140* |
| **1860** | 4,994 | 6,515 | 59,510 | 4,767 | 27,714 | 4,312 | 3,851 | 7,057 | *6,433* |
| **1870** | 4,453 | 6,603 | 50,649 | 4,801 | 30,596 | 4,282 | 3,830 | 6,844 | *6,414* |
| **1880** | 3,984 | 6,489 | 41,402 | 5,020 | 35,001 | 4,308 | 3,839 | 6,988 | *6,284* |
| **1890** | 3,601 | 6,243 | 29,699 | 5,350 | 36,010 | 4,306 | 3,879 | 6,939 | *5,929* |
| **1900** | 3,254 | 5,974 | 19,822 | 5,594 | 33,727 | 4,296 | 3,863 | 6,927 | *5,475* |
| **1910** | 2,847 | 5,465 | 14,527 | 6,240 | 31,297 | 4,289 | 3,888 | 6,963 | *5,180* |
| **1920** | 3,173 | 4,846 | 11,124 | 6,271 | 15,313 | 4,216 | 3,760 | 6,936 | *4,911* |
| **1930** | 2,613 | 4,368 | 8,918 | 6,371 | 8,832 | 4,165 | 3,712 | 6,893 | *4,635* |
| **1940** | 2,744 | 4,092 | 7,421 | 6,198 | 8,085 | 4,061 | 3,562 | 6,866 | *4,475* |
| **1950** | 2,431 | 3,475 | 7,441 | 6,176 | 8,396 | 4,044 | 3,446 | 6,812 | *4,419* |
| **1960** | 2,304 | 2,663 | 4,737 | 5,418 | 8,491 | 4,054 | 3,411 | 6,553 | *4,109* |
| **1970** | 2,453 | 1,940 | 4,321 | 4,454 | 6,820 | 3,839 | 3,323 | 6,244 | *3,845* |
| **1980** | 2,534 | 1,475 | 6,663 | 3,888 | 6,344 | 3,493 | 3,263 | 5,803 | *3,710* |
| **1990** | 3,355 | 1,214 | 5,459 | 3,415 | 6,602 | 3,306 | 3,218 | 5,222 | *3,512* |
| **2000** | 4,382 | 859 | 4,876 | 3,034 | 8,425 | 3,053 | 3,071 | 5,061 | *3,378* |
| **2010** | 5,445 | 1,055 | 3,900 | 2,461 | 6,175 | 2,648 | 2,286 | 4,868 | *3,105* |
| **2016** | 5,623 | 1,100 | 3,834 | 2,516 | 5,704 | 2,414 | 1,993 | 4,626 | *2,962* |

**Sources**: see text.

***Working animals***

An assumption to quantify the ratio draught animals/population is that in many cases (although not always, as we will see), its magnitude, depending on the structure of past agricultural economies and their features in different parts of the World, is more or less stable for long periods (in relation to the population). The available data before the start of the agricultural modernisation can enlighten the decades (ordinarily the nineteenth century) for which we lack any quantitative information. For the earlier modernising economies, WE, NA and O, we can avail of better evidence than for the rest of the World.

Part of the livestock enters the estimate of energy consumption in the form of food (meat, milk…) for humans and is already included in the estimate of food intake (previous Table 4). Another contribution of the livestock to energy consumption is through its work. Although livestock series are available (ordinarily for the twentieth century –see Mitchell (2013)-, it is not easy to distinguish the share employed in work. Ordinarily, horses, mules, asses, camels are employed either in work or transportation, with the exception of animals which are too young (assumed in the following calculations equal to 20 percent). For cattle, it is different and, in many cases, we can not distinguish working animals from the rest. Ordinarily calves and milk cows do not work; although exceptions are far from rare. For modern countries, Matthewman, Dijkman, Zerbini (w.d.) write that "parts of the World where cows are used to provide draught power include Bangladesh, Indonesia, Pakistan, Philippines, Thailand, Sri Lanka, Poland, Senegal, Egypt, Zambia, Zimbabwe, Guadaloup". To this list we could easily add many more countries in Africa and several countries in Latin America. Furthermore from country to country the share of working cattle is different and changes in time (diminishing whenever we approach the present). The methods I followed are different for each macro-area. Useful information on power and employment of diverse animals in agriculture can be found in *Animal traction in rainfed agriculture in Africa and South America* (1991) and Goe, McDowell (1980).

In order to quantify the contribution of working animals to human energy consumption, I followed the method employed by Kander and Warde (2011). The rationale behind their calculation is to consider a draught animal as a machine and fodder intake as the fuel the machine has to burn in order to work. The method implies the conversion of any draft animal into horse equivalents, to establish the ratio horse equivalents-population for any country or macro-area, to multiply horse equivalents per person by a daily food intake of 23,000 kcal by an horse equivalent and finally multiply the result by 365 days and by the population of the country or area. For the conversion into horse equivalents (any horse equivalent equal to 1), the coefficients for other animals are (on the basis of their relative power): for a mule 1, for ox and buffalo 0.67, for donkeys 0.3, for camels 1.

The specific calculation is different for any macro-area or nation and different are the sources. For a general view of the employment of working animals in the World about 2000, I used Lhoste, Havard, Vall (2010), p. 12, whose figures are summarised in Table 8.

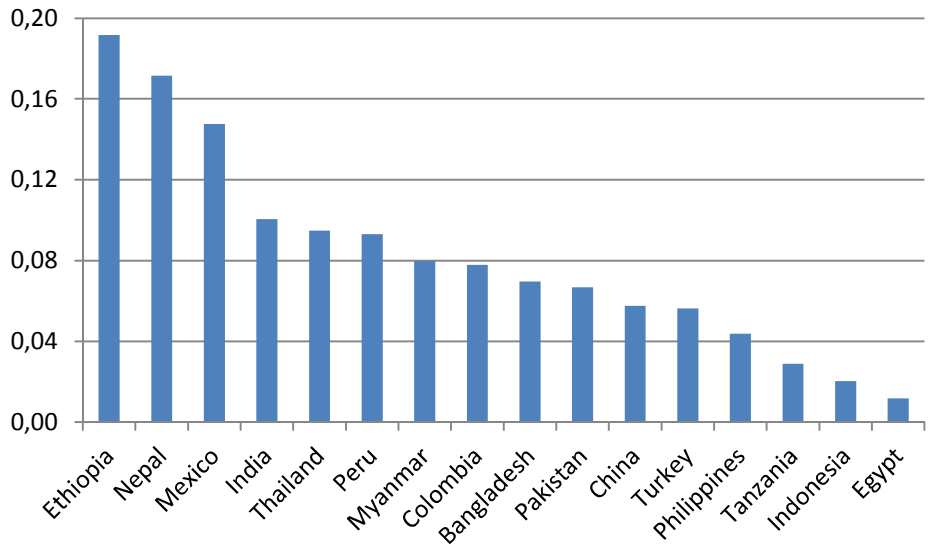
**Table 8**. World working animals per species in about 2000 (000,000)

| millions | As | LA | Af | Others | TOTAL |
|---|---|---|---|---|---|
| **Oxen and Buffaloes** | 270 | 15 | 16 | 0 | *301* |
| **Horses** | 16 | 24 | 5 | 13 | *58* |
| **Donkeys and mules** | 23 | 7 | 17 | 9 | *56* |
| **Dromedaries and camels** | 4 | 0 | 15 | 0 | *19* |
| **TOTAL** | **313** | **46** | **53** | **22** | ***434*** |

**Source**: Lhoste, Havard, Vall (2010), p. 12.

An estimate per country is provided by Ramaswamy (1985, 1994), according to whom, for the years around 1980-90, in the World "the population of draught animals may be estimated at approximately 400 million (300 million adult animals and 100 million young stock)" (1994, p. 196; and see the critical comments by Starkey (2010), pp. 15-6). Horse equivalents per capita for a sample of countries is presented in Figure 2. Of great use is Alexandratos, Bruinsma, Hrabovszky (1982) who report data on working animals for 90 countries in 1975 and projections for 2000.

**Figure 2**. Horse equivalents per capita (ratio horse equivalents-population) in a sample of countries 1980-90




**Source**: Ramaswamy (1985), p. 3.

*Western Europe*: for WE my estimates follow the series already available in Kander and Warde (2011). Those series are based on direct data from coeval documents and concern Sweden, The Nether-

lands, England, Germany, France, Spain and Italy in the period 1815-1913 (Italy from 1861 and Spain from 1870). I report here my elaboration of that data (Table 9), taken as representative of WE on the whole (data in col. 1, 2, 3, 4, 5 in thousands).

**Table 9.** Estimates by Kander-Warde of working animals in Sweden, The Netherlands, England, Germany, France, Spain and Italy, Heq and Kcal of fodder per inhabitant in 1815-1913

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| | **Horses** | **Oxen** | **Mules** | **Donkeys** | **Horse eq.** | **Population** | **Horse eq.** | **Mtoe** | **Kcal per c.** |
| | (000) | (000) | (000) | (000) | (000) | | **per c.** | **per year** | **per day** |
| **1815** | 4,338 | 3,982 | 275 | 312 | 7,331 | 70,054,807 | 0.10 | 6.15 | 2,407 |
| **1840** | 4,737 | 4,012 | 294 | 326 | 7,827 | 88,004,837 | 0.09 | 6.57 | 2,046 |
| **1850** | 4,953 | 4,012 | 320 | 363 | 8,081 | 94,888,637 | 0.09 | 6.78 | 1,959 |
| **1860** | 5,568 | 5,416 | 252 | 304 | 8,243 | 126,168,072 | 0.07 | 6.92 | 1,503 |
| **1870** | 5,902 | 6,256 | 264 | 300 | 8,093 | 150,599,666 | 0.05 | 6.79 | 1,236 |
| **1880** | 5,763 | 6,232 | 252 | 286 | 7,906 | 162,490,334 | 0.05 | 6.64 | 1,119 |
| **1890** | 5,999 | 6,421 | 233 | 264 | 8,180 | 174,565,972 | 0.05 | 6.87 | 1,078 |
| **1900** | 6,728 | 6,223 | 271 | 308 | 8,715 | 189,313,519 | 0.05 | 7.32 | 1,059 |
| **1913** | 7,342 | 5,905 | 154 | 288 | 8,568 | 211,597,050 | 0.04 | 7.19 | 931 |

**Source**: personal elaboration of the series in Kander and Warde (2011).

**Note:** in col. 8 Heq of col. 7 are multiplied by their daily consumption of fodder and by 365. In col. 8 the rise in 1860 and 1870 depends on the inclusion of Italy and Spain (lacking for the years 1815-50).

For WE after 1913 I exploited the series in *Energy History Database* (where the authors follow the same method of calculation used in the present *Database* and in Kander-Warde (2011)).

*Eastern Europe*: data for Bulgaria cover the period 1900-95 (in Barzev ( 2004), and Vlaeva, Barzev, Georgieva, Ivanova (2017)). Data for Czechoslovakia**,** from *Kuskova et al. Energy consumption in Czechoslovakia* (and Kuskova, Gingrich, Krausmann (2008)), confirm the similarity of horse equivalents per capita between EE and WE (especially between Czechoslovakia and Germany), such as shown also by Nielsen (2017). Data from Spulber (2003), pp. 77-8 on horses are not far from those of WE (Table 10).

**Table 10.** Heq estimate including only horses for a sample of countries in EE 1938-55

| | Czechoslovakia | Poland | Hungary | Romania | Bulgaria | Yugoslavia |
|---|---|---|---|---|---|---|
| **1938** | 0.045 | 0.126 | 0.101 | 0.131 | 0.089 | 0.079 |
| **1948** | 0.051 | 0.096 | 0.062 | 0.059 | 0.077 | 0.062 |
| **1953** | | 0.104 | 0.071 | 0.064 | 0.063 | 0.067 |
| **1955** | 0.053 | 0.110 | 0.074 | 0.069 | 0.063 | 0.072 |

**Source**: Spulber (2003), pp. 77-8.

Data in Table 10 refers only to horses. I, then, regressed horse equivalents in WE on Western European per capita GDP. The resulting equation is $y = 110.99e^{-2E-04x}$; $R^2 = 0.9856$. In order to obtain the series of horse equivalents for EE, I used this same equation on the series in *Maddison Project* (2013 edition) relative to per capita GDP in EE.

*North America*: present series report the original yearly series in O'Connor, Cleveland (2014) for the US and Unger, Thistle (2013) for Canada.

*Latin America*: beef and dairy cattle played an important role in Latin America in the centuries I deal with and continue to play a remarkable role (Jarvis (1986)). As a consequence, within the figures relating to cattle, it is hard to specify the percentages of working animals. A reliable source covers 20 countries in the year 1975 (Alexandratos, Bruinsma, Hrabovszky (1982), pp. 148-50), when the ratio draught animals-population was 0.04 (and then equal to the European average in 1913). For the years 1835-2016 and 1892-2000 two annual series are available: for Chile (unpublished, worked out by César Yáñez, who kindly shared with me the results of his research; I seize the opportunity for thanking him) and for Uruguay (Bertoni in *Energy History* and Bertoni, Cancela (2010)). Based on Mitchell (2013), I collected and

worked out the whole yearly series (with several missing years) for Cuba, Mexico, Brazil, El Salvador and Argentina. These estimates were completed with other quantitative information for Cuba in 1892-2000 (Henriksson, Lindholm (2000), Ríos, Cárdenas (2003)), Mexico in 1930-90 (Ortiz-Laurel, Rössel (w.d.)), Latin America on the whole in 1950-70 (Biswanger, Donovan, (1987), p. 71). For cattle, I assumed in my calculations that only 10 percent was working. In any case, the results for some LA countries are too high. For Argentina in 1875, the ratio horse equivalents-population is equal to 2.00, which led to the exclusion of Argentina. The figures for Uruguay as well seem too high, given the wide breeding of livestock in the country: 0.68 in 1892, 0.20 in 1950 and 0.07 in 2016. The averages among the other countries result, however, in relatively high figures for the ratio horse equivalents-population: 0.15 for 1835 (assumed also for 1820-34), 0.21 for 1900, 0.20 for 1950, 0.04 for 1975 and 0.03 for 2016. On the whole, the series of Chile by Yáñez appears to be more plausible. I adopted it for my calculations of the average for the LA macro-area.

*Oceania*: in Oceania only horses were used as draught animals. The entire series of horses is provided by Mitchell (1998a, 2013) and start in 1852 for Australia and 1850 for New Zealand. We know that the horses were only 3,500 on the whole in 1820 Australia. Missing data for 1820-50 have been interpolated.

*Asia*: the only estimate for China at the start of the nineteenth century is provided by Adshead (1974, 1997) and Debeir, Deléage, Hémery (1986), p. 109, on the basis of Braudel (1979), I, ch. V; from 1949 yearly data is from Hunter Colby, Crook, Webb (1992), p. 137 (Table 114, "Animals for draft use", about 66 percent of total animals); from 1957 Biswanger, Donovan (1987) Table B-3, p. 69; Naughton (2007), pp. 263-64 from 1949; Cartier (1993, 1999, p. 190) for 1930 and 1990. For China some data for the years 1914-44 are recorded by Mitchell (1998a). I assumed that working animals were 66 percent of the total, such as in 1945-50. From 1820 until 1914, I assumed the same horse-equivalents of 0.06 per person, such as in 1914-50 and 1820. For India, data is only available from 1945, additionally , only cattle and buffaloes (corresponding to 0.67 horses, as said earlier) were employed as working animals. In 1945-70 draught animals represented 34 percent of the total Cattle plus Buffaloes (recorded in Mitchell (1998a). Since Mitchell reports data from 1890, for the period 1890-1945 I assumed that working animals were 34 percent of total cattle and buffaloes. For the period 1820-1890 I assumed the ratio horse equivalents-population was equal to 0.06 (such as in 1890). From 1945-77 I take data from Biswanger, Donovan (1987), p. 70; from 1972 until 1977 Natarajan, Chander, Bharathy (2016); Mrema, Soni, Rolle (2015), p. 27 for 2005 and 2015 (with projections for 2030 and 2050); Singh (2015), p. 70, and for 1960-2010 (per decade); FAO (2013), p. 106. For Pakistan Lateef, Hanjra (1992), p. 127 and for Bangladesh 1965-80, Jabbar (1980), p. 4. Data for Taiwan 1960-69 in Peng Tien-song (1971), p. 109, confirm the estimate for China in 1960, and a faster decline than for China in the following decade. For Japan 1880-1984, Biswanger, Donovan (1987), p. 67. After 1984 draught animals are no longer employed in Japan. For the calculation of traditional energy in Asia I finally built a weighted average of data for China, India (including Bangladesh from 1950) and Japan.

*Middle East:* UN (1951), p. 50 (with data for 1937-51 for Iran, Iraq, Turkey, Syria). For Turkey and Iran, we can avail of the series in Mitchell (1998a and 2013) on livestock from 1945 for Turkey and 1930 for Iran; and UN (1953); Gifford (1981), p. 17 for 1980-2000. For Iran from 1995-2010, there are also estimates by Tabatabaeefar, Omid (2005), p. 142. The series by Mitchell and UN (1951 and 1953), completed by *İstatistik Göstergeler Statistical Indicators 1923-2013* (2013), pp. 200-01, for the period from 1929, report data for Iran, Iraq, Turkey, Syria and refer to livestock on the whole (including, that is, non-working animals). I assumed that 0.8 horses, donkey and mules actually worked. For cattle, the percentage was much lower. I assumed that only 0.3 of cattle was employed in transport and agriculture. For the nineteenth century I assumed the same ratio animal-population of the first documented years of the twentieth century.

*Africa:* working animals still play an important role in African agriculture (*Animal traction in rainfed agriculture in Africa and South America* (1991), Starkey (2000), Ehui, Poison (1993)). In 1975 the ratio horse equivalents-population was 0.04 (Alexandratos, Bruinsma, Hrabovszky (1982), pp. 148-50), despite the presence of trypanosomiasis which constrained livestock breeding (Gifford (1981), p. 17). In Mitchell (2013), livestock is recorded by race for several African countries. My series is computed from data relating to the following countries: Algeria (1860-2010), Egypt (1913-2010), Ethiopia-Eritrea (1938-2010), Nigeria (1945-2010), South Africa (1849-2010). For the first half of the nineteenth century and the years 2010-16, I assumed the same ratio horse equivalents-population respectively of 1850 and

2010. Useful for comparisons with my data are: Alexandratos, Bruinsma, Hrabovszky (1982), pp. 148-50 (20 African countries in 1975); Biswanger, Donovan (1987), p. 71 (Senegal 1959-75).

The results of my calculations for the macro-areas are summarised in Table 11.

**Table 11.** Kcal per capita per day from working animals 1820-2016

| kcal | WE | EE | NA | LA | O | As | ME | Af | WORLD |
|---|---|---|---|---|---|---|---|---|---|
| Draft animals | | | | | | | | | |
| **1820** | 2,139 | 2,730 | 6,454 | 3,496 | 238 | 1,395 | 1,774 | 2,300 | *1,773* |
| **1830** | 2,111 | 2,711 | 6,673 | 3,496 | 723 | 1,395 | 1,768 | 2,300 | *1,796* |
| **1840** | 2,140 | 2,685 | 6,992 | 3,586 | 2,241 | 1,395 | 1,763 | 2,300 | *1,835* |
| **1850** | 2,181 | 2,662 | 6,287 | 3,832 | 5,280 | 1,395 | 1,757 | 2,300 | *1,871* |
| **1860** | 2,159 | 2,643 | 6,342 | 4,152 | 4,729 | 1,395 | 1,752 | 2,775 | *1,964* |
| **1870** | 2,068 | 2,610 | 5,654 | 2,514 | 6,143 | 1,395 | 1,746 | 1,771 | *1,859* |
| **1880** | 2,052 | 2,542 | 6,082 | 1,568 | 8,105 | 1,395 | 1,742 | 2,175 | *1,902* |
| **1890** | 2,011 | 2,443 | 6,633 | 1,315 | 8,266 | 1,419 | 1,738 | 2,313 | *1,960* |
| **1900** | 1,981 | 2,343 | 6,328 | 1,686 | 9,568 | 1,610 | 1,734 | 1,970 | *2,058* |
| **1910** | 2,039 | 2,346 | 5,961 | 3,029 | 10,131 | 1,757 | 1,730 | 2,038 | *2,222* |
| **1920** | 1,966 | 2,400 | 5,335 | 3,042 | 9,519 | 2,062 | 1,689 | 1,793 | *2,342* |
| **1930** | 1,742 | 2,234 | 3,341 | 3,109 | 6,088 | 2,108 | 1,754 | 1,791 | *2,193* |
| **1940** | 1,616 | 1,990 | 2,425 | 2,781 | 5,137 | 1,991 | 2,590 | 1,181 | *1,976* |
| **1950** | 1,365 | 1,761 | 1,125 | 1,884 | 2,756 | 2,299 | 2,550 | 1,552 | *1,963* |
| **1960** | 1,019 | 1,445 | 372 | 1,670 | 1,310 | 2,493 | 2,501 | 1,436 | *1,918* |
| **1970** | 545 | 1,098 | 196 | 1,118 | 706 | 1,971 | 2,002 | 1,195 | *1,493* |
| **1980** | 226 | 915 | 126 | 789 | 664 | 1,475 | 1,624 | 949 | *1,135* |
| **1990** | 92 | 979 | 85 | 533 | 446 | 1,253 | 1,043 | 834 | *967* |
| **2000** | 78 | 988 | 60 | 485 | 280 | 1,032 | 791 | 662 | *810* |
| **2010** | 71 | 681 | 43 | 311 | 55 | 875 | 613 | 632 | *675* |
| **2016** | 67 | 459 | 41 | 243 | 49 | 834 | 558 | 551 | *619* |

**Sources**: see text.

## 4. Modern sources

Following the chronology of their exploitation, modern primary sources of energy are coal, oil, natural gas, primary electricity, and nuclear. Peat is ordinarily included in "coal" or "solid fuels" (adjusted on the basis of its caloric content -2,600 kcal/kg-: Etemad, Luciani (1991), p. XXVII, Darmstadter (1971), p. 819).

The series refer always to consumption. Included in my series is the energy used within a nation's borders directly. I actually adopt what is mostly called the Production based accounting (PBA) and not the Consumption based accounting (CBA), which also takes the indirect energy into account that was required to produce traded goods that were eventually consumed in another country. Prior to 1965, the available databases of energy ordinarily deal with production. Only from 1965 onwards can we avail of databases of yearly consumption by source for several countries in the World. For the previous period a calculation of consumption (both per macro-area and nation) meets several difficulties. In any case, we can never assume production as a proxy for consumption (with the obvious exception of the World on the whole) (such as shown by Kander, Warde, Teives Henriques, Nielsen, Kulionis, Hagen (2017)). Since the start of the exploitation of modern sources, wide scale trading of coal and oil began (the problem is discussed for LA in Rubio, Yáñez, Folchi, Carreras (2010); for UK, see Harley (1989)). As a consequence, both for any nation and any macro-area, production and consumption did not coincide, apart from natural gas and hydroelectricity, whereby before 1965 production often coincided with consumption, since the trade of these carriers developed relatively late (Table 12). On the differences production-consumption see UN (1952).

The estimates of energy consumption per macro-area are based on national series for 72 countries (reported in the *Database*). These estimates refer to the so-called "apparent consumption". "Apparent" means that for any source and for any country consumption is the result of production plus imports minus

exports. "Inventory accumulation or depletion, which may make an area's actual consumption lower or higher than tabulated, is ignored" (Darmstadter (1971), p. 3).

**Table 12**. Ratio production to consumption per macro-area for Coal, Oil, Gas and Hydroelectricity 1925, 1950, 1965

| | WE | EE | NA | LA | O | As | ME | Af |
|---|---|---|---|---|---|---|---|---|
| **COAL** | | | | | | | | |
| **1925** | 1.063 | 1.128 | 1.018 | 0.659 | 1.103 | 1.094 | 0.991 | 1.045 |
| **1950** | 0.998 | 1.034 | 1.008 | 0.961 | 0.980 | 1.006 | 0.991 | 1.056 |
| **1965** | 0.918 | 1.031 | 1.069 | 0.925 | 1.222 | 0.873 | 0.996 | 1.010 |
| **OIL** | | | | | | | | |
| **1925** | 0.033 | 1.256 | 1.143 | 3.732 | - | 1.118 | 4.292 | 0.236 |
| **1950** | 0.076 | 0.986 | 0.908 | 5.727 | - | 1.038 | 13.912 | 0.300 |
| **1965** | 0.060 | 1.231 | 0.798 | 4.204 | 0.018 | 0.294 | 14.940 | 4.413 |
| **GAS** | | | | | | | | |
| **1925** | 1.000 | 1.000 | 1.000 | 0.991 | - | 1.000 | - | - |
| **1950** | 0.963 | 0.996 | 1.004 | 0.837 | - | 1.000 | 1.000 | - |
| **1965** | 0.961 | 1.000 | 0.997 | 1.059 | 1.000 | 1.007 | 1.000 | 1.760 |
| **HYDRO** | | | | | | | | |
| **1925** | 0.998 | 0.883 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| **1950** | 0.996 | 1.015 | 1.004 | 0.967 | 1.000 | 1.000 | 1.000 | 1.000 |
| **1965** | 0.999 | 1.000 | 0.997 | 0.996 | 1.000 | 1.000 | 1.000 | 1.001 |

**Source**: Darmstadter (1971).

In order to build the series, I employed two distinct methods, one for traditional sources and another for modern sources. My series of consumption of traditional sources started from estimates of consumption per capita, which were then multiplied by the population in order to reach aggregate figures; whereas, for the estimation of modern sources I started from aggregate values for any nation, then divided them by the population in order to compute per capita values. For any macro-area consumption, it is the sum of the yearly series of each source.

In any case, such as for traditional primary sources, present series refer to the input of a source of energy into engines able to make the source available for consumption. Then, for instance, at the beginning of the nineteenth century, the efficiency of a steam engine fuelled by coal was about 1 percent. The present series do not refer to this 1 percent, but to 100 percent put into the steam engine. As shown previously, the same procedure is followed for the estimates of traditional sources: the input of food is computed and not the engendered mechanical work (more or less equal to 15 percent of the input). In order to follow this same method of calculation, primary electricity deserves special attention. Electricity is never a primary source. Primary sources are coal, oil, natural gas, falling water, wind, solar heat, biomass or nuclear fuels exploited to generate electricity in power stations. Following a common usage, I use the label of *Primary Electricity* whenever electricity is produced through falling water, wind, and Sun's heat. In the present database, as ordinarily done, coal, oil and natural gas exploited in power stations for the production of electricity, are included in the series of coal, oil and natural gas (and not in those of *Primary Electricity*). The same holds true for nuclear energy. Following the logic of this method of calculation, the electricity produced by anything other than coal, oil and gas would have to be computed as the force of falling water, that of the wind, of the Sun's heat and of nuclear fuels. In order to compute the input of energy employed for the production of electricity, the procedure is the following. If, for instance, a country exploits the energy of its power stations with the efficiency (that is the ratio between the output and input into its turbines) of 0.30, and this generated energy is equal to 50 Mtoe, then we divide 50 by 0.30 and the result (166) is the actual input of energy. This calculation, however, is not followed in the available series of primary electricity and nuclear electricity.

Two frequent methods used in the available estimates of electricity consumption are:

1. to take into account only the generated electricity (then the item *Primary Electricity* includes the electricity consumed by final consumers and not the energy input of a carrier into the power station). Then,

if, for instance, the yield in the production of electricity in a power station, is 30 percent, the value we find in the series is not the input, but only the output (the 30 percent of total input);

2. to convert the generated electricity into the input of energy as any power station were fuelled through fossil fuels. Assuming that the electricity produced in a country is 2000 and that the average yield by the power stations of that country fuelled with coal is 30 percent, the resulting electricity is 2,000/0.30= 6,666; even though in that country all electricity is produced through the falling water (whose yield is about 90 percent and not 30 percent).

In the first case the result is an underestimate of the value of the consumption of primary energy. In the second case the result is an underestimate for hydroelectricity and an overestimate for solar and wind electricity. For example: in the database *BP Statistical Review of World Energy*, we read in the sheet *Definitions*: "The primary energy values of nuclear and hydroelectric generation, as well as electricity from renewable sources, have been derived by calculating the equivalent amount of fossil fuel required to generate the same volume of electricity in a thermal power station, assuming a conversion efficiency of 38 percent". The procedure followed in the BP series of the electricity generated in power stations is to take the output of electricity and to divide it by 0.38 in order to estimate the input of primary energy (the equivalent amount of fossil fuel). Then, if on the World scale the energy generated (through fossil fuels, water, wind…) is 10,000, this amount is divided in any case by 0.38 (the yield of the fossil fuelled power stations) and the result (that is the output) is 23,616.

The method to estimate "primary electricity" in the present series is different; the energy input was calculated by dividing the energy generated in the power station by the actual yield of the power station. Following Eurelectric (2003), I used as coefficients of conversion (that is the efficiency of the turbines): 1. for hydro turbines 0.90; 2. for renewables (solar and wind electricity) 0.25; and 3. for nuclear 0.30. In specific cases, the conversion of the already existing series into new homogeneous series by always following the previous procedure implies a recalculation. As an example, I take the case of the BP database, which I frequently followed in my series of modern sources since 1965. In that case BP estimated primary energy assuming the standard coefficient of 0.38 for any power station. Following my own procedure, I multiplied the BP series by 0.38 (in order to estimate the generated electricity) and then divided the result by 0.90 in the case of hydroelectricity, by 0.25 in the case of other renewables and by 0.30 in that of nuclear electricity. Notice that in the specific case of hydroelectricity a calculation of the generated electricity and that of the input of falling water into the power station results in relatively similar figures (given the high yield of the hydro turbines). It is not so in the case of nuclear or wind or solar fuelled power stations.

*Primary Electricity* is equal to the sum of *Hydro* and *Other Renewables*.

Even though not always specified in the following information per macro-area and country, brown coal, when distinguished from hard coal in the sources of data, is computed with a heating content equal to 0.5 hard coal.

For the national statistical reconstructions of modern carriers of energy some more exploited sources of information are (in brackets the acronym or name used in the following explanatory notes):

(EL) Etemad, B., Luciani, J. (1991) (series of production per country and macro-area 1800-1985);

(SPDP) *Shift Project Data Portal* (tabulated data from EL and EIA starting from 1900);

(EIA) US EIA *Historical Statistics for 1980-2013* (http://www.tsp-data-portal.org/all-datasets);

(EIA-DOE) Coal_consumption_by_country 1980-2012; www.Eia-Doe;

(ENERDATA) *ENERDATA. Global Energy Statistical Yearbook 2019*.

(Mitchell 1998a) Mitchell, B.R. (1998a). *International historical statistics. Africa, Asia & Oceania 1750-1993*. London, McMillan (series on production, exports and imports); data on production pp. 352-72 and on export-import pp. 653-67.

(Mitchell 1998b) Mitchell, B.R. (1998b). *International historical statistics. Europe 1750-1993*. London, McMillan (series on production, exports and imports); data on production pp. 426-41 and on export-import pp. 476-98;

(Mitchell 1983) Mitchell, B.R. (1983). *International historical statistics. The Americas and Australasia.* London, McMillan (series on production, exports and imports); data on production on pp. 399-413 and on export-import on pp. 522-32.

(Mitchell 2013) Mitchell, B.R. (2013). *International historical statistics.* London, Palgrave (series on production, exports and imports updated to 2010).

(Darmstadter 1971) Darmstadter, J. (with Polach, J.G., Teitelbaum, P.D.)(1971). *Energy in the World economy. A statistical review of trends in output, trade, and consumption since 1925*. Baltimore, John Hopkins Press (series on production, import-export and consumption for the years 1925, 1929, 1933, 1937, 1938, 1950, 1953, 1955, 1957 and 1960-65).

(BP) *BP Statistical Review of World Energy June 2017, June 2018, June 2019* (data per source for 72 countries since 1965).

(WDI) *World Development Indicators*, 2018 edition (only used for primary electricity: in the dataset Hydro, Renewables and Nuclear are specified and allow to compute primary electricity following the method explained above).

(IEA 2018), *Energy balances of OECD countries, Energy balances of non-OECD countries.*

*Energy History* Joint Center for History and Economics. Series of data on energy consumption (including traditional sources).

(CEPAL) *CEPAL–CEPALSTAT, Estadísticas e indicadores ambientales, Producción y consumo de energía de recursos renovables y no renovables*

Whenever the source of recent data (from 2010) is not specified, I took the data from the two volumes by ENI (2017), *World oil review 2017, I, World gas and renewables review 2017, II,* and ENI (2019), *World oil review 2019, I, World gas and renewables review 2019, II.*

***Western Europe***

*Austria: Coal* from Gross (1971)(where Brown Coal, or lignite, is equal to 0.5 Hard Coal) until 1913 (data refers to Cisleithania). Retropolation from 1831 until 1820. Austrian population, within present borders, was equal to 25 percent (Mitchell 1998b and Findl, Helczmanovszki (1974), p. 20) of Cisleithanian population. Data from Gross have been adjusted on the basis of relative population. The period 1925-65 is from Darmstadter (1971), 1966-2018 from BP. *Oil* data on oil import and export from 1864 in Mitchell 1998b are not plausible in the light of the series in Darmstadter (1971) from 1925 (probably oils different from petroleum are also included); then I take the figure on imports from Mitchell (1998b) and interpolate the figures of oil from 1864 until 1925; Darmstadter (1971) for 1925-65; BP from 1966. Only few data are added by Kreuzberger (1961). *Gas* consumption (equal to production) starts in 1946 and is from EL until 1964, then BP. *Hydro* from 1918 until 1964 is from EL and SPDP, then from BP. *Other Renewables* BP from 1986.

*Belgium*: *Coal* apparent consumption 1831-1964 from Mitchell (1998b) and retropolation for 1820-30; from 1965 from BP. *Oil* computed as Import-Export (no domestic production) from Mitchell (1998b); Darmstadter (1971) 1925-64; BP from 1965. *Gas* consumption starts in 1950; for 1950-64 Darmstadter (1971); from 1965 BP. *Hydro* for 1920 from EL, Darmstadter (1971) for 1925-60 and EL 1960-64; BP from 1965. *Other Renewables* BP from 1973. *Nuclear* from 1966 BP.

*Denmark: Coal* together with peat (2,600 kcal/kg) from Teives Henriques, Sharp (2016, Online Supporting Information) until 1904; from 1905 Mitchell (1998b) import plus production; BP from 1965. *Oil* import from Mitchell (1998b) since 1863; BP from 1965. *Gas* starts from 1984 BP. *Hydro* EL from 1939; BP from 1965. *Other Renewables* from 1978 BP. A comparison is possible with the series (per decade and 5 years from 1820-1910 and annual 1910-13) by Teives Henriques, Sharp (2016, Online Supporting Information). The correlation is 0.999.

*Finland: Coal* only import (no production) from 1860 Mitchell (1998b); BP from 1970; *Oil* only import from 1865 Mitchell (1998b); BP from 1965. *Gas* consumption starts from 1974, BP. *Hydro* EL 1929-59, Darmstadter (1971) 1960-64; BP from 1964. *Other Renewables* from 1990 BP. *Nuclear* from 1977 BP.

*France*: from *Energy History* (series elaborated by Ben Gales) with new series for primary electricity; *Hydro* from 1923 EL and BP from 1965. *Other Renewables* BP from 1966. *Nuclear* from 1958 EL, from 1965 BP. Data for coal, oil, gas from 2000 are from BP.

*Germany*: from *Energy History* (series elaborated by Paul Warde). BP from 2009 for *Coal* and *Gas*, *IEA Headline Global Energy Data (2017 edition.)* For *Oil* from 2002 *ENERDATA. Global Energy Statistical Yearbook 2019*. *Nuclear* from EL for 1961-64 and BP from 1965.

*Greece: Coal* production from 1900-15 from EL and 1916-64 from Mitchell (1998b), import 1867-1964 from Mitchell (1998b); from 1965 BP. *Oil* 1925-64 from Mitchell (1998b) (only import), BP from 1965. *Gas* consumption starts from 1982 (Mitchell (1998b)). *Hydro* 1928-64 from EL (production equal to consumption). *Other Renewables* from 1988 BP.

*Ireland:* the country was part of the UK from 1801 until 1921. For these 120 years it is hard to distinguish Irish consumption of coal and oil from that consumed in UK. *Coal* production is from EL from 1830 (data on production in 1855, 1873, 1893, 1907 also in Bielenberg (2014), p. 198). Importations are from EP-PI, Enhanced British Parliamentary Papers on Ireland (www.dippam.ac.uk) for the years 1820-22, 1824-27, 1846-47 and 1864 (interpolated the missing years). Data on peat consumption (2,600 kcal/kg) are from Kennedy (2013, p. 27), with interpolations for the missing years. *Oil* retropolation to 1880 from 1925 with the rates of growth 1925-30 (Darmstadter (1971)); 1925-64 Darmstadter (1971); BP from 1965. *Gas* from 1979 BP; *Hydro* EL from 1930. *Other Renewables* from 1992 BP.

*Italy*: from Malanima (2006 and 2013). BP from 1965 for *Hydro*, *Other Renewables* and *Nuclear* and BP for coal, oil and gas from 2010.

*Netherlands*: from *Energy History* (series elaborated by Ben Gales). The series have been completed for oil with *ENERDATA. Global Energy Statistical Yearbook 2019* from 1990 and BP for *Hydro Other Renewables.*

*Norway: Coal* import (from 1929) plus production (Mitchell (1998b)); BP from 1970. *Oil* Mitchell (1998b) from 1863 and BP from 1965. *Gas* from 1978 BP. *Hydro* 1935 EL and BP from 1965. *Other Renewables* BP from 1985. A useful comparison has been done with the series by Lindmark, Minde, 'Et energiregnskap for Fastlands-Norge 1835–2012', *Heimen*, (2018), pp. 157-77.

*Portugal:* Teives Henriques (2009 and 2011). Data retropolated for 1820-50 (when the series by Teives Henriques start). Completed with BP from 2009. *Oil* 2011-18 from *ENERDATA. Global Energy Statistical Yearbook 2019.*

*Spain:* from *Energy History* (series elaborated by Mar Rubio. See the criteria followed in Rubio (2005)). Retropolation from 1850 until 1820. From 2009 completed with BP. For oil from 2012 *ENERDATA. Global Energy Statistical Yearbook 2019.*

*Sweden:* Kander (2002). Series completed with BP from 2000 and Electricity revised (according to the just recalled procedure for primary electricity). *Oil* from 2005 *ENERDATA. Global Energy Statistical Yearbook 2019.*

*Switzerland*: *Coal* import from 1858 until 1924 (Mitchell (1998b)), Darmstadter from 1925 until 1964, BP from 1965. *Oil* only importation from 1870 until 1964 (Mitchell (1998b)), BP from 1965. *Gas* from 1971 BP. *Hydro* EL 1929-64; BP from 1965. *Other Renewables* BP from 1978. *Nuclear* BP from 1969.

*United Kingdom: Coal* production minus export (Mitchell (1998b)) from 1820 until 1991; BP from 1991. A series of coal consumption has also been built by the Department for Business, Energy and Industrial Strategy, Historical Coal Data: Coal Availability and Consumption, 1853 to 2017 (www.gov.uk). The correlation between this series and my series of coal is 0.992 (and the correlation of my series with that by Warde (2007) is 0.990). *Oil* from 1856 production + crude oil imports + refined oil import - export - Irish consumption in 1820-1921 (Mitchell (1998b)); BP from 1977. *Gas* Mitchell (1998b) 1930-39; EL 1950-77; BP dal 1978. *Hydro* EL 1920-64; BP from 1965. *Other Renewables* BP from 1984. *Nuclear* from 1956 Bolton (2013), p. 11 and BP.

***Eastern Europe***

*Bulgaria: Coal* from Mitchell (1998b) production from 1894 (brown coal 0.5 hard coal) plus import (from 1887), and from 1980 from BP. *Oil* EL for production, Mitchell (1998b) for import, and BP from 1965. *Gas* from 1965, BP series. *Hydro* EL from 1929 and BP from 1965. *Other Renewables* BP from 2010. *Nuclear* BP from 1974.

*Czechoslovakia:* All data from 1820 until1917 refer to Bohemia and Moravia, from 1919 until 1991 to Czechoslovakia, and from 1992 until 2003 to Czechia plus Slovakia. All data are from *Kuskova et al. Energy*

*consumption in Czechoslovakia.* For a comparison of this series with those of Germany and Britain, see Nielsen, Warde, Kander (2017). Higher values in BP than in the database by *Kuskova et al*. for coal.

*Hungary: Coal* data in the series 1851-1914 in Gross (1971) are too high. I used Mitchell (1998b) from 1851 for production (brown coal 0.5 hard coal) and for import-export; data on consumption from BP are too low (I use rates of growth in BP from 1971 starting from the figure in Mitchell from 1970). *Oil* from 1900 production in EL and import-export in Mitchell (1998b); BP from 1968. *Hydro* EL from 1946 and BP from 1965. *Other Renewables* from BP since 1995. *Nuclear* from 1982 BP.

*Poland: Coal* data EL from 1820; import and export start from 1920 (Mitchell 1998b); BP from 1970 (rates of growth). *Oil* production EL from 1874 and import-export Mitchell (1998b) from 1920; BP from 1965. *Gas* EL 1922. From 1950 Poland is no longer independent (Darmstadter 1971). BP from 1965. *Hydro* EL from 1927; BP from 1965. *Other Renewables* BP from 1969.

*Romania: Coal* from 1882 (Mitchell 1998b) production (brown and hard coal) plus import; BP rates of growth from 1974. *Oil* production Mitchell (1998b) in 1883-1900, EL from 1900 and export from Mitchell; from 1965 BP. *Gas* production from 1922 from Mitchell (1998b); export starts from 1960 (Darmstadter 1971); BP from 1965. *Hydro* EL from 1924; BP from 1965. *Other Renewables* from 2010 BP. *Nuclear* from 1996 BP.

*URSS:* after 1990, the series is the result of the sum of data for: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan. *Coal* from 1830 EL (production = consumption); from 1866 import and export from Mitchell (1998b); from 1965 BP. *Oil* production from 1860 EL and import-export from Mitchell (1998b); BP from 1965. *Gas* from 1922 EL and from 1965 BP. *Hydro* from 1921 EL; from 1965 BP. *Other Renewables* from 1998 BP. *Nuclear* from 1965 BP. Our data on coal and oil production coincide with those by Suhara (2017).

*Yugoslavia:* after 1992, the series is the result of the sum of data for: Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia, TFYR Macedonia. *Coal* data on Serbia from 1893 in Mitchell (1998b) on production (brown and hard coal), export and import (until 1912 data on apparent consumption are divided by 0.4 in order to compute an estimate of Yugoslavia, since in Serbia lived 40 percent of yugoslavian population) see also Republic of Serbia (2016); from 1965 BP. *Oil* from 1922 import from Mitchell (1998b), production EL from 1933 and BP from 1980. *Gas* from 1926 EL and Bartoletto (2016), p. 24 from 1990 (sum of Slovenia, Bosnia, Erzegovina, Croatia, Serbia, Macedonia, Montenegro). *Hydro* EL from 1929, BP from 1992. *Nuclear* BP from 1981.

***North America***

*Canada*: the series of modern carriers are those of Unger, Thistle (2013), updated with BP from 1998 (Oil from 2000: *ENERDATA. Global Energy Statistical Yearbook 2018*). *Primary electricity* is from BP since 1965.

*USA:* the series are those of O'Connor, Cleveland (2014) and O' Connor (w.d.) updated from 2010 with *EIA Annual Energy Review February 2019* in www.eia.gov/totalenergy/data/annual/. The complete series of electricity is from *EIA*. See also: Netschert, Schurr (1960), pp. 47 and 86 and Linde (1991), p. 51.

***Latin America***

For Latin America Mar Del Mar Rubio allowed to compare mine to her complete series (not yet published) of total consumption of modern sources for 20 Latin American countries in 1856-2000 (I thank Mar for her kindness). In my series of coal and hydroelectricity I followed respectively Yáñez, Rubio, Jofré, Carreras (2013) and Rubio, Tafunell (2014). The other series were independently developed. In Table 13 I report the correlation among my series and those by Rubio. The coefficient of correlation is ordinarily close to 0.99. Only in the case of Panama it is lower.

The book by Wu (1995) mainly deals with 1980-95 and adds little to our statistical sources. Series covering 1970-2017 have been produced by (CEPAL), although not complete for any source. In the present database CEPAL series have been used to cover some series for the years after 2010 and to check our data. For Coal I exploited also (EIA-DOE). For Oil, Gas and renewables (in Eletricity) series have been completed for 2017-18 with ENI (2019).

**Table 13**. Correlation between the present series of modern sources for Latin America and those by Mar Del Mar Rubio 1856-2000

| | | | | | |
|---|---|---|---|---|---|
| 1 | Argentina | 0.996 | 11 | Guatemala | 0.994 |
| 2 | Bolivia | 0.988 | 12 | Haiti | 0.968 |
| 3 | Brasil | 0.999 | 13 | Honduras | 0.991 |
| 4 | Chile | 0.998 | 14 | Mexico | 0.998 |
| 5 | Colombia | 0.995 | 15 | Nicaragua | 0.984 |
| 6 | Costa Rica | 0.994 | 16 | Panama | 0.954 |
| 7 | Cuba | 0.990 | 17 | Paraguay | 0.983 |
| 8 | Dominican R. | 0.971 | 18 | Peru | 0.985 |
| 9 | Ecuador | 0.990 | 19 | Uruguay | 0.994 |
| 10 | El Salvador | 0.991 | 20 | Venezuela | 0.992 |

**Source**: see text.

*Argentina*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013), from 1856, updated with BP from 1997. *Oil* UN (1957). *Energy in America Latina*, p. 134, 1925-55, Darmstadter (1971) 1955-65, BP from 1965. *Gas* EL from 1922, BP from 1965. *Hydro* Rubio, Tafunell (2014) from 1907; BP from 1965. *Other Renewables* BP from 1970. *Nuclear* BP from 1974.

*Bolivia: Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1915, updated with BP from 1997. *Oil* Darmstadter (1971) 1925-65, interpolated from 1965 to 1980, SPDP (from EIA) from 1980. *Gas* 1955-79 Mitchell (1983), SPDP (form EIA) from 1980. *Hydro* Rubio, Tafunell (2014) 1915-70; WDI from 1971. *Other Renewables* WDI from 1971.

*Brazil*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1856, updated with BP from 1996. *Oil* from 1903 production plus import from Mitchell (1983); BP from 1966. *Gas* Mitchell (1983) for 1940-45, SPDP for 1946-65, BP from 1966. *Hydro* Rubio, Tafunell (2014) for 1890-1964; BP from 1965. *Other Renewables* BP from 1970. *Nuclear* BP from 1974.

*Chile*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1856; BP from 1996. *Oil* 1925-49 UN (1957). *Energy in America Latina*, pp. 149-50, 1950-64 Darmstadter (1971), BP from 1965. *Gas* EL (SPDP) 1949-51, Mitchell (1983) 1952-80, BP from 1981. *Hydro* Rubio, Tafunell (2014) from 1897; BP from 1965. *Other Renewables* from 1983 BP.

*Colombia*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1856, updated with BP from 2000. *Oil* production minus export from 1922 Mitchell (1983), BP from 1971. *Gas* Mitchell (1983) from 1935, BP from 1966. *Hydro* Rubio, Tafunell (2014) from 1907; BP from 1965. *Other Renewables* BP from 1975.

*Costa Rica*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1870 until 1951. *Oil* from 1872 UN (1957). *Energy in America Latina*, p. 172 from 1925, interpolation 1925-79, SPDP (form EIA) from 1980, ENI (2017) 2013-16. *Hydro* Rubio, Tafunell (2014) from 1900; WDI from 1971. *Other Renewables* WDI from 1971.

*Cuba*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1856 (for 1841-50 import from Mitchell (1983) assuming that consumption is 30 percent higher than importation, such as in 1856), SPDP (form EIA) from 2000. *Oil* Darmstadter (1971) 1925-65, interpolation 1965-79, SPDP (form EIA) from 1980. Gas SPDP (from EIA) from 1980. *Hydro* Rubio, Tafunell (2014) from 1907; WDI from 1971. Other Renewables WDI from 1971.

*Dominican Republic*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1870, SPDP (from EIA) from 1982. *Oil* 1937-53 UN (1957) p. 177, interpolation 1954-79, SPDP (from EIA) from 1980. *Gas* SPDP (from EIA) from 2003. *Hydro* Rubio, Tafunell (2014) from 1952, WDI from 1971. *Other Renewables* WDI from 1971.

*Ecuador*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1892. *Oil* EL 1917-24, Darmstadter (1971) 1925-65, BP from 1966. *Gas* EL 1917-24, Darmstadter (1971) 1933-38, EL 1939-49, Dramstadter (1971) 1950-64, BP 1965. *Hydro* Rubio, Tafunell (2014) 1910-70, WDI from 1971. *Other Renewables* BP from 2006.

*El Salvador*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1870, SPDP (from EIA) from 1980. *Oil* UN (1957) 1925-54, interpolation 1955-79, SPDP (from EIA) from 1980. *Gas* no gas consumption. *Hydro* Rubio, Tafunell (2014) from 1912, WDI from 1971. *Other Renewables* WDI from 1975.

*Guatemala*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1870, SPDP (from EIA) from 1980. *Oil* UN (1957) 1925-54, interpolation 1955-79, SPDP (from EIA) from 1980. *Gas* no gas consumption. *Hydro* Rubio, Tafunell (2014) from 1907, WDI from 1971. *Other Renewables* WDI from 1971.

*Haiti*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1970, SPDP (from EIA) 1982-93, no coal consumption later. *Oil* UN (1957), pp. 174-75 1925-54, interpolation 1955-79, SPDP (from EIA) from 1980. *Gas* no gas consumption *Hydro* WDI from 1971. *Other Renewables* WDI from 1971 and until 1991.

*Honduras*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1870, SPDP (from EIA) from 1981. *Oil* UN (1957), p. 175 1925-54, interpolation 1955-79, SPDP (from EIA) from 1980. *Gas* no gas consumption. *Hydro* Rubio, Tafunell (2014) from 1908, WDI from 1971. *Other Renewables* WDI from 1999.

*Mexico*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1856, updated with BP from 2001. *Oil* 1901-64 Mitchell (1983), BP from 1965. *Gas* Darmstadter (1971) 1925-30, Mitchell (1983) 1932-65, BP from 1965. *Hydro* Rubio, Tafunell (2014) from 1907; WDI from 2001. *Other Renewables* BP from 1973. *Nuclear* BP from 1989.

*Nicaragua*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1871; consumption stops in 1955 and starts again in 2002; from 2002 SPDP (from EIA). *Oil* UN (1957) 1925-54, p. 176, interpolation 1955-79, SPDP (from EIA) from 1980. *Gas* no gas consumption. *Hydro* Rubio, Tafunell (2014) from 1944. *Other Renewables* WDI from 1971.

*Panama*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1904, from 1980 SPDP (from EIA); *Oil* UN (1957) 1925-54 and 1970-73, p. 176, interpolation 1955-69, SPDP (from EIA) from 1980. *Hydro* Rubio, Tafunell (2014) from 1950, WDI 1978. *Other Renewables* WDI from 1971. *Nuclear* SPDP (from EIA) 1969-76.

*Paraguay*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1900, SPDP (from EIA) from 2005. *Oil* UN (1957) 1934-49, p. 177, Darmstadter (1971) 1950-65 interpolated 1966-79, SPDP (from EIA) from 1980. *Gas* no gas consumption. *Hydro* Rubio, Tafunell (2014) from 1968, WDI from 1982. *Other Renewables* WDI from 1981.

*Peru*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1856, BP from 1980. *Oil* EL from 1881 until 1914, Mitchell (1983) production minus export from 1915, BP from 1979. *Gas* Darmstadter (1971) from 1925, Mitchell (1983) from 1950, BP from 1970. *Hydro* Rubio, Tafunell (2014) from 1907; BP from 1996. *Other Renewables* BP from 1971.

*Uruguay*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1856, updated with BP from 1997. SPDP (from EIA) from 1980. *Oil* Bertoni, *Energy consumption in Uruguay in:* cienciassociales.edu.uy/wp-content/.../Energía-Uruguay.xlsx 1882-2000, SPDP (from EIA) from 2001. *Gas* Bertoni, *Energy consumption in Uruguay* 1998-2000, SPDP (from EIA) from 2001. *Hydro* Rubio, Tafunell (2014) from 1944, WDI from 1979. *Other Renewables* WDI from 1971.

*Venezuela*: *Coal* Yáñez, Rubio, Jofré, Carreras (2013) from 1870, BP from 2006. *Oil* Mitchell (1983) from 1884, UN (1957) 1938-48, Mitchell (1983) from 1949, BP from 1970. *Gas* Mitchell (1983) 1932-2003, BP from 2004. *Hydro* Rubio, Tafunell (2014) from 1909; BP from 2000. *Other Renewables* no renewables.

***Oceania***

Energy consumption in Melanesia, Polinesia, Micronesia, where in 2017 lived about 30 percent of the population of Oceania, is far lower than in Australia and New Zealand. In 1980-2013 it adds 3 percent to the aggregate consumption of modern carriers of Australia plus New Zealand (*Index Mundi*, energy consumption in Australia, New Zealand, Palau, Fiji, Tonga, Samoa, Vanuatu, Solomon Islands, Kiribati). In order to compute total consumption of Oceania I added always 3 percent to total consumption of modern sources by Australia and New Zealand.

*Australia*: *Coal* was discovered in Australia in 1804, although its commercial exploitation began in 1830 (http://www.minerals.org.au). The first data on production starts from (1860 EL, p. 29). I retropolated data for 1830-59. See also the Australian National Bureau of Statistics with data starting from 1881 and coinciding with data by Mitchell (1998a). I assumed that before 1920 brown coal (lignite) was equal to half (with brown coal = 0.5 hard coal, as always in these calculations). Exports start from 1851 (Mitchell (1998a) and are subtracted from production in order to compute consumption. From 1900 production is from SPDP (from EIA). BP from 1965. *Oil* imports from Mitchell (1998a), Darmstadter (1971) from 1925 until 1964, BP from

1965. *Gas* SPDP (from EIA) from 1962, BP from 1966. *Hydro* EL from 1962, BP from 1966. *Other Renewables* BP from 1965.

*New Zealand: Coal* from 1878 data from Provider: Ministry of Business, Innovation, and Employment. *Oil* retropolation from 1925 to 1901, Darmstadter (1971) from 1925 until 1965, BP from 1965. *Gas* EL from 1960, BP from 1965. *Hydro* EL 1922, BP from 1976. *Other Renewables* EL from 1959, BP from 1965.

***Asia***

*China: Coal* is hard to quantify prior to 1900. Following Wright (2008), p. 9, I assumed a per capita consumption of coal of 140 kcal per day until 1905. This estimate tallies with the estimate of production per capita provided by Mulhall (1884), p. 89, for the second half of the 19th century. From 1864 we find some information on import and export in Thomson (2003). From 1906 I followed Wright (2008). Data by Thomson (2003) are higher than those by BP (available from 1965), but in line with those by Xiangfei Bai, Hua Ding, Jinjing Lian, Dong Ma, Xiaoyu Yang, Nanxiang Sun, Wenlin Xue & Yijun Chang (2018). The low reliability of data on Coal consumption in China has been criticised (see New York Times, Nov. 3, 2015). Here, however, I follow in BP 2019 the revised series of coal in National Bureau of Statistics of China (http://data.stats.gov.cn/english/tablequery.htm?code=AA0701). *Oil* EL from 1926 on production (export only from 1973), BP from 1965. *Gas* EL from 1955, BP from 1965. *Hydro* EL from 1933, BP from 1965. *Other Renewables* BP from 1992. *Nuclear* BP from 1993.

*India*: *Coal* from 1860 EL, from 1890 production from Mitchell (1998a). I assume that –such as in 1925-39- consumption is 75 percent of production, as in Darmstadter (1971), from which I take data 1925-64. BP from 1965. *Oil* from 1879 to 1888 only imports (in gallons; 1 gallon = 0.003147 Toe) from Mitchell (1998a), from 1889 production as well from EL, BP 2019 from 1965. *Gas* production in EL from 1960 is equal to consumption, from 1965 BP. *Hydro* EL from 1929, BP from 1965. *Other Renewables* BP from 1991. *Nuclear* from 1969 BP.

*Indonesia: Coal* production from 1890 in Mitchell (1998a). Since in 1925-39 consumption is 75 percent of production, as in Darmstadter (1971), I assume the same percentage previously. From 1925-64 I take data from Darmstadter (1971) and from 1967 from BP. *Oil* production from Mitchell (1998a) from 1893, EL from 1900 (and, from 1910, minus exports of crude and refined), BP from 1967. *Gas* production is equal to consumption from 1921 Mitchell (1998a; 1 cubic metre = 0,0009315 Toe) and BP from 1967. *Hydro* EL from 1928 and BP from 1968. *Other Renewables* BP from 1990.

*Japan: Coal* from Mitchell (1998a) production and import from 1868, BP from 1965. *Oil* production, from 1869-1901 and since 1902 from EL, plus import since 1910 of crude and refined (Mitchell 1998a; 1 gallon US = 0.003499 Toe), BP from 1965. *Gas* from 1922 from EL and BP from 1965. *Gas* from 1922 EL and BP from 1970. *Hydro* from 1915 EL and fraom 1965 BP. *Other Renewables* BP from 1970. *Nuclear* from 1966 BP.

*Malaysia: Coal* from 1890 EL data on production. I assume that consumption is higher than production such it was in 1925-30: by about 15 percent. Darmstadter (1971) for 1925-65. From 1977 *Malaysia energy statistics handbook 2015,* p. 41. *Oil* EL 1912-24, Darmstadter (1998a) 1925-65, BP from 1966. *Gas* from 1971 BP. *Hydro* EL from 1928, BP from 1965. *Other Renewables* from 2009 BP.

*Philippines: Coal* 1907-24 Mitchell (1998a) on production (assuming that production is 10 percent of consumption such as after 1925), Darmstadter (1971) 1925-1964, BP from 1965. *Oil* Darmstadter (1971a) 1925-65, BP from 1966. *Gas* BP from 2001. *Hydro* EL 1928-74, BP from 1975. *Other Renewables* BP from 1979.

*Thailand: Coal* Darmstadter (1971) 1925-65, BP from 1966. *Oil* Darmstadter (1971) 1925-64, BP from 1965. *Gas* BP from 1981. *Hydro* EL 1964-68, BP from 1969. *Other Renewables* BP from 1996. *Nuclear* BP from 1978.

***Middle East***

*Iran*: *Coal* production is equal to consumption. From 1939 Mitchell (1998a), BP from 1965. *Oil* in Mitchell (1998a) production from 1912 minus export from 1911, BP from 1969. *Gas* Darmstadter (1971) 1953-54, EL from 1955, BP from 1969. *Hydro* EL from 1961, BP from 1972. *Other Renewables* BP from 2008. *Nuclear* BP from 2012.

*Iraq:* no coal consumption. *Oil* since 1927 Mitchell (1998a) production minus crude and refined exports, EIA from 1980. *Gas* EL 1955-79, EIA from 1980. *Hydro* from 1971 WDI. No renewables or nuclear.

*Israel*: *Coal* Darmstadter (1971) from 1950, BP from 1965. *Oil* from 1950 Darmstadter (1971), from 1965 Mitchell (1998a), from 1980 EIA. *Gas* EL from 1971, EIA from 1980. No hydro, renewables and nuclear.

*Saudi Arabia: Coal* from 2007 BP. *Oil* EL production from 1936 minus exports from 1948 Mitchell (1998a), BP from 1971 (and Gately, Al-Yousef, Al-Sheikh (2012)). *Gas* from 1961 EL and from 1965 BP. No hydro, renewables and nuclear.

*Syria: Coal* Darmstadter (1971) from 1950, Bartoletto (2016) from 1971 (interpolation from 1966 until 1970, when consumption is stable). *Oil* Darmstadter (1971) from 1950, EIA 1968-70, Bartoletto (2016) from 1971 (1966-67 interpolated). *Gas* Darmstadter (1971) from 1955-65, EIA from 1968 (1966 and 1967 interpolated). *Hydro* EL from 1937, Bartoletto (2016) from 1971. No renewables and nuclear.

*Turkey: Coal* EL and Mitchell (1998a) from 1868 (assuming that export is 10 percent such as in 1925-30), Darmstadter (1971) 1925-39, Mitchell (1998a) 1939-64, BP from 1965. *Oil* Dramstadter (1971) 1925-65, BP from 1966. *Gas* EL 1971-79, BP from 1986 (interpolated 1980-85). *Hydro* EL from 1936, BP from 1965. *Other Renewables* BP from 1967.

***Africa***

*Algeria: Coal* EL and Mitchell (1998a) 1917-24 (assuming that production is 3 percent of consumption), Darmstadter (1971) from 1925, BP from 1965. *Oil* 1916-24 EL (assuming that production is 2 percent of consumption, Darmstadter (1971) from 1925 until 1964, BP from 1965. *Gas* EL from 1946, BP from 1965. *Hydro* Darmstadter (1971) from 1925 until 1964, BP from 1965. *Other Renewables* BP from 2011.

*Congo RD: Coal* EL 1920-24 (production multiplied by 4.5 to compute consumption), Darmstadter (1971) from 1925 until 1964, interpolation 1965-79, EIA from 1980. *Oil* Darmstadter (1971) from 1925 until 1965, EIA from 1966 (completed with ENI 2017). *Gas* EIA from 2006. *Hydro* EIA 1929-59, Darmstadter (1971) 1960-65, EIA from 1966.

*Egypt*: *Coal* Darmstadter (1971) 1925-65, BP from 1965. *Oil* EL and Mitchell (1998a) from 1911 until 1924 (assuming that consumption is 1.8 production), Darmstadter (1971) 1925-65, BP from 1965. *Gas* EL 1963-65, BP from 1966. *Hydro* Darmstadter (1971) 1950-64, BP from 1965. *Other Renewables* BP from 1999.

*Ethiopia-Eritrea: Coal* from 2008 (no consumption of coal earlier) by ENI (2017). *Oil* Eia from 1980. *Gas* no gas. *Hydro* EIA from 1980.

*Libya*: *Coal* Darmstadter (1971) 1925-65, EIA from 1980 (almost 0 between 1966 and 1980; interpolated), no longer coal consumption after 1997. *Oil* Darmstadter (1971) 1960-65, interpolation 1966-1979, EIA from 1980. *Gas* Bartoletto (2016) from 1971 to 1979, EIA from 1980. No hydro, renewables and nuclear.

*Malawi*: *Coal* Darmstadter (1971) 1925-65, interpolation 1966-79, EIA from 1980. *Oil* Darmstadter (1971) 1925-65, interpolation 1966-79, EIA from 1980. No *Gas*. *Hydro* Darmstadter (1971) 1962-65, interpolation 1966-79, EIA from 1980.

*Morocco*: *Coal* Darmstadter (1971) 1925-65, between 1966 and 1979 consumption is 80 percent of production (from Darmstadter (1971)) in Mitchell (1998a), EIA from 1980. *Oil* Darmstadter (1971) 1925-65, interpolation 1966-70, Bartoletto (2016) from 1971. *Gas* SPDP from 1953. *Hydro* EL from 1934, Darmstadter from 1925 to 1965, interpolation 1966-79, EIA from 1980.

*Nigeria: Coal* from 1905 consumption is 95 percent of production in Mitchell (1998a), EIA from 1980. *Oil* Darmstadter (1971) 1925-65, interpolation 1966-79, EIA from 1980. *Gas* EL from 1962, EIA from 1980. *Hydro* Darmstadter (1971) 1925-65, interpolation 1966-79, EIA from 1980. For a comparison of energy consumption from 1970, Enibe, Odukwe (1990).

*Tunisia*: *Coal* EL for 1916-24 (assuming that cosnumption is 5 times production such as from 1925), Darmstadter (1971) 1925-65, interpolation 1966-70, Bartoletto (2016) from 1971. *Oil* Darmstadter (1971) 1925-65, interpolation 1966-70, Bartoletto (2016) from 1971. *Gas* Darmstadter (1971) 1955-65, interpolation 1966-70, Bartoletto (2016) from 1971. *Hydro* EL and EIA from 1925. *Other Renewables* WDI from 2001.

*South Africa: Coal* Mitchell (1998a) from 1889 (assuming that production is 75 percent of production such as in 1925-30), Darmstadter (1971) 1925-65, rates of growth in BP 1966-79 (assuming 1965=1), EIA from 1980. *Oil* import in Mitchell (1998a), Darmstadter (1971) 1925-65, BP from 1965. *Gas* BP from 1980. *Hydro* BP from 1971. *Other Renewables* BP from 1996. *Nuclear* BP from 1984.

*Zambia: Coal* Darmstadter (1971) 1925-65, interpolation 1966-79, from 1980 Central Statistical Office of Zambia (http://zambia.opendataforafrica.org). *Oil* Darmstadter (1971) 1925-65, EIA from 1980, interpolation 1966-79. *Gas* no gas consumption. *Hydro* SPDP from 1950, EIA from 1980.

*Zimbabwe: Coal* EL from 1903 (assuming consumption equal to 80 percent of production such as in 1980 (because of exports towards South Africa), EIA from 1980 (data by Dutkiewicz (1991), p. 26 confirm those by EL and EIA). *Oil* EIA from 1980 with retropolation to 1950. *Gas* no gas. *Hydro* from 1952 EL and EIA from 1980 (only thermal production of electricity existed from 1935, Dutkiewicz (1991), pp. 18-9; p. 28). *Other Renewables* WDI from 2006.

## 5. The results

As already stated, the margins of error are evidently wider for traditional than modern sources. In addition, the reliability of the statistical reconstruction is diverse for any country (depending on the percentage of traditional and modern sources for any country and in time). In any case, such as always in statistical reconstructions, the error of the whole is less than the error of the parts: the margin of error is lower for the World series than for any macro-area, lower for macro-area than for country, lower for total consumption of a country than for any source of consumption.

C.H. Feinstein and M. Thomas (2002b) rightly recommended historians and statisticians to replace, in their reconstructions, "the point estimate given by the simple sample mean by an interval estimate" (p. 137). Where the errors are not correlated (such as in our case), an interval estimate could be computed through the square root of the sum of variances of errors of the series, as summarised through the following equation:

$$\epsilon = \sqrt{\sigma_x^2 + \sigma_y^2 \ldots}$$

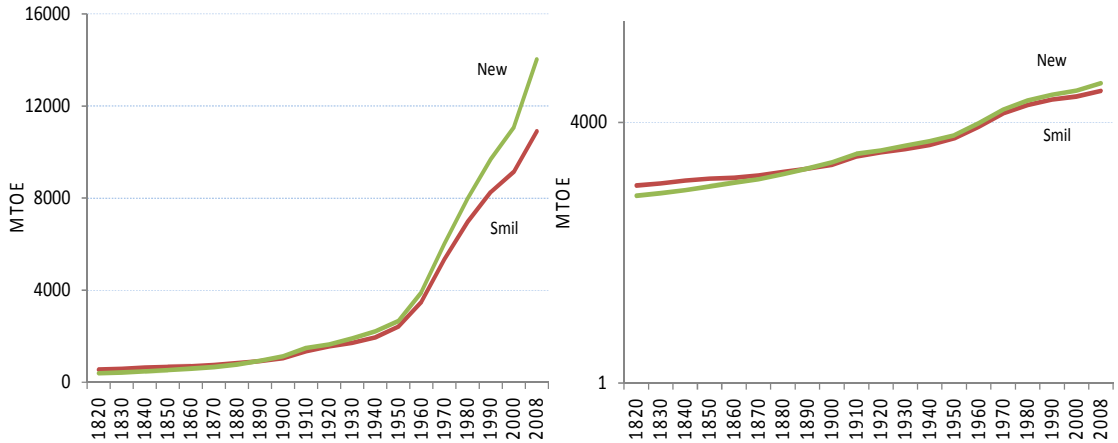
where $\epsilon$ is the error and $\sigma^2$ is the variance.

A precondition for the calculation is to "attach to each category a likely margin of error" (Federico-Tena (2018), p. 19). The possibility to define a likely margin of error does not always exists. The possibility of establishing interval estimates requires "the historian to gauge the reliability of each component of a series and then to derive the overall margin of error for the whole. It would be most helpful if these subjective evaluations were made by the compiler of an estimate" (Feinstein, Thomas (2002b), p. 157). For our series we could proceed from any basic series, and, attributing a percentage error, we could evaluate the final error and the final confidence interval. The premise would be, however, the attribution of a percentage error in an arbitrary way. Assuming, for my series of traditional sources, an error of 20 percent for any basic source, the result would be of an error of 5 to 10 percent. Assuming a percentage error of 40 percent, the result would be an error between 10 and 20 percent. Assuming a 10 percent error for any of my series per country, the result would be, for total consumption in the nineteenth century, an error of 3-4 percent. We would however, have to change in time the range of error (again in an arbitrary way). The confidence interval would diminish as we approach the present.

Whenever possibile, I compared my series with the already available series, as explained in the previous summary of the methods used. In the following graphs, I compare my series of World energy consumption to the other available series; specify the correlations and explain the reasons for the differences.

The only long-term series of World consumption has been elaborated by Smil (2010) for the period 1800-2008. The series includes wood fuel as the only traditional source. In Figure 3, I present my series and that by Smil. My series is 28 percent lower in 1820 and 29 percent higher in 2008. The difference depends on the estimation of fuelwood or "biofuels" (in Smil). In 1820, according to Smil, total consumption of "biofuels" was 22 Exajoules, that is 525 Mtoe, or 525 koe per capita per year (World population was 1 billion in 1820). The estimate by Smil would imply a daily per capita consumption of biofuels of more than 4 kg, which is higher than ours.

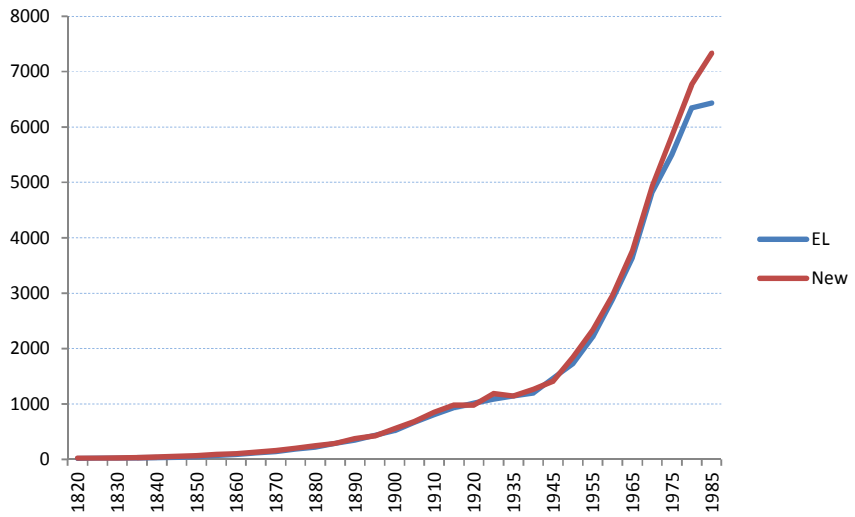
**Figure 3**. Comparison of two decadal series of World energy consumption 1820-2008 (Mtoe) (vertical axis arithmetic and log)




**Sources**: Smil (2010) and present *Database*. Smil includes in his series Coal, Oil, Natural Gas, Hydroelectricity, Nuclear electricity and Biofuels. Both the methods employed by Smil and the sources are not reported.

On the World scale consumption and production coincide. A comparison can be done between my series and the series by Etemad, Luciani (1991), which includes production of modern sources for 5-years periods. The correlation is 0.999 (Figure 4).

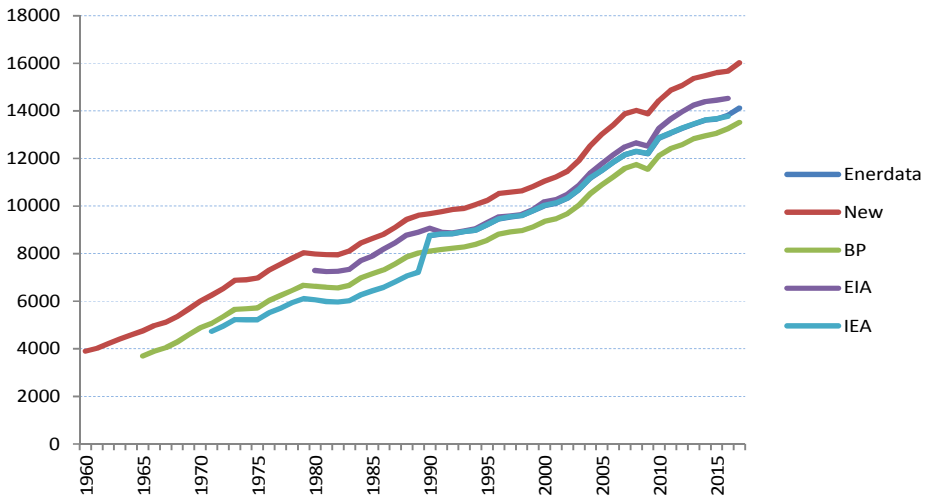
**Figure 4**. Two series of World energy consumption of modern sources 1820-1985 (Mtoe, 5-years)




**Sources**: Etemad, Luciani (1991) and present *Database*.

A comparison per country and macro-area is possible only from 1965 onward, since the available databases of energy consumption start in 1965-70. A comparison of my final series (in *Database*) and four series by Enerdata, BP, EIA and IEA of World energy consumption in 1965-2017 is presented Figure 5. While the correlation with my series is 0.999, the differences between my series and the other ones are due to; (1) the wider coverage (World on the whole in my series; while both Enerdata, BP and EIA series do not include all of the World countries); (2) the difference in our estimate of electricity (see § 4); and (3) to the introduction of traditional sources in my series (see § 3), excluded in the other series. In particular, traditional sources in 2016 (my series) account for 4-8 percent in the cases of Western Europe, Eastern Europe, North America, Oceania, Middle East, but for 34 percent in the case of Africa, 15 percent in that of Latin America and 13 percent in that of Asia. If we exclude traditional sources (equal on the whole to 11 percent in 2016), my series is in line with the other series reported in Figure 5.

**Figure 5**. Five series of World energy consumption 1960-2018 (Mtoe)

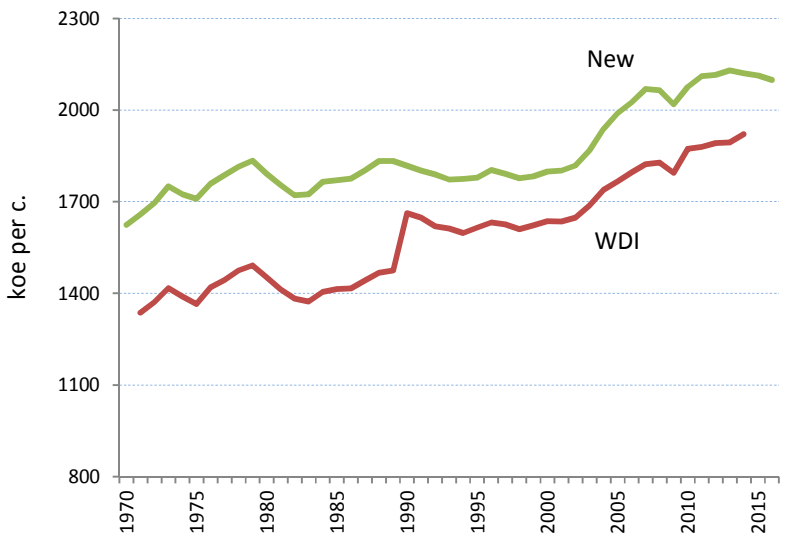



**Sources**: New: see the present *Database*; Enerdata, *Global Energy Statistical Yearbook 2018*; BP, *Statistical Review of World Energy June 2018;* EIA*, International Data in:* www.eia.gov/beta/international/data/browser; IEA (2018), *Energy balances of OECD countries, Energy balances of non-OECD countries.*

**Note:** the year 2017 is included. Enerdata and IEA series almost coincide; however both curves are undistinguishable.

A comparison between my series of per capita consumption and the series by the World Bank is presented in Figure 6. The correlation between the series is 0.90. The difference depends again on the inclusion of traditional sources in my series.

**Figure 6**. Two series of per capita World energy consumption 1970-2016 (Koe per capita per year)




**Sources**: present *Database* and Energy Use per capita in WDI. *World Bank. World Development Indicators (2017).*

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# THE DATABASE

# 1820-2018

The original series have been calculated per source, per country and per year from 1820 until 2018. In the following *Database*, I report the national series per decade (until 2010 and for 2018) and only the aggregate consumption for each country. I report the series on population to allow per capita calculations of total consumption and consumption per source.

Total consumption of energy per macro-area is not equal to total consumption of the 72 countries of our sample. The first has been adjusted to the population of any macro-area and the World, while the second refers to the total of 72 countries.

# I. Per Macro-area

**Table A 1.** Population per macro-area and the World 1820-2018 (000 000)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | WE | EE | NA | LA | O | As | ME | Af | WORLD |
| **1820** | 138.951 | 91.222 | 10.427 | 20.792 | 1.624 | 685.253 | 25.000 | 74.000 | 1 047.270 |
| **1821** | 140.431 | 92.008 | 10.748 | 21.052 | 1.621 | 687.489 | 25.095 | 74.284 | 1 052.728 |
| **1822** | 141.918 | 92.801 | 11.078 | 21.316 | 1.620 | 689.732 | 25.190 | 74.568 | 1 058.224 |
| **1823** | 143.423 | 93.601 | 11.472 | 21.585 | 1.621 | 691.983 | 25.285 | 74.854 | 1 063.824 |
| **1824** | 144.946 | 94.409 | 11.878 | 21.858 | 1.625 | 694.240 | 25.381 | 75.141 | 1 069.477 |
| **1825** | 146.451 | 95.223 | 12.295 | 22.135 | 1.627 | 696.506 | 25.477 | 75.429 | 1 075.142 |
| **1826** | 147.916 | 96.045 | 12.661 | 22.417 | 1.625 | 698.778 | 25.573 | 75.718 | 1 080.733 |
| **1827** | 149.355 | 96.875 | 13.025 | 22.703 | 1.624 | 701.058 | 25.670 | 76.009 | 1 086.318 |
| **1828** | 150.754 | 97.711 | 13.359 | 22.994 | 1.622 | 703.346 | 25.767 | 76.300 | 1 091.853 |
| **1829** | 152.015 | 98.556 | 13.690 | 23.290 | 1.623 | 705.640 | 25.865 | 76.592 | 1 097.270 |
| **1830** | 153.072 | 99.408 | 14.028 | 23.590 | 1.628 | 707.943 | 25.962 | 76.886 | 1 102.518 |
| **1831** | 154.325 | 100.268 | 14.451 | 23.895 | 1.628 | 710.253 | 26.061 | 77.181 | 1 108.061 |
| **1832** | 155.440 | 101.135 | 14.902 | 24.206 | 1.631 | 712.570 | 26.159 | 77.476 | 1 113.520 |
| **1833** | 156.587 | 102.010 | 15.354 | 24.521 | 1.639 | 714.895 | 26.258 | 77.773 | 1 119.039 |
| **1834** | 157.713 | 102.893 | 15.807 | 24.841 | 1.642 | 717.228 | 26.358 | 78.072 | 1 124.554 |
| **1835** | 159.107 | 103.785 | 16.263 | 25.167 | 1.644 | 719.568 | 26.457 | 78.371 | 1 130.361 |
| **1836** | 160.372 | 104.684 | 16.719 | 25.498 | 1.651 | 721.916 | 26.558 | 78.671 | 1 136.068 |
| **1837** | 161.658 | 105.591 | 17.177 | 25.834 | 1.655 | 724.271 | 26.658 | 78.973 | 1 141.817 |
| **1838** | 162.903 | 106.506 | 17.637 | 26.177 | 1.668 | 726.634 | 26.759 | 79.275 | 1 147.560 |
| **1839** | 164.248 | 107.430 | 18.098 | 26.525 | 1.681 | 729.005 | 26.860 | 79.579 | 1 153.428 |
| **1840** | 165.565 | 108.362 | 18.577 | 26.879 | 1.697 | 731.384 | 26.962 | 79.884 | 1 159.310 |
| **1841** | 166.904 | 109.303 | 19.235 | 27.239 | 1.728 | 733.770 | 27.064 | 80.191 | 1 165.435 |
| **1842** | 168.215 | 110.252 | 19.894 | 27.606 | 1.749 | 736.164 | 27.166 | 80.498 | 1 171.545 |
| **1843** | 169.484 | 111.210 | 20.556 | 27.980 | 1.760 | 738.566 | 27.269 | 80.806 | 1 177.631 |
| **1844** | 170.824 | 112.176 | 21.219 | 28.361 | 1.774 | 740.976 | 27.372 | 81.116 | 1 183.818 |
| **1845** | 172.219 | 113.151 | 21.885 | 28.749 | 1.791 | 743.394 | 27.476 | 81.427 | 1 190.091 |
| **1846** | 173.473 | 114.135 | 22.553 | 29.144 | 1.806 | 745.819 | 27.580 | 81.739 | 1 196.249 |
| **1847** | 173.685 | 115.128 | 23.223 | 29.548 | 1.824 | 748.253 | 27.684 | 82.053 | 1 201.397 |
| **1848** | 173.280 | 116.129 | 23.895 | 29.961 | 1.848 | 750.694 | 27.789 | 82.367 | 1 205.963 |
| **1849** | 173.182 | 117.140 | 24.753 | 30.382 | 1.891 | 753.144 | 27.894 | 82.683 | 1 211.069 |
| **1850** | 173.404 | 118.161 | 25.666 | 30.814 | 1.925 | 755.603 | 28.000 | 83.000 | 1 216.574 |
| **1851** | 173.748 | 119.282 | 26.820 | 31.183 | 1.954 | 754.557 | 28.097 | 83.337 | 1 218.975 |
| **1852** | 174.498 | 120.385 | 27.712 | 31.556 | 2.025 | 753.511 | 28.194 | 83.675 | 1 221.557 |
| **1853** | 175.237 | 121.500 | 28.707 | 31.935 | 2.107 | 752.468 | 28.291 | 84.014 | 1 224.259 |
| **1854** | 175.912 | 122.625 | 29.503 | 32.319 | 2.197 | 751.425 | 28.389 | 84.355 | 1 226.726 |
| **1855** | 176.081 | 123.762 | 30.402 | 32.708 | 2.291 | 750.385 | 28.487 | 84.697 | 1 228.814 |
| **1856** | 176.906 | 124.911 | 31.303 | 33.103 | 2.370 | 749.345 | 28.586 | 85.041 | 1 231.565 |
| **1857** | 177.908 | 126.071 | 32.206 | 33.503 | 2.459 | 748.307 | 28.684 | 85.386 | 1 234.524 |
| **1858** | 178.902 | 127.243 | 33.110 | 33.909 | 2.536 | 747.271 | 28.783 | 85.732 | 1 237.487 |
| **1859** | 180.101 | 128.426 | 34.017 | 34.321 | 2.578 | 746.236 | 28.883 | 86.080 | 1 240.642 |
| **1860** | 181.210 | 129.622 | 34.928 | 34.738 | 2.623 | 745.202 | 28.983 | 86.429 | 1 243.735 |
| **1861** | 183.127 | 130.830 | 35.852 | 35.162 | 2.650 | 744.170 | 29.083 | 86.780 | 1 247.652 |
| **1862** | 184.183 | 132.049 | 36.736 | 35.591 | 2.692 | 743.139 | 29.183 | 87.132 | 1 250.707 |
| **1863** | 185.453 | 133.282 | 37.622 | 36.027 | 2.750 | 742.109 | 29.284 | 87.485 | 1 254.013 |
| **1864** | 186.657 | 134.526 | 38.508 | 36.469 | 2.822 | 741.082 | 29.385 | 87.840 | 1 257.290 |
| **1865** | 187.871 | 135.784 | 39.395 | 36.917 | 2.896 | 740.055 | 29.487 | 88.196 | 1 260.601 |
| **1866** | 188.790 | 137.054 | 40.283 | 37.372 | 2.958 | 739.030 | 29.589 | 88.554 | 1 263.629 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1867** | 189.847 | 138.337 | 41.171 | 37.834 | 3.009 | 738.006 | 29.691 | 88.913 | 1 266.809 |
| **1868** | 190.738 | 139.633 | 42.057 | 38.302 | 3.076 | 736.984 | 29.794 | 89.274 | 1 269.858 |
| **1869** | 190.097 | 140.942 | 42.950 | 38.777 | 3.142 | 735.963 | 29.897 | 89.636 | 1 271.405 |
| **1870** | 191.181 | 142.229 | 43.866 | 39.258 | 3.184 | 734.943 | 30.000 | 90.000 | 1 274.661 |
| **1871** | 191.663 | 143.726 | 44.787 | 39.861 | 3.095 | 738.440 | 30.210 | 90.604 | 1 282.387 |
| **1872** | 192.511 | 145.241 | 45.890 | 40.476 | 3.151 | 741.955 | 30.422 | 91.212 | 1 290.858 |
| **1873** | 193.818 | 146.772 | 47.000 | 41.103 | 3.209 | 745.485 | 30.636 | 91.824 | 1 299.848 |
| **1874** | 195.229 | 148.321 | 48.107 | 41.743 | 3.289 | 749.033 | 30.851 | 92.440 | 1 309.013 |
| **1875** | 196.757 | 149.887 | 49.199 | 42.394 | 3.376 | 752.598 | 31.067 | 93.061 | 1 318.339 |
| **1876** | 198.373 | 151.471 | 50.296 | 43.070 | 3.454 | 756.179 | 31.285 | 93.685 | 1 327.814 |
| **1877** | 200.050 | 153.072 | 51.389 | 43.759 | 3.532 | 759.778 | 31.505 | 94.314 | 1 337.399 |
| **1878** | 201.740 | 154.692 | 52.482 | 44.462 | 3.612 | 763.393 | 31.726 | 94.947 | 1 347.055 |
| **1879** | 203.408 | 156.331 | 53.585 | 45.179 | 3.699 | 767.026 | 31.948 | 95.584 | 1 356.760 |
| **1880** | 204.833 | 157.987 | 54.713 | 45.911 | 3.791 | 770.676 | 32.172 | 96.226 | 1 366.310 |
| **1881** | 206.162 | 159.663 | 56.068 | 46.657 | 3.878 | 774.344 | 32.398 | 96.872 | 1 376.041 |
| **1882** | 207.427 | 161.357 | 57.402 | 47.419 | 3.968 | 778.029 | 32.625 | 97.522 | 1 385.750 |
| **1883** | 208.654 | 163.071 | 58.741 | 48.197 | 4.082 | 781.731 | 32.854 | 98.176 | 1 395.507 |
| **1884** | 210.078 | 164.804 | 60.082 | 48.990 | 4.211 | 785.452 | 33.084 | 98.835 | 1 405.536 |
| **1885** | 211.420 | 166.557 | 61.416 | 49.799 | 4.316 | 789.189 | 33.317 | 99.498 | 1 415.514 |
| **1886** | 212.880 | 168.330 | 62.744 | 50.596 | 4.415 | 792.945 | 33.550 | 100.166 | 1 425.627 |
| **1887** | 214.278 | 170.123 | 64.074 | 51.422 | 4.519 | 796.719 | 33.786 | 100.838 | 1 435.759 |
| **1888** | 215.664 | 171.937 | 65.410 | 52.264 | 4.621 | 800.510 | 34.023 | 101.515 | 1 445.944 |
| **1889** | 217.146 | 173.771 | 66.745 | 53.124 | 4.714 | 804.319 | 34.261 | 102.196 | 1 456.277 |
| **1890** | 218.535 | 175.627 | 68.081 | 54.002 | 4.804 | 808.149 | 34.502 | 102.882 | 1 466.582 |
| **1891** | 219.926 | 177.515 | 69.445 | 54.897 | 4.898 | 812.709 | 34.744 | 103.573 | 1 477.705 |
| **1892** | 221.401 | 179.424 | 70.805 | 55.809 | 4.984 | 817.295 | 34.987 | 104.268 | 1 488.973 |
| **1893** | 222.862 | 181.355 | 72.162 | 56.742 | 5.058 | 821.907 | 35.233 | 104.968 | 1 500.286 |
| **1894** | 224.613 | 183.307 | 73.520 | 57.694 | 5.132 | 826.544 | 35.480 | 105.672 | 1 511.963 |
| **1895** | 226.328 | 185.282 | 74.877 | 58.665 | 5.206 | 831.208 | 35.729 | 106.381 | 1 523.676 |
| **1896** | 228.234 | 187.278 | 76.235 | 59.656 | 5.278 | 835.898 | 35.980 | 107.095 | 1 535.655 |
| **1897** | 230.257 | 189.297 | 77.593 | 60.668 | 5.353 | 840.615 | 36.232 | 107.814 | 1 547.830 |
| **1898** | 232.446 | 191.339 | 78.956 | 61.700 | 5.420 | 845.358 | 36.486 | 108.538 | 1 560.243 |
| **1899** | 234.510 | 193.404 | 80.326 | 62.755 | 5.481 | 850.128 | 36.742 | 109.266 | 1 572.611 |
| **1900** | 236.384 | 195.493 | 81.692 | 63.832 | 5.540 | 854.926 | 37.000 | 110.000 | 1 584.867 |
| **1901** | 238.470 | 198.314 | 83.259 | 65.045 | 5.629 | 861.091 | 37.150 | 111.087 | 1 600.044 |
| **1902** | 240.586 | 201.179 | 84.963 | 66.191 | 5.722 | 867.300 | 37.301 | 112.185 | 1 615.427 |
| **1903** | 242.658 | 204.090 | 86.597 | 67.509 | 5.810 | 873.554 | 37.452 | 113.293 | 1 630.965 |
| **1904** | 244.751 | 207.048 | 88.312 | 68.695 | 5.906 | 879.853 | 37.604 | 114.413 | 1 646.581 |
| **1905** | 246.747 | 210.053 | 90.149 | 69.997 | 6.009 | 886.198 | 37.757 | 115.543 | 1 662.453 |
| **1906** | 248.898 | 213.105 | 91.867 | 71.429 | 6.114 | 892.588 | 37.910 | 116.685 | 1 678.596 |
| **1907** | 250.960 | 216.206 | 93.750 | 72.965 | 6.223 | 899.025 | 38.064 | 117.838 | 1 695.030 |
| **1908** | 253.148 | 219.357 | 95.680 | 74.332 | 6.341 | 905.507 | 38.218 | 119.003 | 1 711.586 |
| **1909** | 255.316 | 222.559 | 97.645 | 75.922 | 6.471 | 912.037 | 38.373 | 120.178 | 1 728.501 |
| **1910** | 257.477 | 225.811 | 99.755 | 77.573 | 6.610 | 918.614 | 38.529 | 121.366 | 1 745.736 |
| **1911** | 259.502 | 229.060 | 101.441 | 79.129 | 6.779 | 925.238 | 38.685 | 122.565 | 1 762.399 |
| **1912** | 261.222 | 232.363 | 103.092 | 80.868 | 6.988 | 931.909 | 38.842 | 123.776 | 1 779.061 |
| **1913** | 263.085 | 235.722 | 105.238 | 82.202 | 7.201 | 938.632 | 39.000 | 125.000 | 1 796.080 |
| **1914** | 263.630 | 234.915 | 107.384 | 83.223 | 7.357 | 945.249 | 39.457 | 127.047 | 1 808.262 |
| **1915** | 262.984 | 234.118 | 108.922 | 83.991 | 7.428 | 951.913 | 39.919 | 129.128 | 1 818.401 |
| **1916** | 262.575 | 233.330 | 110.365 | 84.625 | 7.439 | 958.624 | 40.386 | 131.242 | 1 828.586 |
| **1917** | 262.048 | 232.551 | 111.877 | 85.817 | 7.455 | 965.382 | 40.859 | 133.391 | 1 839.381 |
| **1918** | 261.110 | 231.782 | 113.106 | 87.276 | 7.566 | 972.188 | 41.338 | 135.576 | 1 849.942 |
| **1919** | 262.474 | 231.021 | 113.784 | 88.838 | 7.792 | 979.041 | 41.822 | 137.796 | 1 862.569 |
| **1920** | 263.073 | 230.270 | 115.437 | 90.178 | 8.029 | 985.945 | 42.311 | 140.053 | 1 875.297 |
| **1921** | 259.633 | 229.374 | 117.752 | 91.874 | 8.192 | 994.909 | 42.807 | 142.346 | 1 886.887 |
| **1922** | 260.312 | 230.259 | 119.403 | 93.651 | 8.361 | 1 003.954 | 43.308 | 144.677 | 1 903.926 |
| **1923** | 262.441 | 232.232 | 121.397 | 95.580 | 8.534 | 1 013.081 | 43.815 | 147.047 | 1 924.127 |
| **1924** | 264.497 | 235.846 | 123.701 | 97.545 | 8.708 | 1 022.291 | 44.329 | 149.455 | 1 946.371 |
| **1925** | 266.281 | 240.377 | 125.578 | 99.415 | 8.893 | 1 031.585 | 44.848 | 151.902 | 1 968.879 |
| **1926** | 268.180 | 245.107 | 127.308 | 101.435 | 9.073 | 1 040.963 | 45.373 | 154.390 | 1 991.829 |
| **1927** | 269.778 | 249.566 | 129.139 | 103.460 | 9.251 | 1 050.427 | 45.904 | 156.918 | 2 014.443 |
| **1928** | 271.435 | 253.696 | 130.806 | 105.318 | 9.415 | 1 059.977 | 46.442 | 159.488 | 2 036.576 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1929** | 273.044 | 257.413 | 132.274 | 108.119 | 9.554 | 1 069.613 | 46.986 | 162.100 | 2 059.103 |
| **1930** | 274.944 | 260.586 | 133.876 | 109.497 | 9.681 | 1 079.338 | 47.536 | 164.754 | 2 080.211 |
| **1931** | 276.960 | 263.444 | 135.010 | 111.911 | 9.792 | 1 089.150 | 48.092 | 167.452 | 2 101.812 |
| **1932** | 278.536 | 265.304 | 135.946 | 113.931 | 9.889 | 1 099.052 | 48.656 | 170.195 | 2 121.508 |
| **1933** | 280.041 | 266.903 | 136.813 | 115.978 | 9.987 | 1 109.044 | 49.225 | 172.982 | 2 140.973 |
| **1934** | 281.600 | 268.929 | 137.719 | 118.077 | 10.084 | 1 119.126 | 49.802 | 175.815 | 2 161.152 |
| **1935** | 283.191 | 271.021 | 138.704 | 120.228 | 10.179 | 1 129.301 | 50.385 | 178.694 | 2 181.702 |
| **1936** | 285.055 | 273.796 | 139.631 | 122.444 | 10.276 | 1 139.567 | 50.975 | 181.620 | 2 203.365 |
| **1937** | 286.667 | 277.791 | 140.509 | 124.715 | 10.384 | 1 149.928 | 51.572 | 184.594 | 2 226.159 |
| **1938** | 288.560 | 282.619 | 141.628 | 127.009 | 10.500 | 1 160.382 | 52.176 | 187.617 | 2 250.491 |
| **1939** | 290.586 | 287.394 | 142.806 | 129.485 | 10.627 | 1 170.931 | 52.787 | 190.690 | 2 275.307 |
| **1940** | 291.467 | 289.952 | 144.018 | 131.760 | 10.745 | 1 181.583 | 53.405 | 193.813 | 2 296.743 |
| **1941** | 291.346 | 284.821 | 145.429 | 134.602 | 10.846 | 1 195.010 | 54.031 | 196.986 | 2 313.071 |
| **1942** | 292.696 | 279.961 | 147.040 | 137.460 | 10.957 | 1 208.589 | 54.663 | 200.212 | 2 331.578 |
| **1943** | 293.065 | 275.187 | 149.067 | 140.651 | 11.054 | 1 222.322 | 55.303 | 203.491 | 2 350.140 |
| **1944** | 293.587 | 270.733 | 150.883 | 143.495 | 11.189 | 1 236.211 | 55.951 | 206.824 | 2 368.872 |
| **1945** | 295.617 | 270.385 | 152.699 | 147.445 | 11.420 | 1 249.529 | 56.685 | 210.314 | 2 394.093 |
| **1946** | 297.661 | 270.038 | 154.386 | 151.505 | 11.655 | 1 262.989 | 57.429 | 213.863 | 2 419.526 |
| **1947** | 299.719 | 269.691 | 157.396 | 155.676 | 11.896 | 1 276.595 | 58.183 | 217.472 | 2 446.628 |
| **1948** | 301.792 | 269.344 | 160.186 | 159.961 | 12.141 | 1 290.347 | 58.946 | 221.142 | 2 473.860 |
| **1949** | 303.879 | 268.998 | 163.380 | 164.365 | 12.392 | 1 304.248 | 59.720 | 224.874 | 2 501.856 |
| **1950** | 305.980 | 268.653 | 166.149 | 168.891 | 12.648 | 1 318.300 | 60.503 | 228.670 | 2 529.794 |
| **1951** | 307.614 | 272.668 | 169.056 | 173.470 | 12.971 | 1 346.675 | 62.045 | 233.277 | 2 577.776 |
| **1952** | 309.419 | 276.988 | 172.184 | 178.206 | 13.276 | 1 373.044 | 63.637 | 238.113 | 2 624.866 |
| **1953** | 311.318 | 281.512 | 175.204 | 183.079 | 13.572 | 1 398.327 | 65.275 | 243.178 | 2 671.465 |
| **1954** | 313.256 | 286.158 | 178.491 | 188.076 | 13.871 | 1 423.282 | 66.957 | 248.471 | 2 718.563 |
| **1955** | 315.210 | 290.859 | 181.811 | 193.194 | 14.177 | 1 448.502 | 68.683 | 253.995 | 2 766.430 |
| **1956** | 317.181 | 295.566 | 185.169 | 198.438 | 14.493 | 1 474.410 | 70.454 | 259.750 | 2 815.461 |
| **1957** | 319.198 | 300.248 | 188.783 | 203.821 | 14.819 | 1 501.266 | 72.274 | 265.739 | 2 866.148 |
| **1958** | 321.313 | 304.888 | 192.154 | 209.363 | 15.153 | 1 529.183 | 74.149 | 271.965 | 2 918.168 |
| **1959** | 323.589 | 309.482 | 195.508 | 215.088 | 15.490 | 1 558.162 | 76.087 | 278.432 | 2 971.839 |
| **1960** | 326.082 | 314.026 | 198.740 | 221.017 | 15.825 | 1 588.185 | 78.094 | 285.142 | 3 027.112 |
| **1961** | 328.811 | 318.510 | 202.131 | 227.158 | 16.158 | 1 619.315 | 80.176 | 292.100 | 3 084.358 |
| **1962** | 331.735 | 322.904 | 205.326 | 233.499 | 16.490 | 1 651.784 | 82.333 | 299.309 | 3 143.380 |
| **1963** | 334.747 | 327.158 | 208.381 | 240.004 | 16.830 | 1 686.032 | 84.565 | 306.772 | 3 204.489 |
| **1964** | 337.699 | 331.212 | 211.391 | 246.626 | 17.188 | 1 722.601 | 86.865 | 314.491 | 3 268.074 |
| **1965** | 340.483 | 335.028 | 214.161 | 253.328 | 17.571 | 1 761.816 | 89.234 | 322.471 | 3 334.092 |
| **1966** | 343.051 | 338.580 | 216.792 | 260.095 | 17.983 | 1 803.843 | 91.673 | 330.720 | 3 402.738 |
| **1967** | 345.426 | 341.894 | 219.309 | 266.935 | 18.417 | 1 848.407 | 94.191 | 339.248 | 3 473.827 |
| **1968** | 347.650 | 345.036 | 221.628 | 273.856 | 18.862 | 1 894.841 | 96.796 | 348.050 | 3 546.719 |
| **1969** | 349.796 | 348.104 | 223.902 | 280.878 | 19.300 | 1 942.208 | 99.503 | 357.120 | 3 620.809 |
| **1970** | 351.914 | 351.170 | 226.575 | 288.013 | 19.718 | 1 989.773 | 102.321 | 366.459 | 3 695.944 |
| **1971** | 354.017 | 354.257 | 229.458 | 295.261 | 20.114 | 2 037.374 | 105.261 | 376.067 | 3 771.809 |
| **1972** | 356.073 | 357.356 | 231.930 | 302.613 | 20.490 | 2 085.033 | 108.326 | 385.965 | 3 847.786 |
| **1973** | 358.042 | 360.470 | 234.186 | 310.058 | 20.846 | 2 132.442 | 111.523 | 396.199 | 3 923.766 |
| **1974** | 359.865 | 363.591 | 236.454 | 317.584 | 21.184 | 2 179.293 | 114.854 | 406.828 | 3 999.654 |
| **1975** | 361.500 | 366.715 | 238.909 | 325.181 | 21.507 | 2 225.401 | 118.326 | 417.898 | 4 075.437 |
| **1976** | 362.944 | 369.845 | 241.269 | 332.840 | 21.812 | 2 270.595 | 121.930 | 429.425 | 4 150.660 |
| **1977** | 364.217 | 372.988 | 243.740 | 340.560 | 22.102 | 2 314.988 | 125.672 | 441.404 | 4 225.672 |
| **1978** | 365.342 | 376.138 | 246.795 | 348.351 | 22.388 | 2 359.059 | 129.593 | 453.835 | 4 301.501 |
| **1979** | 366.351 | 379.292 | 249.506 | 356.224 | 22.685 | 2 403.493 | 133.746 | 466.707 | 4 378.004 |
| **1980** | 367.275 | 382.440 | 252.495 | 364.185 | 23.005 | 2 448.821 | 138.161 | 480.012 | 4 456.394 |
| **1981** | 368.120 | 385.557 | 255.041 | 372.237 | 23.352 | 2 495.041 | 142.847 | 493.748 | 4 535.942 |
| **1982** | 368.901 | 388.629 | 257.563 | 380.367 | 23.722 | 2 542.085 | 147.771 | 507.910 | 4 616.948 |
| **1983** | 369.663 | 391.673 | 259.934 | 388.551 | 24.113 | 2 590.313 | 152.871 | 522.486 | 4 699.604 |
| **1984** | 370.464 | 394.718 | 262.218 | 396.755 | 24.518 | 2 640.146 | 158.063 | 537.454 | 4 784.334 |
| **1985** | 371.346 | 397.767 | 264.573 | 404.954 | 24.929 | 2 691.792 | 163.275 | 552.796 | 4 871.434 |
| **1986** | 372.324 | 400.838 | 267.019 | 413.133 | 25.348 | 2 745.457 | 168.496 | 568.506 | 4 961.120 |
| **1987** | 373.394 | 403.877 | 269.522 | 421.293 | 25.775 | 2 800.813 | 173.717 | 584.569 | 5 052.960 |
| **1988** | 374.565 | 406.719 | 272.089 | 429.447 | 26.207 | 2 856.866 | 178.884 | 600.957 | 5 145.733 |
| **1989** | 375.840 | 409.150 | 274.898 | 437.617 | 26.640 | 2 912.259 | 183.933 | 617.632 | 5 237.968 |
| **1990** | 377.214 | 411.019 | 278.107 | 445.815 | 27.071 | 2 965.984 | 188.823 | 634.567 | 5 328.602 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1991** | 378.716 | 412.273 | 281.805 | 454.042 | 27.501 | 3 017.694 | 193.523 | 651.763 | 5 417.317 |
| **1992** | 380.332 | 412.962 | 285.546 | 462.279 | 27.929 | 3 067.558 | 198.051 | 669.221 | 5 503.880 |
| **1993** | 381.976 | 413.168 | 289.226 | 470.499 | 28.353 | 3 115.740 | 202.480 | 686.917 | 5 588.359 |
| **1994** | 383.529 | 413.018 | 292.727 | 478.668 | 28.772 | 3 162.600 | 206.913 | 704.821 | 5 671.048 |
| **1995** | 384.913 | 412.621 | 296.155 | 486.755 | 29.185 | 3 208.430 | 211.426 | 722.922 | 5 752.408 |
| **1996** | 386.083 | 412.005 | 299.577 | 494.759 | 29.593 | 3 253.187 | 216.059 | 741.221 | 5 832.484 |
| **1997** | 387.083 | 411.180 | 303.122 | 502.678 | 29.997 | 3 296.803 | 220.798 | 759.753 | 5 911.415 |
| **1998** | 388.043 | 410.215 | 306.579 | 510.489 | 30.401 | 3 339.543 | 225.607 | 778.592 | 5 989.470 |
| **1999** | 389.145 | 409.185 | 310.008 | 518.163 | 30.811 | 3 381.745 | 230.431 | 797.836 | 6 067.325 |
| **2000** | 390.517 | 408.158 | 313.341 | 525.686 | 31.229 | 3 423.661 | 235.236 | 817.566 | 6 145.394 |
| **2001** | 392.191 | 407.166 | 316.361 | 533.042 | 31.657 | 3 465.426 | 239.997 | 837.821 | 6 223.661 |
| **2002** | 394.116 | 406.240 | 319.367 | 540.245 | 32.094 | 3 507.017 | 244.751 | 858.623 | 6 302.453 |
| **2003** | 396.235 | 405.427 | 322.341 | 547.350 | 32.552 | 3 548.330 | 249.606 | 880.017 | 6 381.858 |
| **2004** | 398.456 | 404.780 | 325.342 | 554.433 | 33.040 | 3 589.182 | 254.706 | 902.049 | 6 461.988 |
| **2005** | 400.700 | 404.333 | 328.362 | 561.548 | 33.568 | 3 629.452 | 260.146 | 924.758 | 6 542.867 |
| **2006** | 402.968 | 404.109 | 331.399 | 568.711 | 34.138 | 3 669.091 | 265.966 | 948.156 | 6 624.538 |
| **2007** | 405.254 | 404.104 | 334.450 | 575.906 | 34.747 | 3 708.181 | 272.109 | 972.266 | 6 707.018 |
| **2008** | 407.469 | 404.301 | 337.267 | 583.116 | 35.380 | 3 746.887 | 278.461 | 997.145 | 6 790.025 |
| **2009** | 409.504 | 404.668 | 341.084 | 590.307 | 36.014 | 3 785.433 | 284.855 | 1 022.859 | 6 874.725 |
| **2010** | 411.287 | 405.174 | 344.295 | 597.455 | 36.636 | 3 823.963 | 291.164 | 1 049.446 | 6 959.421 |
| **2011** | 412.770 | 405.813 | 347.080 | 604.556 | 37.238 | 3 862.526 | 297.349 | 1 076.934 | 7 044.266 |
| **2012** | 413.978 | 406.573 | 349.900 | 611.608 | 37.824 | 3 901.016 | 303.426 | 1 105.285 | 7 129.609 |
| **2013** | 415.002 | 407.399 | 352.644 | 618.594 | 38.399 | 3 939.225 | 309.387 | 1 134.398 | 7 215.047 |
| **2014** | 415.977 | 408.227 | 355.348 | 625.489 | 38.970 | 3 976.864 | 315.243 | 1 164.130 | 7 300.248 |
| **2015** | 417.001 | 409.003 | 357.980 | 632.276 | 39.543 | 4 013.708 | 320.998 | 1 194.370 | 7 384.880 |
| **2016** | 418.107 | 409.704 | 360.802 | 638.944 | 40.117 | 4 049.674 | 326.640 | 1 225.081 | 7 469.068 |
| **2017** | 419.261 | 410.323 | 361.444 | 645.488 | 40.691 | 4 084.766 | 332.152 | 1 256.268 | 7 550.393 |
| **2018** | 420.421 | 410.852 | 364.085 | 651.907 | 41.261 | 4 118.962 | 337.545 | 1 287.921 | 7 632.955 |

**Figure 7.** World total and per capita energy consumption 1820-2018 (Mtoe and Koe)

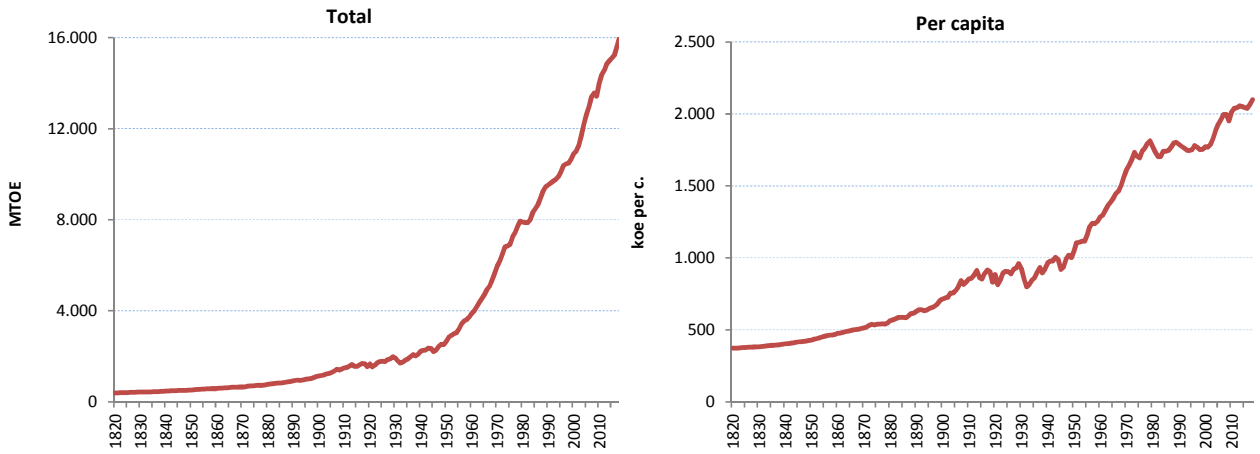


**Figure 8.** Total energy consumption per macro-area 1820-2018 (Mtoe)(log vertical axis)

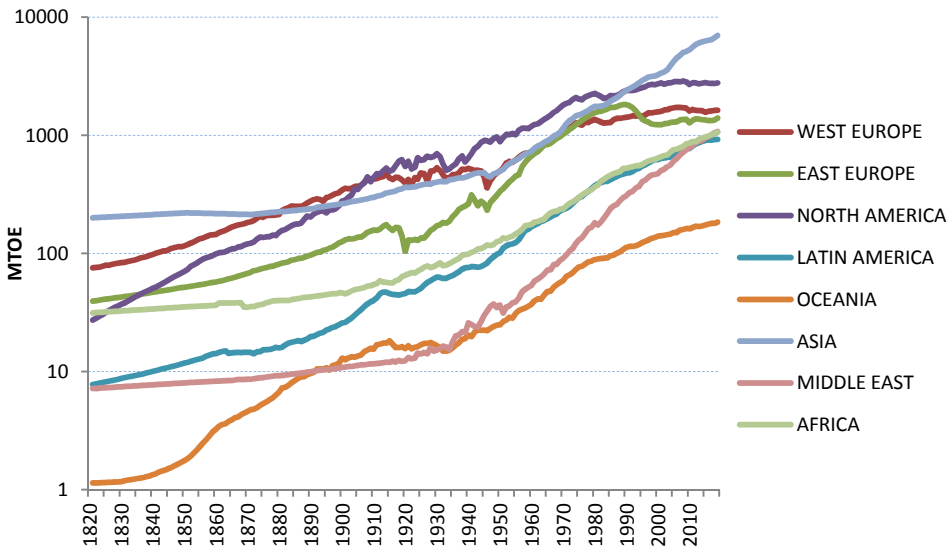


**Table A 2**. World energy consumption per macro-area 1820-2018 (Mtoe)(Figures 7 and 8)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | WE | EE | NA | LA | O | As | ME | Af | WORLD |
| **1820** | 75.622 | 39.429 | 27.354 | 7.812 | 1.142 | 200.014 | 7.186 | 31.423 | 389.981 |
| **1821** | 76.159 | 39.794 | 28.257 | 7.910 | 1.142 | 200.665 | 7.213 | 31.547 | 392.688 |
| **1822** | 76.686 | 40.163 | 29.188 | 8.010 | 1.144 | 201.318 | 7.240 | 31.672 | 395.421 |
| **1823** | 77.802 | 40.610 | 30.289 | 8.112 | 1.147 | 201.973 | 7.268 | 31.796 | 398.996 |
| **1824** | 79.282 | 40.976 | 31.462 | 8.215 | 1.152 | 202.630 | 7.296 | 31.922 | 402.934 |
| **1825** | 79.432 | 41.343 | 32.653 | 8.320 | 1.157 | 203.289 | 7.323 | 32.048 | 405.565 |
| **1826** | 80.706 | 41.661 | 33.808 | 8.427 | 1.159 | 203.950 | 7.351 | 32.174 | 409.236 |
| **1827** | 81.841 | 42.046 | 35.026 | 8.535 | 1.162 | 204.614 | 7.379 | 32.301 | 412.903 |
| **1828** | 82.735 | 42.373 | 35.971 | 8.645 | 1.165 | 205.280 | 7.407 | 32.428 | 416.005 |
| **1829** | 83.254 | 42.687 | 36.990 | 8.757 | 1.171 | 205.948 | 7.435 | 32.556 | 418.799 |
| **1830** | 84.240 | 43.131 | 38.046 | 8.871 | 1.196 | 206.618 | 7.464 | 32.684 | 422.251 |
| **1831** | 85.459 | 43.439 | 39.275 | 8.987 | 1.207 | 207.284 | 7.492 | 32.813 | 425.956 |
| **1832** | 86.872 | 43.888 | 40.821 | 9.104 | 1.217 | 207.953 | 7.521 | 32.943 | 430.319 |
| **1833** | 87.958 | 44.274 | 42.234 | 9.224 | 1.232 | 208.624 | 7.549 | 33.073 | 434.167 |
| **1834** | 89.278 | 44.691 | 43.534 | 9.345 | 1.244 | 209.297 | 7.578 | 33.203 | 438.170 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1835** | 91.633 | 45.102 | 45.115 | 9.472 | 1.257 | 209.973 | 7.607 | 33.334 | 443.491 |
| **1836** | 92.563 | 45.549 | 46.485 | 9.611 | 1.274 | 210.650 | 7.636 | 33.465 | 447.234 |
| **1837** | 94.159 | 45.974 | 47.919 | 9.754 | 1.291 | 211.330 | 7.665 | 33.597 | 451.690 |
| **1838** | 96.248 | 46.433 | 49.133 | 9.901 | 1.315 | 212.011 | 7.694 | 33.730 | 456.465 |
| **1839** | 98.091 | 46.905 | 50.546 | 10.052 | 1.343 | 212.695 | 7.723 | 33.863 | 461.218 |
| **1840** | 100.860 | 47.416 | 51.943 | 10.206 | 1.372 | 213.382 | 7.752 | 33.996 | 466.928 |
| **1841** | 102.783 | 47.899 | 53.716 | 10.376 | 1.410 | 214.069 | 7.782 | 34.130 | 472.165 |
| **1842** | 104.347 | 48.353 | 55.558 | 10.563 | 1.445 | 214.759 | 7.811 | 34.265 | 477.102 |
| **1843** | 105.245 | 48.738 | 57.459 | 10.698 | 1.477 | 215.452 | 7.841 | 34.400 | 481.311 |
| **1844** | 107.361 | 49.269 | 59.558 | 10.868 | 1.514 | 216.146 | 7.871 | 34.536 | 487.124 |
| **1845** | 110.498 | 49.862 | 61.777 | 11.045 | 1.555 | 216.843 | 7.901 | 34.672 | 494.152 |
| **1846** | 112.725 | 50.386 | 63.786 | 11.225 | 1.598 | 217.542 | 7.931 | 34.809 | 500.001 |
| **1847** | 114.311 | 50.846 | 65.994 | 11.420 | 1.647 | 218.243 | 7.961 | 34.946 | 505.367 |
| **1848** | 114.164 | 51.314 | 68.058 | 11.616 | 1.702 | 218.946 | 7.991 | 35.084 | 508.876 |
| **1849** | 116.223 | 51.657 | 70.513 | 11.820 | 1.768 | 219.652 | 8.022 | 35.222 | 514.877 |
| **1850** | 119.131 | 52.169 | 73.096 | 12.032 | 1.836 | 220.360 | 8.052 | 35.361 | 522.038 |
| **1851** | 121.933 | 52.661 | 77.359 | 12.249 | 1.914 | 219.990 | 8.078 | 35.473 | 529.658 |
| **1852** | 125.471 | 53.256 | 80.043 | 12.439 | 2.043 | 219.620 | 8.105 | 35.584 | 536.563 |
| **1853** | 128.905 | 53.795 | 83.184 | 12.656 | 2.168 | 219.251 | 8.131 | 35.697 | 543.787 |
| **1854** | 133.446 | 54.300 | 86.826 | 12.862 | 2.325 | 218.883 | 8.158 | 35.809 | 552.608 |
| **1855** | 135.972 | 55.037 | 89.708 | 13.096 | 2.503 | 218.515 | 8.184 | 35.922 | 558.938 |
| **1856** | 138.978 | 55.717 | 92.065 | 13.510 | 2.671 | 218.148 | 8.211 | 36.035 | 565.335 |
| **1857** | 142.771 | 56.336 | 94.105 | 13.819 | 2.881 | 217.781 | 8.237 | 36.149 | 572.080 |
| **1858** | 143.525 | 56.527 | 96.002 | 14.067 | 3.086 | 217.415 | 8.264 | 36.263 | 575.149 |
| **1859** | 144.842 | 57.481 | 98.752 | 14.235 | 3.243 | 217.049 | 8.291 | 36.378 | 580.272 |
| **1860** | 150.288 | 58.062 | 101.059 | 14.545 | 3.449 | 216.947 | 8.318 | 37.992 | 590.661 |
| **1861** | 153.527 | 58.990 | 101.906 | 14.788 | 3.572 | 216.563 | 8.345 | 38.022 | 595.713 |
| **1862** | 156.389 | 59.997 | 103.422 | 15.043 | 3.628 | 216.181 | 8.371 | 38.053 | 601.084 |
| **1863** | 161.474 | 61.007 | 106.613 | 14.313 | 3.784 | 215.800 | 8.398 | 38.083 | 609.472 |
| **1864** | 166.749 | 61.937 | 108.847 | 14.414 | 3.901 | 215.420 | 8.425 | 38.114 | 617.808 |
| **1865** | 170.954 | 63.159 | 109.891 | 14.450 | 4.070 | 215.043 | 8.496 | 38.145 | 624.207 |
| **1866** | 173.829 | 64.121 | 113.155 | 14.585 | 4.117 | 214.667 | 8.541 | 38.176 | 631.191 |
| **1867** | 176.348 | 65.508 | 114.233 | 14.476 | 4.324 | 214.292 | 8.573 | 38.276 | 636.030 |
| **1868** | 178.763 | 66.812 | 117.347 | 14.529 | 4.448 | 213.923 | 8.585 | 35.166 | 639.573 |
| **1869** | 183.153 | 67.954 | 120.516 | 14.524 | 4.598 | 213.554 | 8.639 | 35.099 | 648.037 |
| **1870** | 185.065 | 69.142 | 122.324 | 14.514 | 4.778 | 213.185 | 8.635 | 35.603 | 653.246 |
| **1871** | 190.597 | 71.316 | 125.013 | 14.183 | 4.792 | 214.341 | 8.710 | 35.526 | 664.477 |
| **1872** | 198.555 | 72.444 | 132.644 | 14.749 | 4.948 | 215.503 | 8.787 | 36.297 | 683.928 |
| **1873** | 206.969 | 73.781 | 137.289 | 14.725 | 5.162 | 216.672 | 8.849 | 36.908 | 700.355 |
| **1874** | 202.638 | 75.298 | 136.721 | 15.335 | 5.355 | 218.005 | 8.919 | 37.154 | 699.425 |
| **1875** | 209.043 | 76.121 | 138.230 | 15.305 | 5.533 | 219.465 | 9.012 | 38.192 | 710.901 |
| **1876** | 210.209 | 77.657 | 138.191 | 15.402 | 5.767 | 220.647 | 9.056 | 38.993 | 715.921 |
| **1877** | 209.899 | 77.800 | 142.592 | 15.713 | 6.007 | 221.813 | 9.172 | 39.687 | 722.684 |
| **1878** | 211.000 | 79.683 | 141.868 | 16.045 | 6.358 | 223.173 | 9.203 | 39.735 | 727.067 |
| **1879** | 213.494 | 81.340 | 150.495 | 15.864 | 6.709 | 224.542 | 9.210 | 39.989 | 741.642 |
| **1880** | 230.809 | 82.907 | 157.012 | 16.044 | 7.265 | 225.796 | 9.281 | 40.056 | 769.170 |
| **1881** | 238.224 | 83.946 | 159.604 | 16.776 | 7.365 | 226.954 | 9.366 | 39.925 | 782.160 |
| **1882** | 243.792 | 85.174 | 166.247 | 17.427 | 7.667 | 228.115 | 9.429 | 39.867 | 797.717 |
| **1883** | 251.845 | 87.669 | 172.147 | 17.720 | 8.066 | 229.279 | 9.504 | 40.820 | 817.049 |
| **1884** | 250.010 | 88.776 | 176.046 | 18.026 | 8.405 | 230.561 | 9.581 | 41.056 | 822.462 |
| **1885** | 250.254 | 90.386 | 177.402 | 18.367 | 8.760 | 231.805 | 9.661 | 41.436 | 828.070 |
| **1886** | 249.877 | 91.207 | 181.033 | 18.005 | 8.977 | 233.066 | 9.717 | 41.936 | 833.817 |
| **1887** | 257.627 | 92.673 | 193.771 | 18.405 | 9.061 | 234.512 | 9.825 | 42.426 | 858.300 |
| **1888** | 267.880 | 95.078 | 206.875 | 18.876 | 9.489 | 235.917 | 9.907 | 42.632 | 886.655 |
| **1889** | 276.152 | 97.129 | 203.047 | 19.734 | 9.629 | 237.435 | 10.023 | 42.818 | 895.967 |
| **1890** | 284.774 | 99.556 | 215.638 | 19.860 | 9.902 | 239.767 | 10.090 | 43.267 | 922.853 |
| **1891** | 290.124 | 102.128 | 222.154 | 20.560 | 10.552 | 246.140 | 10.171 | 43.588 | 945.415 |
| **1892** | 287.807 | 102.747 | 228.143 | 21.179 | 10.505 | 247.719 | 10.244 | 44.012 | 952.356 |
| **1893** | 275.916 | 106.342 | 229.183 | 21.536 | 10.548 | 249.372 | 10.319 | 44.505 | 947.721 |
| **1894** | 297.738 | 107.576 | 220.219 | 22.522 | 10.766 | 251.595 | 10.380 | 44.761 | 965.557 |
| **1895** | 301.741 | 111.190 | 233.343 | 22.996 | 10.300 | 253.244 | 10.446 | 45.215 | 988.476 |
| **1896** | 311.389 | 113.623 | 233.749 | 23.648 | 11.257 | 255.798 | 10.541 | 45.664 | 1 005.668 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1897** | 321.532 | 117.406 | 240.099 | 24.136 | 11.507 | 257.721 | 10.575 | 45.525 | 1 028.500 |
| **1898** | 327.146 | 122.989 | 254.065 | 24.930 | 11.808 | 260.633 | 10.712 | 46.376 | 1 058.659 |
| **1899** | 344.582 | 126.143 | 278.148 | 25.798 | 12.983 | 262.263 | 10.830 | 46.430 | 1 107.177 |
| **1900** | 357.086 | 130.928 | 283.796 | 26.218 | 12.613 | 266.558 | 10.903 | 45.622 | 1 133.724 |
| **1901** | 351.985 | 133.215 | 299.682 | 27.339 | 13.127 | 271.658 | 11.062 | 46.826 | 1 154.895 |
| **1902** | 355.404 | 132.345 | 311.046 | 28.286 | 13.304 | 274.306 | 11.087 | 48.161 | 1 173.939 |
| **1903** | 367.233 | 133.769 | 349.553 | 30.064 | 13.227 | 277.127 | 11.184 | 49.416 | 1 231.573 |
| **1904** | 371.407 | 137.807 | 348.450 | 31.840 | 13.575 | 280.689 | 11.280 | 50.037 | 1 245.084 |
| **1905** | 377.352 | 137.831 | 378.581 | 33.457 | 13.831 | 283.328 | 11.383 | 50.800 | 1 286.563 |
| **1906** | 402.084 | 143.950 | 393.288 | 35.437 | 14.739 | 287.348 | 11.445 | 51.702 | 1 339.993 |
| **1907** | 421.035 | 151.312 | 444.824 | 37.392 | 15.226 | 291.325 | 11.591 | 52.852 | 1 425.557 |
| **1908** | 420.431 | 154.419 | 405.425 | 38.876 | 15.822 | 295.764 | 11.660 | 53.432 | 1 395.829 |
| **1909** | 424.359 | 157.835 | 438.260 | 40.016 | 15.456 | 298.757 | 11.640 | 54.588 | 1 440.910 |
| **1910** | 429.983 | 157.065 | 472.459 | 41.915 | 16.872 | 304.737 | 11.710 | 55.671 | 1 490.412 |
| **1911** | 440.242 | 161.028 | 470.155 | 45.692 | 17.094 | 308.777 | 11.800 | 58.686 | 1 513.475 |
| **1912** | 446.303 | 170.009 | 499.888 | 47.095 | 17.391 | 315.373 | 11.886 | 57.193 | 1 565.139 |
| **1913** | 476.614 | 175.315 | 528.840 | 47.111 | 17.441 | 325.117 | 11.979 | 57.127 | 1 639.546 |
| **1914** | 436.080 | 164.368 | 496.300 | 45.934 | 18.210 | 328.729 | 12.019 | 56.229 | 1 557.869 |
| **1915** | 423.135 | 157.098 | 508.492 | 44.880 | 17.029 | 332.317 | 12.317 | 56.365 | 1 551.633 |
| **1916** | 442.556 | 165.421 | 553.951 | 44.865 | 15.938 | 338.175 | 12.090 | 58.697 | 1 631.692 |
| **1917** | 439.069 | 165.008 | 600.920 | 44.432 | 15.949 | 347.083 | 12.456 | 60.155 | 1 685.071 |
| **1918** | 420.788 | 139.574 | 622.600 | 45.396 | 16.308 | 352.498 | 12.203 | 63.843 | 1 673.210 |
| **1919** | 393.331 | 104.438 | 545.746 | 45.954 | 15.685 | 362.585 | 12.404 | 65.497 | 1 545.639 |
| **1920** | 421.694 | 129.772 | 603.299 | 47.682 | 16.566 | 360.512 | 13.181 | 67.186 | 1 659.894 |
| **1921** | 378.764 | 129.552 | 519.289 | 47.201 | 15.590 | 362.705 | 12.853 | 68.608 | 1 534.562 |
| **1922** | 438.768 | 131.607 | 534.722 | 47.175 | 16.097 | 366.734 | 12.997 | 68.284 | 1 616.385 |
| **1923** | 424.879 | 129.082 | 644.164 | 48.833 | 16.251 | 373.981 | 14.409 | 70.887 | 1 722.484 |
| **1924** | 482.067 | 134.737 | 614.568 | 50.748 | 16.872 | 380.441 | 14.123 | 73.125 | 1 766.681 |
| **1925** | 476.967 | 135.166 | 623.528 | 54.063 | 17.305 | 384.854 | 14.585 | 76.341 | 1 782.808 |
| **1926** | 407.893 | 144.653 | 664.677 | 56.649 | 17.373 | 386.490 | 14.160 | 78.559 | 1 770.455 |
| **1927** | 496.705 | 157.127 | 649.530 | 58.807 | 17.711 | 385.352 | 15.841 | 75.956 | 1 857.030 |
| **1928** | 498.991 | 162.899 | 661.526 | 61.087 | 17.086 | 398.023 | 14.964 | 77.643 | 1 892.219 |
| **1929** | 531.552 | 172.379 | 698.494 | 62.873 | 16.600 | 403.011 | 15.196 | 80.216 | 1 980.321 |
| **1930** | 503.861 | 174.862 | 662.987 | 62.576 | 15.960 | 406.303 | 15.665 | 83.523 | 1 925.737 |
| **1931** | 461.731 | 182.791 | 572.207 | 61.487 | 14.941 | 404.740 | 16.467 | 79.062 | 1 793.426 |
| **1932** | 430.323 | 180.473 | 507.283 | 61.368 | 14.889 | 405.275 | 16.153 | 79.160 | 1 694.923 |
| **1933** | 437.570 | 188.199 | 519.633 | 63.312 | 15.192 | 419.519 | 15.538 | 81.880 | 1 740.844 |
| **1934** | 464.271 | 205.385 | 548.969 | 65.062 | 15.870 | 422.334 | 17.887 | 84.859 | 1 824.637 |
| **1935** | 463.492 | 218.596 | 574.984 | 67.473 | 16.825 | 431.713 | 20.112 | 87.768 | 1 880.962 |
| **1936** | 482.388 | 235.958 | 634.521 | 70.097 | 17.586 | 434.493 | 20.478 | 90.609 | 1 986.129 |
| **1937** | 515.466 | 245.296 | 669.247 | 73.618 | 18.755 | 436.879 | 21.779 | 96.883 | 2 077.924 |
| **1938** | 512.799 | 251.237 | 595.226 | 75.641 | 18.984 | 442.578 | 21.414 | 97.270 | 2 015.147 |
| **1939** | 524.252 | 263.042 | 641.616 | 76.133 | 20.338 | 452.588 | 25.780 | 98.972 | 2 102.721 |
| **1940** | 515.244 | 313.819 | 701.498 | 77.569 | 19.819 | 465.091 | 25.044 | 102.102 | 2 220.187 |
| **1941** | 501.745 | 283.744 | 774.168 | 77.165 | 21.649 | 475.334 | 24.050 | 104.623 | 2 262.478 |
| **1942** | 507.226 | 252.817 | 806.199 | 76.680 | 22.473 | 481.181 | 23.872 | 108.823 | 2 279.272 |
| **1943** | 499.434 | 275.914 | 870.190 | 77.608 | 22.327 | 478.068 | 26.570 | 109.882 | 2 359.992 |
| **1944** | 444.884 | 263.542 | 905.786 | 79.802 | 22.374 | 481.308 | 29.942 | 113.349 | 2 340.987 |
| **1945** | 358.852 | 232.070 | 898.504 | 82.789 | 22.209 | 456.141 | 32.519 | 117.998 | 2 201.081 |
| **1946** | 413.038 | 269.957 | 874.767 | 88.984 | 23.190 | 443.312 | 35.672 | 116.712 | 2 265.631 |
| **1947** | 452.890 | 287.931 | 936.235 | 93.562 | 24.166 | 473.767 | 37.342 | 119.095 | 2 424.987 |
| **1948** | 479.652 | 309.428 | 967.458 | 98.071 | 24.661 | 482.203 | 34.885 | 126.054 | 2 522.414 |
| **1949** | 500.604 | 336.394 | 883.236 | 101.145 | 24.838 | 497.870 | 36.686 | 127.753 | 2 508.525 |
| **1950** | 530.371 | 352.857 | 954.583 | 110.868 | 26.506 | 512.840 | 31.378 | 135.430 | 2 654.832 |
| **1951** | 585.314 | 378.300 | 1 017.845 | 115.987 | 27.354 | 552.752 | 35.263 | 133.328 | 2 846.144 |
| **1952** | 602.811 | 401.797 | 1 011.835 | 119.358 | 28.961 | 572.548 | 35.932 | 137.335 | 2 910.577 |
| **1953** | 592.803 | 425.773 | 1 035.891 | 120.878 | 28.396 | 597.811 | 38.304 | 140.468 | 2 980.324 |
| **1954** | 618.657 | 453.302 | 1 009.857 | 123.930 | 31.147 | 612.732 | 38.913 | 146.131 | 3 034.670 |
| **1955** | 650.686 | 462.964 | 1 101.733 | 130.701 | 32.857 | 634.723 | 41.941 | 152.053 | 3 207.658 |
| **1956** | 681.789 | 543.056 | 1 146.554 | 143.470 | 33.844 | 666.387 | 47.188 | 159.278 | 3 421.565 |
| **1957** | 704.173 | 592.904 | 1 146.993 | 156.881 | 34.656 | 696.750 | 49.679 | 172.276 | 3 554.311 |
| **1958** | 702.289 | 635.029 | 1 141.101 | 160.688 | 35.835 | 712.109 | 52.064 | 173.748 | 3 612.864 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1959** | 701.181 | 667.558 | 1 192.127 | 168.277 | 37.100 | 732.844 | 53.495 | 175.659 | 3 728.242 |
| **1960** | 712.636 | 699.115 | 1 236.301 | 172.647 | 39.746 | 780.316 | 58.414 | 183.985 | 3 883.160 |
| **1961** | 733.673 | 728.207 | 1 253.062 | 179.169 | 41.283 | 815.681 | 60.640 | 186.982 | 3 998.697 |
| **1962** | 783.966 | 775.809 | 1 309.443 | 186.751 | 40.909 | 834.322 | 63.505 | 191.354 | 4 186.060 |
| **1963** | 827.902 | 826.353 | 1 360.527 | 189.640 | 44.591 | 868.240 | 67.203 | 194.798 | 4 379.254 |
| **1964** | 867.943 | 834.339 | 1 419.107 | 196.046 | 47.512 | 899.855 | 72.109 | 208.504 | 4 545.415 |
| **1965** | 896.535 | 856.258 | 1 480.063 | 203.149 | 48.024 | 935.281 | 72.930 | 220.755 | 4 712.996 |
| **1966** | 914.531 | 898.172 | 1 562.231 | 211.235 | 51.876 | 985.272 | 80.321 | 225.780 | 4 929.417 |
| **1967** | 945.175 | 937.361 | 1 612.496 | 215.944 | 54.335 | 1 013.640 | 80.772 | 228.423 | 5 088.145 |
| **1968** | 998.811 | 968.204 | 1 708.758 | 228.678 | 56.742 | 1 058.063 | 86.941 | 237.231 | 5 343.429 |
| **1969** | 1 055.568 | 1 017.388 | 1 795.170 | 234.481 | 58.812 | 1 149.152 | 91.301 | 238.642 | 5 640.513 |
| **1970** | 1 120.935 | 1 066.565 | 1 861.857 | 241.075 | 63.629 | 1 248.086 | 97.053 | 252.160 | 5 951.362 |
| **1971** | 1 155.690 | 1 115.843 | 1 903.839 | 249.903 | 65.891 | 1 331.283 | 104.671 | 264.891 | 6 192.010 |
| **1972** | 1 201.902 | 1 166.656 | 2 002.739 | 264.226 | 68.855 | 1 382.292 | 109.643 | 273.451 | 6 469.764 |
| **1973** | 1 272.555 | 1 223.515 | 2 087.944 | 281.339 | 73.277 | 1 458.277 | 121.619 | 285.382 | 6 803.908 |
| **1974** | 1 242.253 | 1 276.232 | 2 035.156 | 297.050 | 76.889 | 1 484.512 | 130.132 | 296.043 | 6 838.267 |
| **1975** | 1 219.710 | 1 340.836 | 2 002.331 | 304.179 | 77.836 | 1 515.406 | 135.839 | 311.029 | 6 907.168 |
| **1976** | 1 289.343 | 1 396.290 | 2 106.541 | 320.645 | 81.196 | 1 565.627 | 147.927 | 325.767 | 7 233.337 |
| **1977** | 1 285.206 | 1 455.738 | 2 170.733 | 335.708 | 85.094 | 1 627.485 | 161.813 | 336.831 | 7 458.607 |
| **1978** | 1 325.118 | 1 513.981 | 2 221.172 | 355.680 | 86.363 | 1 701.374 | 166.478 | 346.407 | 7 716.574 |
| **1979** | 1 365.946 | 1 552.309 | 2 257.722 | 376.147 | 89.019 | 1 750.263 | 181.927 | 366.635 | 7 939.968 |
| **1980** | 1 334.863 | 1 586.974 | 2 188.808 | 390.117 | 89.708 | 1 750.626 | 174.080 | 378.931 | 7 894.106 |
| **1981** | 1 294.276 | 1 598.769 | 2 131.973 | 397.369 | 90.371 | 1 764.975 | 184.409 | 408.419 | 7 870.562 |
| **1982** | 1 265.508 | 1 635.016 | 2 051.683 | 406.125 | 91.272 | 1 787.856 | 200.183 | 426.223 | 7 863.867 |
| **1983** | 1 273.746 | 1 661.286 | 2 065.399 | 407.627 | 91.905 | 1 841.273 | 218.206 | 443.028 | 8 002.471 |
| **1984** | 1 283.719 | 1 721.480 | 2 169.798 | 420.173 | 95.858 | 1 938.442 | 239.533 | 457.191 | 8 326.194 |
| **1985** | 1 351.912 | 1 713.847 | 2 155.194 | 431.929 | 96.825 | 2 010.060 | 251.956 | 471.224 | 8 482.947 |
| **1986** | 1 388.664 | 1 748.625 | 2 161.942 | 447.424 | 100.763 | 2 075.378 | 259.381 | 483.154 | 8 665.332 |
| **1987** | 1 394.324 | 1 799.744 | 2 231.618 | 459.763 | 102.965 | 2 176.795 | 279.520 | 494.734 | 8 939.463 |
| **1988** | 1 410.792 | 1 821.975 | 2 337.530 | 469.435 | 107.647 | 2 294.351 | 295.522 | 520.776 | 9 258.029 |
| **1989** | 1 414.104 | 1 812.876 | 2 394.942 | 478.260 | 112.528 | 2 396.478 | 307.093 | 524.156 | 9 440.437 |
| **1990** | 1 431.759 | 1 784.321 | 2 388.708 | 482.211 | 115.065 | 2 469.382 | 327.868 | 536.523 | 9 535.836 |
| **1991** | 1 462.758 | 1 714.761 | 2 386.010 | 492.237 | 114.730 | 2 559.456 | 336.422 | 543.547 | 9 609.921 |
| **1992** | 1 456.269 | 1 612.818 | 2 423.497 | 515.373 | 116.258 | 2 666.149 | 357.288 | 552.549 | 9 700.201 |
| **1993** | 1 455.410 | 1 497.086 | 2 478.244 | 525.215 | 119.093 | 2 770.298 | 367.826 | 553.879 | 9 767.052 |
| **1994** | 1 457.444 | 1 370.226 | 2 529.731 | 550.258 | 123.845 | 2 898.120 | 404.633 | 565.733 | 9 899.990 |
| **1995** | 1 488.453 | 1 319.541 | 2 579.283 | 563.385 | 127.076 | 2 998.255 | 417.263 | 589.698 | 10 082.952 |
| **1996** | 1 541.387 | 1 301.934 | 2 667.471 | 580.121 | 130.245 | 3 109.509 | 442.243 | 605.224 | 10 378.136 |
| **1997** | 1 542.346 | 1 254.255 | 2 685.973 | 602.785 | 134.090 | 3 156.257 | 461.676 | 617.128 | 10 454.511 |
| **1998** | 1 564.854 | 1 234.916 | 2 681.088 | 622.576 | 136.740 | 3 158.469 | 466.611 | 625.412 | 10 490.666 |
| **1999** | 1 571.665 | 1 225.458 | 2 723.660 | 622.987 | 139.709 | 3 246.899 | 472.303 | 643.331 | 10 646.011 |
| **2000** | 1 595.995 | 1 230.839 | 2 784.632 | 636.937 | 141.214 | 3 349.688 | 502.075 | 656.916 | 10 898.296 |
| **2001** | 1 634.352 | 1 251.836 | 2 717.454 | 642.768 | 142.522 | 3 426.422 | 517.123 | 672.619 | 11 005.096 |
| **2002** | 1 645.078 | 1 255.037 | 2 760.998 | 648.647 | 144.439 | 3 582.928 | 543.746 | 682.964 | 11 263.836 |
| **2003** | 1 683.650 | 1 283.459 | 2 776.920 | 653.817 | 145.461 | 3 856.907 | 560.627 | 716.780 | 11 677.621 |
| **2004** | 1 710.667 | 1 293.580 | 2 833.653 | 685.439 | 149.961 | 4 181.816 | 601.706 | 752.330 | 12 209.152 |
| **2005** | 1 717.762 | 1 299.497 | 2 844.339 | 706.614 | 149.809 | 4 496.129 | 635.272 | 763.699 | 12 613.121 |
| **2006** | 1 721.872 | 1 343.893 | 2 827.481 | 732.814 | 157.584 | 4 735.874 | 676.711 | 781.870 | 12 978.100 |
| **2007** | 1 703.063 | 1 352.365 | 2 881.620 | 756.021 | 159.841 | 5 018.005 | 718.542 | 801.653 | 13 391.108 |
| **2008** | 1 697.979 | 1 364.739 | 2 824.184 | 778.412 | 162.296 | 5 128.890 | 755.628 | 848.229 | 13 560.357 |
| **2009** | 1 604.499 | 1 274.129 | 2 692.772 | 773.089 | 161.496 | 5 270.081 | 782.358 | 858.850 | 13 417.274 |
| **2010** | 1 657.705 | 1 329.582 | 2 774.856 | 809.391 | 165.721 | 5 550.947 | 820.097 | 883.938 | 13 992.237 |
| **2011** | 1 622.322 | 1 376.319 | 2 772.807 | 841.563 | 170.086 | 5 835.145 | 860.189 | 882.569 | 14 361.000 |
| **2012** | 1 618.419 | 1 373.455 | 2 718.720 | 865.723 | 169.344 | 6 006.718 | 888.501 | 923.148 | 14 564.029 |
| **2013** | 1 615.145 | 1 353.458 | 2 763.553 | 888.492 | 170.492 | 6 188.195 | 906.702 | 949.626 | 14 835.663 |
| **2014** | 1 562.309 | 1 347.658 | 2 795.624 | 901.703 | 174.636 | 6 285.516 | 951.299 | 971.003 | 14 989.748 |
| **2015** | 1 592.712 | 1 331.430 | 2 761.965 | 909.571 | 177.255 | 6 370.967 | 976.639 | 983.876 | 15 104.415 |
| **2016** | 1 602.127 | 1 333.387 | 2 745.273 | 907.704 | 180.186 | 6 448.831 | 1 012.215 | 1 009.293 | 15 239.017 |
| **2017** | 1 629.792 | 1 351.680 | 2 739.193 | 920.697 | 180.203 | 6 701.325 | 1 050.604 | 1 029.809 | 15 603.304 |
| **2018** | 1 622.944 | 1 401.578 | 2 778.724 | 920.942 | 183.898 | 6 977.599 | 1 076.508 | 1 061.145 | 16 023.340 |

**Figure 9.** Percentage of total energy consumption per macro-area per year 1820-2018

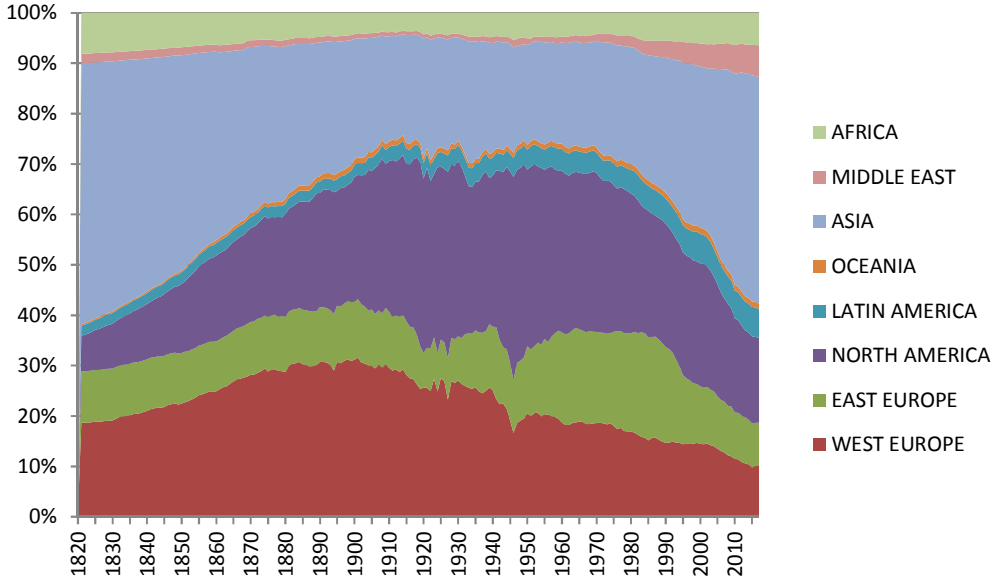


**Table A 3**. Percentage of World energy consumption per macro-area per decade 1820-2018 (Figure 9, with yearly data)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | WE | EE | NA | LA | O | As | ME | Af | WORLD |
| **1820** | 19.39 | 10.11 | 7.01 | 2.00 | 0.29 | 51.29 | 1.84 | 8.06 | 100 |
| **1830** | 19.95 | 10.21 | 9.01 | 2.10 | 0.28 | 48.93 | 1.77 | 7.74 | 100 |
| **1840** | 21.60 | 10.15 | 11.12 | 2.19 | 0.29 | 45.70 | 1.66 | 7.28 | 100 |
| **1850** | 22.82 | 9.99 | 14.00 | 2.30 | 0.35 | 42.21 | 1.54 | 6.77 | 100 |
| **1860** | 25.44 | 9.83 | 17.11 | 2.46 | 0.58 | 36.73 | 1.41 | 6.43 | 100 |
| **1870** | 28.33 | 10.58 | 18.73 | 2.22 | 0.73 | 32.63 | 1.32 | 5.45 | 100 |
| **1880** | 30.01 | 10.78 | 20.41 | 2.09 | 0.94 | 29.36 | 1.21 | 5.21 | 100 |
| **1890** | 30.86 | 10.79 | 23.37 | 2.15 | 1.07 | 25.98 | 1.09 | 4.69 | 100 |
| **1900** | 31.50 | 11.55 | 25.03 | 2.31 | 1.11 | 23.51 | 0.96 | 4.02 | 100 |
| **1910** | 28.85 | 10.54 | 31.70 | 2.81 | 1.13 | 20.45 | 0.79 | 3.74 | 100 |
| **1920** | 25.40 | 7.82 | 36.35 | 2.87 | 1.00 | 21.72 | 0.79 | 4.05 | 100 |
| **1930** | 26.16 | 9.08 | 34.43 | 3.25 | 0.83 | 21.10 | 0.81 | 4.34 | 100 |
| **1940** | 23.21 | 14.13 | 31.60 | 3.49 | 0.89 | 20.95 | 1.13 | 4.60 | 100 |
| **1950** | 19.98 | 13.29 | 35.96 | 4.18 | 1.00 | 19.32 | 1.18 | 5.10 | 100 |
| **1960** | 18.35 | 18.00 | 31.84 | 4.45 | 1.02 | 20.09 | 1.50 | 4.74 | 100 |
| **1970** | 18.83 | 17.92 | 31.28 | 4.05 | 1.07 | 20.97 | 1.63 | 4.24 | 100 |
| **1980** | 16.91 | 20.10 | 27.73 | 4.94 | 1.14 | 22.18 | 2.21 | 4.80 | 100 |
| **1990** | 15.01 | 18.71 | 25.05 | 5.06 | 1.21 | 25.90 | 3.44 | 5.63 | 100 |
| **2000** | 14.64 | 11.29 | 25.55 | 5.84 | 1.30 | 30.74 | 4.61 | 6.03 | 100 |
| **2010** | 11.85 | 9.50 | 19.83 | 5.78 | 1.18 | 39.67 | 5.86 | 6.32 | 100 |
| **2018** | 10.13 | 8.75 | 17.34 | 5.75 | 1.15 | 43.55 | 6.72 | 6.62 | 100 |

**Figure 10**. World energy consumption per source 1820-2018 (Mtoe)

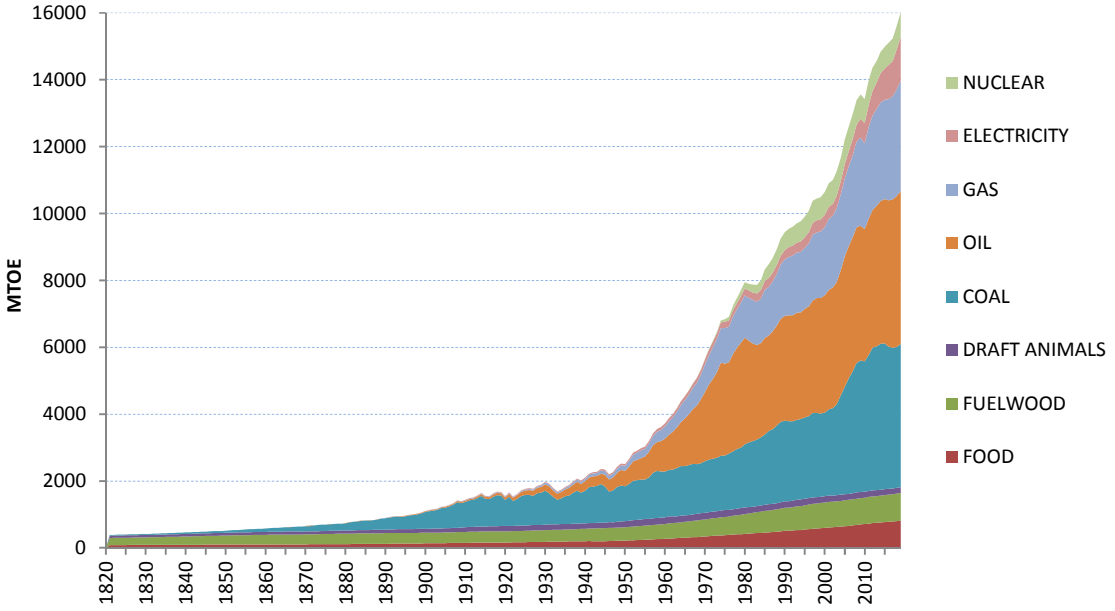


**Table A 4.** World energy consumption per source 1820-2018 (Mtoe)(Figure 10)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 85.666 | 211.560 | 67.891 | 24.865 | | | | | 389.981 |
| **1821** | 86.076 | 212.948 | 68.272 | 25.392 | | | | | 392.688 |
| **1822** | 86.612 | 214.384 | 68.682 | 25.742 | | | | | 395.421 |
| **1823** | 87.093 | 216.278 | 69.153 | 26.472 | | | | | 398.996 |
| **1824** | 87.687 | 218.318 | 69.666 | 27.263 | | | | | 402.934 |
| **1825** | 88.084 | 219.562 | 70.083 | 27.836 | | | | | 405.565 |
| **1826** | 88.696 | 221.487 | 70.624 | 28.428 | | | | | 409.236 |
| **1827** | 89.086 | 223.233 | 71.169 | 29.415 | | | | | 412.903 |
| **1828** | 89.533 | 224.899 | 71.509 | 30.065 | | | | | 416.005 |
| **1829** | 89.956 | 226.414 | 71.900 | 30.529 | | | | | 418.799 |
| **1830** | 90.384 | 228.132 | 72.372 | 31.364 | | | | | 422.251 |
| **1831** | 90.989 | 230.192 | 72.885 | 31.891 | | | | | 425.956 |
| **1832** | 91.565 | 232.190 | 73.474 | 33.089 | | | | | 430.319 |
| **1833** | 92.055 | 234.107 | 73.946 | 34.059 | | | | | 434.167 |
| **1834** | 92.580 | 236.149 | 74.497 | 34.945 | | | | | 438.170 |
| **1835** | 93.267 | 238.788 | 75.065 | 36.371 | | | | | 443.491 |
| **1836** | 93.426 | 240.281 | 75.409 | 38.118 | | | | | 447.234 |
| **1837** | 93.852 | 242.092 | 75.857 | 39.889 | | | | | 451.690 |
| **1838** | 94.472 | 244.258 | 76.471 | 41.263 | | | | | 456.465 |
| **1839** | 94.991 | 246.408 | 77.073 | 42.746 | | | | | 461.218 |
| **1840** | 95.823 | 248.661 | 77.715 | 44.729 | | | | | 466.928 |
| **1841** | 96.493 | 251.190 | 78.299 | 46.183 | | | | | 472.165 |
| **1842** | 97.018 | 253.911 | 78.909 | 47.264 | | | | | 477.102 |
| **1843** | 97.268 | 255.983 | 79.334 | 48.726 | | | | | 481.311 |
| **1844** | 97.776 | 258.387 | 79.940 | 51.021 | | | | | 487.124 |
| **1845** | 98.419 | 260.049 | 80.540 | 55.145 | | | | | 494.152 |
| **1846** | 98.973 | 262.391 | 81.099 | 57.538 | | | | | 500.001 |
| **1847** | 99.407 | 264.455 | 81.589 | 59.917 | | | | | 505.367 |
| **1848** | 99.958 | 266.626 | 82.138 | 60.153 | | | | | 508.876 |
| **1849** | 100.401 | 269.000 | 82.662 | 62.814 | | | | | 514.877 |
| **1850** | 100.976 | 271.493 | 83.164 | 66.405 | | | | | 522.038 |

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|---|---|---|---|---|---|---|---|---|
| **1851** | 101.275 | 274.055 | 83.686 | 70.642 | | | | 529.658 |
| **1852** | 101.431 | 275.984 | 83.973 | 75.176 | | | | 536.563 |
| **1853** | 101.590 | 278.119 | 84.350 | 79.729 | | | | 543.787 |
| **1854** | 101.576 | 280.036 | 84.676 | 86.319 | | | | 552.608 |
| **1855** | 101.697 | 281.763 | 85.177 | 90.300 | | | | 558.938 |
| **1856** | 102.072 | 283.782 | 85.668 | 93.812 | | | | 565.335 |
| **1857** | 102.711 | 286.106 | 86.342 | 96.921 | | | | 572.080 |
| **1858** | 103.220 | 288.052 | 86.894 | 96.983 | | | | 575.149 |
| **1859** | 103.338 | 289.603 | 87.339 | 99.992 | | | | 580.272 |
| **1860** | 103.727 | 291.163 | 89.218 | 106.475 | 0.077 | | | 590.661 |
| **1861** | 104.048 | 292.258 | 89.675 | 109.621 | 0.111 | | | 595.713 |
| **1862** | 104.467 | 293.620 | 89.722 | 113.108 | 0.167 | | | 601.084 |
| **1863** | 104.958 | 294.889 | 88.953 | 120.456 | 0.215 | | | 609.472 |
| **1864** | 105.232 | 296.135 | 88.810 | 127.360 | 0.271 | | | 617.808 |
| **1865** | 105.645 | 296.560 | 88.877 | 132.812 | 0.313 | | | 624.207 |
| **1866** | 105.659 | 297.085 | 88.834 | 139.238 | 0.375 | | | 631.191 |
| **1867** | 106.198 | 296.799 | 88.759 | 143.846 | 0.428 | | | 636.030 |
| **1868** | 106.477 | 297.215 | 85.710 | 149.694 | 0.478 | | | 639.573 |
| **1869** | 106.951 | 297.609 | 85.895 | 157.064 | 0.519 | | | 648.037 |
| **1870** | 107.141 | 297.829 | 86.654 | 161.036 | 0.585 | | | 653.246 |
| **1871** | 107.778 | 299.889 | 86.518 | 169.648 | 0.644 | | | 664.477 |
| **1872** | 108.621 | 301.875 | 88.074 | 184.723 | 0.635 | | | 683.928 |
| **1873** | 109.941 | 304.033 | 88.892 | 196.717 | 0.772 | | | 700.355 |
| **1874** | 110.417 | 304.891 | 89.846 | 193.471 | 0.800 | | | 699.425 |
| **1875** | 111.490 | 306.929 | 91.257 | 200.280 | 0.945 | | | 710.901 |
| **1876** | 112.538 | 308.421 | 92.443 | 200.968 | 1.552 | | | 715.921 |
| **1877** | 113.670 | 309.555 | 93.715 | 203.541 | 2.204 | | | 722.684 |
| **1878** | 114.633 | 310.620 | 94.310 | 204.862 | 2.641 | | | 727.067 |
| **1879** | 115.147 | 311.311 | 94.510 | 217.367 | 3.308 | | | 741.642 |
| **1880** | 116.305 | 312.871 | 94.979 | 241.161 | 3.854 | | | 769.170 |
| **1881** | 117.193 | 313.630 | 95.548 | 251.839 | 3.950 | | | 782.160 |
| **1882** | 118.058 | 314.586 | 96.371 | 264.755 | 3.856 | 0.092 | | 797.717 |
| **1883** | 119.283 | 314.408 | 97.971 | 281.489 | 3.687 | 0.210 | | 817.049 |
| **1884** | 120.435 | 314.976 | 98.737 | 283.687 | 3.978 | 0.650 | | 822.462 |
| **1885** | 121.254 | 315.699 | 99.779 | 284.994 | 4.285 | 2.059 | | 828.070 |
| **1886** | 121.869 | 316.438 | 100.433 | 287.233 | 4.903 | 2.942 | | 833.817 |
| **1887** | 123.310 | 317.259 | 101.217 | 306.649 | 6.040 | 3.825 | | 858.300 |
| **1888** | 124.056 | 317.225 | 102.022 | 331.538 | 7.106 | 4.708 | 0.000 | 886.655 |
| **1889** | 125.097 | 317.133 | 102.936 | 337.345 | 7.864 | 5.591 | 0.000 | 895.967 |
| **1890** | 125.923 | 316.984 | 105.084 | 358.746 | 9.086 | 6.474 | 0.555 | 922.853 |
| **1891** | 126.933 | 317.135 | 111.333 | 373.356 | 10.002 | 5.921 | 0.735 | 945.415 |
| **1892** | 128.764 | 317.114 | 112.398 | 377.433 | 10.304 | 5.369 | 0.975 | 952.356 |
| **1893** | 128.943 | 317.065 | 112.979 | 371.235 | 11.390 | 4.816 | 1.293 | 947.721 |
| **1894** | 130.807 | 317.400 | 113.784 | 386.512 | 11.076 | 4.264 | 1.715 | 965.557 |
| **1895** | 131.579 | 316.604 | 113.963 | 407.340 | 13.004 | 3.711 | 2.275 | 988.476 |
| **1896** | 133.270 | 316.867 | 115.317 | 419.541 | 13.641 | 4.242 | 2.790 | 1 005.668 |
| **1897** | 134.010 | 317.224 | 115.322 | 438.751 | 14.995 | 4.773 | 3.425 | 1 028.500 |
| **1898** | 135.461 | 317.710 | 116.120 | 462.506 | 17.356 | 5.304 | 4.203 | 1 058.659 |
| **1899** | 136.774 | 317.981 | 116.849 | 507.385 | 17.194 | 5.835 | 5.158 | 1 107.177 |
| **1900** | 137.959 | 316.414 | 119.202 | 527.276 | 20.155 | 6.367 | 6.351 | 1 133.724 |
| **1901** | 139.472 | 315.604 | 121.688 | 542.775 | 21.336 | 7.071 | 6.949 | 1 154.895 |
| **1902** | 141.607 | 316.812 | 123.076 | 553.714 | 23.617 | 7.532 | 7.582 | 1 173.939 |
| **1903** | 142.934 | 317.240 | 124.888 | 604.482 | 25.763 | 7.993 | 8.274 | 1 231.573 |
| **1904** | 144.603 | 317.485 | 126.869 | 609.816 | 28.943 | 8.318 | 9.049 | 1 245.084 |
| **1905** | 145.775 | 318.145 | 128.135 | 646.489 | 28.774 | 9.375 | 9.870 | 1 286.563 |
| **1906** | 147.009 | 320.295 | 129.896 | 693.210 | 28.667 | 10.352 | 10.564 | 1 339.993 |
| **1907** | 148.869 | 322.498 | 132.154 | 764.056 | 35.737 | 10.894 | 11.348 | 1 425.557 |
| **1908** | 150.250 | 324.636 | 134.210 | 725.637 | 38.175 | 10.760 | 12.161 | 1 395.829 |
| **1909** | 152.068 | 326.778 | 136.256 | 759.609 | 40.305 | 12.874 | 13.021 | 1 440.910 |
| **1910** | 154.170 | 329.774 | 141.736 | 793.152 | 43.998 | 13.606 | 13.975 | 1 490.412 |
| **1911** | 155.949 | 330.526 | 145.954 | 806.385 | 46.062 | 14.025 | 14.574 | 1 513.475 |
| **1912** | 157.365 | 331.872 | 146.394 | 852.567 | 46.296 | 15.391 | 15.254 | 1 565.139 |

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|---|---|---|---|---|---|---|---|---|---|
| **1913** | 158.676 | 333.231 | 150.017 | 915.502 | 50.016 | 16.184 | 15.919 | | 1 639.546 |
| **1914** | 158.979 | 334.021 | 148.099 | 831.107 | 52.513 | 16.479 | 16.671 | | 1 557.869 |
| **1915** | 159.602 | 335.405 | 151.811 | 813.098 | 56.687 | 17.487 | 17.542 | | 1 551.633 |
| **1916** | 160.039 | 335.591 | 151.188 | 885.914 | 59.920 | 20.990 | 18.051 | | 1 631.692 |
| **1917** | 160.504 | 336.329 | 155.135 | 926.244 | 66.146 | 22.122 | 18.591 | | 1 685.071 |
| **1918** | 160.943 | 336.236 | 158.523 | 910.723 | 67.646 | 19.953 | 19.186 | | 1 673.210 |
| **1919** | 161.899 | 335.722 | 159.445 | 775.226 | 73.154 | 20.524 | 19.669 | | 1 545.639 |
| **1920** | 163.631 | 335.621 | 160.253 | 871.764 | 87.476 | 20.936 | 20.214 | | 1 659.894 |
| **1921** | 164.895 | 335.031 | 160.059 | 747.250 | 90.031 | 17.332 | 19.964 | | 1 534.562 |
| **1922** | 166.573 | 336.071 | 160.377 | 811.541 | 101.462 | 20.541 | 19.819 | | 1 616.385 |
| **1923** | 169.132 | 337.570 | 160.739 | 884.712 | 123.331 | 26.925 | 20.075 | | 1 722.484 |
| **1924** | 171.585 | 339.131 | 160.986 | 918.420 | 126.054 | 30.470 | 20.036 | | 1 766.681 |
| **1925** | 174.132 | 342.059 | 161.250 | 909.281 | 143.430 | 32.217 | 20.439 | | 1 782.808 |
| **1926** | 177.026 | 342.933 | 162.424 | 878.325 | 152.888 | 35.422 | 21.437 | | 1 770.455 |
| **1927** | 179.199 | 344.886 | 160.015 | 950.285 | 161.254 | 38.884 | 22.507 | | 1 857.030 |
| **1928** | 180.992 | 347.162 | 160.169 | 962.154 | 175.915 | 42.230 | 23.597 | | 1 892.219 |
| **1929** | 183.220 | 350.012 | 161.578 | 1 014.488 | 194.255 | 51.566 | 25.202 | | 1 980.321 |
| **1930** | 185.070 | 351.862 | 166.457 | 933.463 | 210.359 | 52.677 | 25.851 | | 1 925.737 |
| **1931** | 186.681 | 353.692 | 162.726 | 821.981 | 195.431 | 46.856 | 26.058 | | 1 793.426 |
| **1932** | 188.394 | 353.757 | 163.511 | 737.244 | 181.033 | 44.558 | 26.427 | | 1 694.923 |
| **1933** | 190.232 | 355.577 | 168.811 | 764.323 | 189.344 | 45.168 | 27.390 | | 1 740.844 |
| **1934** | 191.811 | 357.566 | 163.854 | 832.398 | 199.366 | 51.110 | 28.531 | | 1 824.637 |
| **1935** | 193.449 | 359.586 | 165.577 | 852.293 | 224.514 | 55.561 | 29.983 | | 1 880.962 |
| **1936** | 195.519 | 361.408 | 167.032 | 924.932 | 243.733 | 62.418 | 31.087 | | 1 986.129 |
| **1937** | 197.722 | 364.427 | 166.875 | 984.751 | 262.370 | 69.038 | 32.741 | | 2 077.924 |
| **1938** | 200.053 | 367.118 | 164.918 | 918.538 | 264.123 | 66.826 | 33.571 | | 2 015.147 |
| **1939** | 201.745 | 372.824 | 164.141 | 972.588 | 284.485 | 71.891 | 35.047 | | 2 102.721 |
| **1940** | 203.544 | 375.104 | 165.628 | 1 067.182 | 296.100 | 77.074 | 35.554 | | 2 220.187 |
| **1941** | 200.386 | 380.547 | 165.638 | 1 086.489 | 312.427 | 78.860 | 38.131 | | 2 262.478 |
| **1942** | 201.050 | 386.374 | 165.396 | 1 104.092 | 295.580 | 84.891 | 41.889 | | 2 279.272 |
| **1943** | 201.531 | 385.955 | 164.941 | 1 155.489 | 312.956 | 94.005 | 45.115 | | 2 359.992 |
| **1944** | 202.395 | 384.442 | 163.942 | 1 081.531 | 359.450 | 101.558 | 47.668 | | 2 340.987 |
| **1945** | 204.555 | 391.100 | 172.507 | 917.706 | 356.418 | 107.004 | 51.791 | | 2 201.081 |
| **1946** | 210.347 | 389.007 | 166.740 | 952.188 | 385.330 | 110.395 | 51.625 | | 2 265.631 |
| **1947** | 213.517 | 394.293 | 177.706 | 1 039.250 | 423.908 | 122.014 | 54.298 | | 2 424.987 |
| **1948** | 216.975 | 397.258 | 181.940 | 1 063.116 | 470.132 | 137.415 | 55.578 | | 2 522.414 |
| **1949** | 219.916 | 402.638 | 175.947 | 1 042.194 | 465.128 | 146.486 | 56.215 | | 2 508.525 |
| **1950** | 223.965 | 407.554 | 181.342 | 1 097.084 | 518.377 | 168.249 | 58.262 | | 2 654.832 |
| **1951** | 229.282 | 412.186 | 191.530 | 1 171.412 | 582.101 | 197.513 | 62.120 | | 2 846.144 |
| **1952** | 234.495 | 416.138 | 193.331 | 1 181.167 | 608.245 | 212.317 | 64.885 | | 2 910.577 |
| **1953** | 239.276 | 419.803 | 193.238 | 1 195.563 | 643.019 | 224.658 | 64.767 | | 2 980.324 |
| **1954** | 244.699 | 424.605 | 194.115 | 1 183.963 | 683.042 | 238.471 | 65.775 | | 3 034.670 |
| **1955** | 249.872 | 427.510 | 192.923 | 1 245.744 | 762.914 | 260.249 | 68.446 | | 3 207.658 |
| **1956** | 255.002 | 430.686 | 202.925 | 1 354.856 | 823.477 | 281.716 | 72.871 | 0.031 | 3 421.565 |
| **1957** | 260.437 | 434.392 | 203.972 | 1 404.357 | 865.385 | 307.489 | 78.151 | 0.127 | 3 554.311 |
| **1958** | 266.137 | 439.548 | 197.673 | 1 380.997 | 910.784 | 333.324 | 84.258 | 0.143 | 3 612.864 |
| **1959** | 271.919 | 445.823 | 196.862 | 1 370.431 | 983.129 | 373.316 | 86.320 | 0.441 | 3 728.242 |
| **1960** | 277.941 | 451.619 | 210.590 | 1 389.186 | 1 054.602 | 404.939 | 93.437 | 0.847 | 3 883.160 |
| **1961** | 284.067 | 456.646 | 206.865 | 1 397.291 | 1 122.685 | 433.325 | 96.495 | 1.323 | 3 998.697 |
| **1962** | 291.716 | 461.880 | 194.869 | 1 439.096 | 1 218.608 | 473.264 | 104.733 | 1.894 | 4 186.060 |
| **1963** | 298.586 | 467.742 | 196.320 | 1 481.220 | 1 313.606 | 511.269 | 107.486 | 3.025 | 4 379.254 |
| **1964** | 305.214 | 474.321 | 197.213 | 1 472.760 | 1 420.552 | 557.879 | 112.842 | 4.633 | 4 545.415 |
| **1965** | 312.011 | 480.561 | 193.509 | 1 491.489 | 1 519.901 | 584.976 | 123.210 | 7.337 | 4 712.996 |
| **1966** | 319.381 | 487.980 | 198.326 | 1 504.724 | 1 642.008 | 636.458 | 130.652 | 9.889 | 4 929.417 |
| **1967** | 325.115 | 494.493 | 198.712 | 1 486.336 | 1 752.484 | 681.362 | 137.502 | 12.142 | 5 088.145 |
| **1968** | 332.655 | 503.858 | 199.276 | 1 498.946 | 1 909.702 | 741.813 | 142.232 | 14.947 | 5 343.429 |
| **1969** | 340.615 | 511.941 | 197.625 | 1 543.795 | 2 062.872 | 811.904 | 153.723 | 18.038 | 5 640.513 |
| **1970** | 348.898 | 519.250 | 201.683 | 1 567.192 | 2 252.106 | 880.761 | 159.205 | 22.267 | 5 951.362 |
| **1971** | 358.348 | 524.591 | 205.875 | 1 575.906 | 2 387.079 | 941.557 | 167.707 | 30.947 | 6 192.010 |
| **1972** | 365.644 | 533.055 | 203.024 | 1 592.051 | 2 569.763 | 990.498 | 173.519 | 42.211 | 6 469.764 |
| **1973** | 374.958 | 539.743 | 203.902 | 1 633.757 | 2 786.185 | 1 033.304 | 175.567 | 56.492 | 6 803.908 |
| **1974** | 382.198 | 546.259 | 204.590 | 1 630.370 | 2 746.485 | 1 060.808 | 193.227 | 74.329 | 6 838.267 |

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|---|---|---|---|---|---|---|---|---|---|
| **1975** | 388.313 | 550.633 | 196.582 | 1 686.890 | 2 730.045 | 1 057.417 | 195.536 | 101.752 | 6 907.168 |
| **1976** | 397.982 | 561.080 | 194.393 | 1 739.036 | 2 906.275 | 1 119.180 | 193.144 | 122.246 | 7 233.337 |
| **1977** | 404.656 | 570.009 | 197.395 | 1 786.196 | 3 017.747 | 1 148.161 | 186.463 | 147.981 | 7 458.607 |
| **1978** | 412.861 | 581.461 | 197.560 | 1 810.147 | 3 138.081 | 1 196.621 | 207.329 | 172.514 | 7 716.574 |
| **1979** | 420.512 | 590.859 | 196.633 | 1 892.326 | 3 181.321 | 1 264.831 | 215.708 | 177.777 | 7 939.968 |
| **1980** | 427.933 | 604.862 | 185.097 | 1 940.725 | 3 034.637 | 1 281.407 | 220.299 | 199.145 | 7 894.106 |
| **1981** | 434.927 | 613.094 | 187.924 | 1 958.700 | 2 918.777 | 1 297.755 | 224.581 | 234.805 | 7 870.562 |
| **1982** | 443.595 | 621.447 | 185.548 | 1 986.973 | 2 827.384 | 1 296.421 | 244.182 | 258.316 | 7 863.867 |
| **1983** | 449.127 | 636.091 | 187.997 | 2 032.240 | 2 815.371 | 1 335.529 | 259.869 | 286.246 | 8 002.471 |
| **1984** | 458.507 | 645.091 | 182.041 | 2 099.233 | 2 887.518 | 1 441.013 | 266.362 | 346.428 | 8 326.194 |
| **1985** | 466.273 | 655.118 | 182.962 | 2 195.470 | 2 849.666 | 1 463.075 | 261.485 | 408.899 | 8 482.947 |
| **1986** | 475.510 | 659.555 | 183.792 | 2 226.774 | 2 934.231 | 1 477.348 | 268.027 | 440.094 | 8 665.332 |
| **1987** | 487.375 | 665.927 | 186.279 | 2 319.506 | 2 989.798 | 1 552.711 | 265.075 | 472.792 | 8 939.463 |
| **1988** | 499.194 | 678.876 | 187.098 | 2 400.213 | 3 087.194 | 1 620.572 | 266.789 | 518.093 | 9 258.029 |
| **1989** | 510.513 | 691.067 | 188.675 | 2 414.315 | 3 128.918 | 1 693.283 | 280.232 | 533.434 | 9 440.437 |
| **1990** | 515.699 | 690.253 | 190.496 | 2 392.068 | 3 168.186 | 1 742.465 | 291.886 | 544.783 | 9 535.836 |
| **1991** | 519.458 | 700.693 | 190.914 | 2 380.401 | 3 161.434 | 1 790.352 | 298.347 | 568.323 | 9 609.921 |
| **1992** | 529.982 | 709.315 | 199.875 | 2 385.436 | 3 209.240 | 1 796.394 | 296.063 | 573.895 | 9 700.201 |
| **1993** | 536.103 | 714.830 | 199.679 | 2 407.066 | 3 185.246 | 1 812.383 | 315.134 | 596.611 | 9 767.052 |
| **1994** | 548.313 | 722.689 | 199.824 | 2 429.327 | 3 250.340 | 1 824.422 | 316.753 | 608.321 | 9 899.990 |
| **1995** | 562.201 | 732.058 | 199.482 | 2 448.373 | 3 280.238 | 1 883.547 | 341.615 | 635.438 | 10 082.952 |
| **1996** | 572.282 | 741.548 | 200.243 | 2 518.977 | 3 364.339 | 1 972.532 | 351.143 | 657.072 | 10 378.136 |
| **1997** | 582.790 | 747.063 | 185.684 | 2 518.099 | 3 443.457 | 1 960.214 | 361.687 | 655.517 | 10 454.511 |
| **1998** | 593.844 | 750.020 | 185.937 | 2 484.935 | 3 460.212 | 1 991.048 | 362.956 | 661.713 | 10 490.666 |
| **1999** | 603.372 | 756.195 | 185.842 | 2 497.728 | 3 515.784 | 2 038.814 | 367.479 | 680.797 | 10 646.011 |
| **2000** | 614.058 | 765.217 | 183.343 | 2 575.248 | 3 578.207 | 2 116.723 | 370.213 | 695.288 | 10 898.296 |
| **2001** | 621.494 | 758.888 | 184.003 | 2 616.163 | 3 610.657 | 2 141.055 | 357.493 | 715.343 | 11 005.096 |
| **2002** | 628.676 | 761.860 | 185.472 | 2 720.285 | 3 657.675 | 2 205.537 | 379.666 | 724.666 | 11 263.836 |
| **2003** | 638.841 | 768.196 | 184.777 | 2 976.591 | 3 750.520 | 2 264.869 | 390.956 | 702.871 | 11 677.621 |
| **2004** | 649.301 | 775.258 | 184.929 | 3 206.829 | 3 897.138 | 2 333.840 | 422.822 | 739.034 | 12 209.152 |
| **2005** | 660.741 | 779.410 | 176.884 | 3 459.532 | 3 959.927 | 2 389.651 | 450.010 | 736.966 | 12 613.121 |
| **2006** | 673.564 | 780.460 | 176.293 | 3 653.814 | 4 004.336 | 2 455.361 | 485.106 | 749.166 | 12 978.100 |
| **2007** | 687.976 | 786.276 | 184.057 | 3 873.969 | 4 053.904 | 2 561.537 | 510.405 | 732.985 | 13 391.108 |
| **2008** | 702.185 | 789.772 | 184.030 | 3 928.484 | 4 036.057 | 2 627.905 | 565.591 | 726.333 | 13 560.357 |
| **2009** | 711.871 | 790.378 | 182.976 | 3 895.783 | 3 952.778 | 2 561.382 | 601.436 | 720.671 | 13 417.274 |
| **2010** | 726.638 | 797.271 | 173.230 | 4 067.416 | 4 083.773 | 2 741.843 | 665.497 | 736.569 | 13 992.237 |
| **2011** | 740.245 | 801.723 | 173.443 | 4 270.327 | 4 123.740 | 2 818.556 | 735.219 | 697.746 | 14 361.000 |
| **2012** | 749.865 | 801.842 | 173.076 | 4 300.160 | 4 200.191 | 2 900.363 | 800.539 | 637.993 | 14 564.029 |
| **2013** | 761.489 | 804.742 | 172.932 | 4 369.212 | 4 263.458 | 2 946.484 | 872.926 | 644.418 | 14 835.663 |
| **2014** | 774.221 | 806.733 | 172.814 | 4 360.925 | 4 313.874 | 2 969.820 | 937.420 | 653.941 | 14 989.748 |
| **2015** | 785.137 | 808.701 | 171.391 | 4 256.393 | 4 375.333 | 3 024.513 | 1 016.783 | 666.164 | 15 104.415 |
| **2016** | 794.642 | 814.397 | 169.914 | 4 197.799 | 4 443.620 | 3 092.471 | 1 043.774 | 682.400 | 15 239.017 |
| **2017** | 803.014 | 824.339 | 171.193 | 4 211.386 | 4 509.745 | 3 185.812 | 1 199.131 | 698.683 | 15 603.304 |
| **2018** | 811.501 | 833.249 | 172.924 | 4 273.680 | 4 575.231 | 3 293.754 | 1 321.285 | 741.714 | 16 023.340 |

**Figure 11.** Percentage of any source on total World consumption 1820-2018

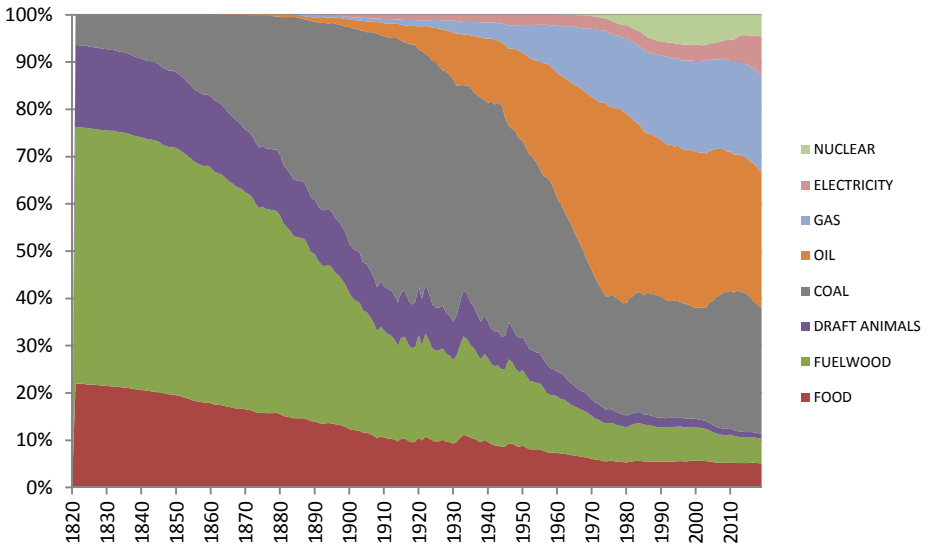
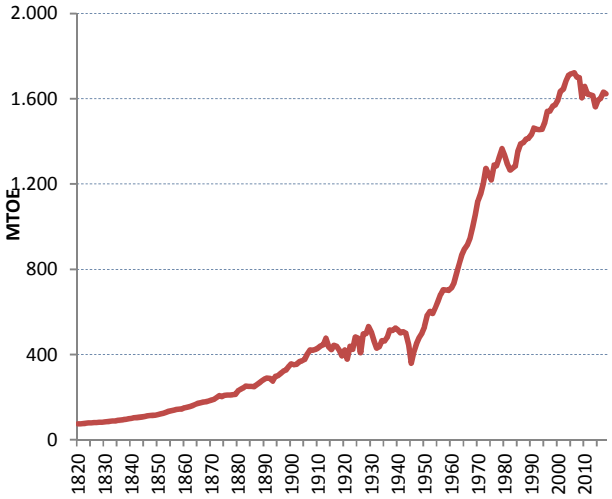
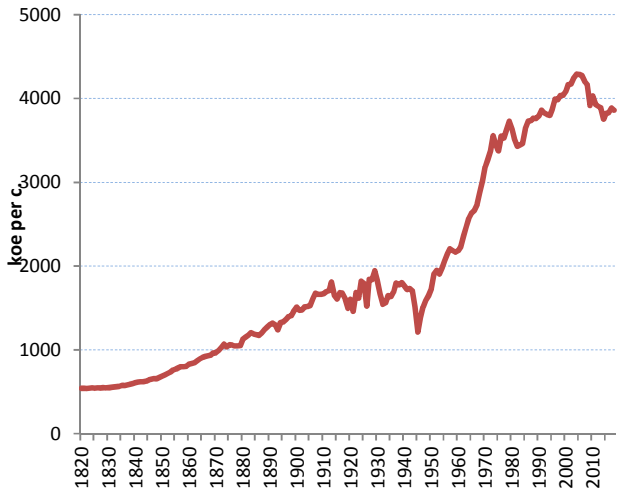



**Table A 5** Percentage of any source on World energy consumption per decade 1820-2018 (Figure 11)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 21.97 | 54.25 | 17.41 | 6.38 | | | | | 100 |
| **1830** | 21.41 | 54.03 | 17.14 | 7.43 | | | | | 100 |
| **1840** | 20.52 | 53.25 | 16.64 | 9.58 | | | | | 100 |
| **1850** | 19.34 | 52.01 | 15.93 | 12.72 | | | | | 100 |
| **1860** | 17.56 | 49.29 | 15.10 | 18.03 | 0.01 | | | | 100 |
| **1870** | 16.40 | 45.59 | 13.27 | 24.65 | 0.09 | | | | 100 |
| **1880** | 15.12 | 40.68 | 12.35 | 31.35 | 0.50 | | | | 100 |
| **1890** | 13.64 | 34.35 | 11.39 | 38.87 | 0.98 | 0.70 | 0.06 | | 100 |
| **1900** | 12.17 | 27.91 | 10.51 | 46.51 | 1.78 | 0.56 | 0.56 | | 100 |
| **1910** | 10.34 | 22.13 | 9.51 | 53.22 | 2.95 | 0.91 | 0.94 | | 100 |
| **1920** | 9.86 | 20.22 | 9.65 | 52.52 | 5.27 | 1.26 | 1.22 | | 100 |
| **1930** | 9.61 | 18.27 | 8.64 | 48.47 | 10.92 | 2.74 | 1.34 | | 100 |
| **1940** | 9.17 | 16.90 | 7.46 | 48.07 | 13.34 | 3.47 | 1.60 | | 100 |
| **1950** | 8.44 | 15.35 | 6.83 | 41.32 | 19.53 | 6.34 | 2.19 | | 100 |
| **1960** | 7.16 | 11.63 | 5.42 | 35.77 | 27.16 | 10.43 | 2.41 | 0.02 | 100 |
| **1970** | 5.86 | 8.72 | 3.39 | 26.33 | 37.84 | 14.80 | 2.68 | 0.37 | 100 |
| **1980** | 5.42 | 7.66 | 2.34 | 24.58 | 38.44 | 16.23 | 2.79 | 2.52 | 100 |
| **1990** | 5.41 | 7.24 | 2.00 | 25.09 | 33.22 | 18.27 | 3.06 | 5.71 | 100 |
| **2000** | 5.63 | 7.02 | 1.68 | 23.63 | 32.83 | 19.42 | 3.40 | 6.38 | 100 |
| **2010** | 5.19 | 5.70 | 1.24 | 29.07 | 29.19 | 19.60 | 4.76 | 5.26 | 100 |
| **2018** | 5.06 | 5.20 | 1.08 | 26.67 | 28.55 | 20.56 | 8.25 | 4.63 | 100 |

**Table A 6.** Total consumption per source in Western Europe 1820-2018 (Mtoe)(Figure 12; Total and per capita)



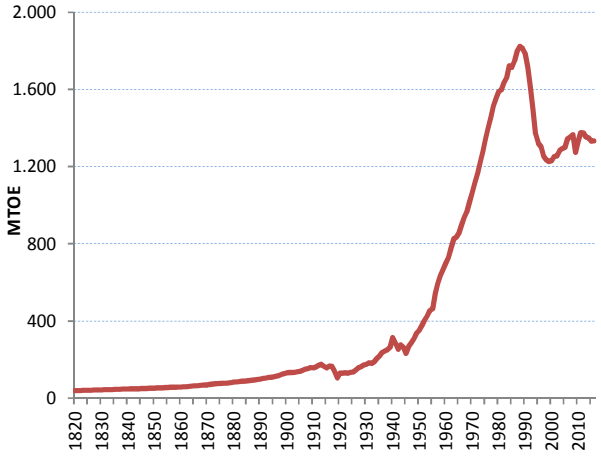

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 12.606 | 29.776 | 10.954 | 22.287 | | | | | 75.622 |
| **1821** | 12.680 | 29.710 | 11.002 | 22.767 | | | | | 76.159 |
| **1822** | 12.879 | 29.664 | 11.071 | 23.073 | | | | | 76.686 |
| **1823** | 13.019 | 29.924 | 11.177 | 23.682 | | | | | 77.802 |
| **1824** | 13.253 | 30.277 | 11.339 | 24.413 | | | | | 79.282 |
| **1825** | 13.306 | 29.805 | 11.395 | 24.926 | | | | | 79.432 |
| **1826** | 13.573 | 30.096 | 11.542 | 25.496 | | | | | 80.706 |
| **1827** | 13.592 | 30.199 | 11.642 | 26.407 | | | | | 81.841 |
| **1828** | 13.690 | 30.311 | 11.719 | 27.015 | | | | | 82.735 |
| **1829** | 13.762 | 30.263 | 11.767 | 27.463 | | | | | 83.254 |
| **1830** | 13.836 | 30.408 | 11.885 | 28.111 | | | | | 84.240 |
| **1831** | 14.076 | 30.688 | 12.050 | 28.645 | | | | | 85.459 |
| **1832** | 14.285 | 30.848 | 12.187 | 29.553 | | | | | 86.872 |
| **1833** | 14.405 | 30.914 | 12.271 | 30.368 | | | | | 87.958 |
| **1834** | 14.558 | 31.100 | 12.399 | 31.221 | | | | | 89.278 |
| **1835** | 14.871 | 31.852 | 12.561 | 32.349 | | | | | 91.633 |
| **1836** | 14.654 | 31.538 | 12.451 | 33.921 | | | | | 92.563 |
| **1837** | 14.667 | 31.514 | 12.486 | 35.492 | | | | | 94.159 |
| **1838** | 14.901 | 31.858 | 12.649 | 36.839 | | | | | 96.248 |
| **1839** | 15.014 | 32.157 | 12.816 | 38.104 | | | | | 98.091 |
| **1840** | 15.430 | 32.553 | 13.010 | 39.867 | | | | | 100.860 |
| **1841** | 15.763 | 32.735 | 13.179 | 41.105 | | | | | 102.783 |
| **1842** | 15.923 | 33.134 | 13.378 | 41.912 | | | | | 104.347 |
| **1843** | 15.836 | 32.861 | 13.360 | 43.189 | | | | | 105.245 |
| **1844** | 16.007 | 32.936 | 13.504 | 44.914 | | | | | 107.361 |
| **1845** | 16.241 | 32.239 | 13.686 | 48.332 | | | | | 110.498 |
| **1846** | 16.360 | 32.381 | 13.784 | 50.200 | | | | | 112.725 |
| **1847** | 16.380 | 32.248 | 13.829 | 51.854 | | | | | 114.311 |
| **1848** | 16.515 | 32.198 | 13.890 | 51.562 | | | | | 114.164 |
| **1849** | 16.513 | 31.937 | 13.904 | 53.869 | | | | | 116.223 |
| **1850** | 16.628 | 31.707 | 13.871 | 56.925 | | | | | 119.131 |

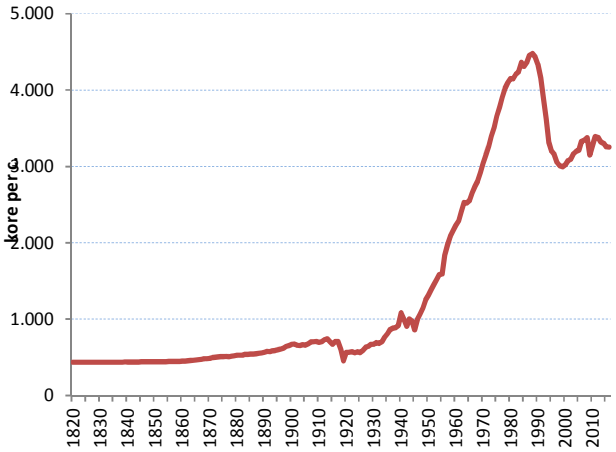
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1851** | 16.727 | 31.636 | 13.879 | 59.691 | | | | 121.933 |
| **1852** | 16.701 | 31.535 | 13.859 | 63.375 | | | | 125.471 |
| **1853** | 16.642 | 31.610 | 13.838 | 66.815 | | | | 128.905 |
| **1854** | 16.450 | 31.462 | 13.769 | 71.765 | | | | 133.446 |
| **1855** | 16.380 | 31.118 | 13.868 | 74.605 | | | | 135.972 |
| **1856** | 16.537 | 31.434 | 13.932 | 77.075 | | | | 138.978 |
| **1857** | 16.979 | 32.040 | 14.197 | 79.555 | | | | 142.771 |
| **1858** | 17.291 | 32.321 | 14.323 | 79.590 | | | | 143.525 |
| **1859** | 17.186 | 32.233 | 14.332 | 81.090 | | | | 144.842 |
| **1860** | 17.268 | 32.140 | 14.356 | 86.524 | | | | 150.288 |
| **1861** | 17.406 | 31.925 | 14.332 | 89.865 | | | | 153.527 |
| **1862** | 17.604 | 32.076 | 14.181 | 92.507 | 0.020 | | | 156.389 |
| **1863** | 17.869 | 32.142 | 14.135 | 97.298 | 0.031 | | | 161.474 |
| **1864** | 17.913 | 32.190 | 14.028 | 102.569 | 0.050 | | | 166.749 |
| **1865** | 18.091 | 31.415 | 14.171 | 107.222 | 0.055 | | | 170.954 |
| **1866** | 17.844 | 31.395 | 14.177 | 110.306 | 0.107 | | | 173.829 |
| **1867** | 18.144 | 30.622 | 14.220 | 113.217 | 0.146 | | | 176.348 |
| **1868** | 18.178 | 30.554 | 14.258 | 115.600 | 0.173 | | | 178.763 |
| **1869** | 18.403 | 30.535 | 14.448 | 119.561 | 0.206 | | | 183.153 |
| **1870** | 18.314 | 30.489 | 14.580 | 121.419 | 0.263 | | | 185.065 |
| **1871** | 18.221 | 30.411 | 14.630 | 127.008 | 0.327 | | | 190.597 |
| **1872** | 18.288 | 30.240 | 14.815 | 134.897 | 0.317 | | | 198.555 |
| **1873** | 18.801 | 30.239 | 14.976 | 142.529 | 0.423 | | | 206.969 |
| **1874** | 18.485 | 29.247 | 15.044 | 139.464 | 0.398 | | | 202.638 |
| **1875** | 18.758 | 29.329 | 15.168 | 145.300 | 0.488 | | | 209.043 |
| **1876** | 18.999 | 29.554 | 15.258 | 145.838 | 0.560 | | | 210.209 |
| **1877** | 19.292 | 29.299 | 15.325 | 145.315 | 0.668 | | | 209.899 |
| **1878** | 19.430 | 29.353 | 15.382 | 146.241 | 0.595 | | | 211.000 |
| **1879** | 19.160 | 28.922 | 15.384 | 149.338 | 0.690 | | | 213.494 |
| **1880** | 19.490 | 29.298 | 15.494 | 165.866 | 0.661 | | | 230.809 |
| **1881** | 19.620 | 29.162 | 15.421 | 173.188 | 0.834 | | | 238.224 |
| **1882** | 19.656 | 29.302 | 15.572 | 178.368 | 0.894 | | | 243.792 |
| **1883** | 20.038 | 28.457 | 15.776 | 186.607 | 0.967 | | | 251.845 |
| **1884** | 20.319 | 28.518 | 15.867 | 184.251 | 1.056 | | | 250.010 |
| **1885** | 20.285 | 28.846 | 16.004 | 183.809 | 1.310 | | | 250.254 |
| **1886** | 20.238 | 29.057 | 16.092 | 183.256 | 1.234 | | | 249.877 |
| **1887** | 20.609 | 29.406 | 16.108 | 190.212 | 1.291 | | | 257.627 |
| **1888** | 20.576 | 28.992 | 16.169 | 200.613 | 1.531 | | | 267.880 |
| **1889** | 20.858 | 28.645 | 16.154 | 208.875 | 1.620 | | | 276.152 |
| **1890** | 20.880 | 28.353 | 16.184 | 217.695 | 1.662 | | | 284.774 |
| **1891** | 21.072 | 28.359 | 16.570 | 222.293 | 1.830 | | | 290.124 |
| **1892** | 21.843 | 28.344 | 16.690 | 219.027 | 1.902 | | | 287.807 |
| **1893** | 20.844 | 28.408 | 16.689 | 207.918 | 2.056 | | 0.001 | 275.916 |
| **1894** | 21.539 | 28.949 | 16.822 | 228.307 | 2.119 | | 0.003 | 297.738 |
| **1895** | 21.472 | 28.450 | 16.904 | 232.631 | 2.280 | | 0.004 | 301.741 |
| **1896** | 22.023 | 28.109 | 16.954 | 241.913 | 2.385 | | 0.005 | 311.389 |
| **1897** | 21.807 | 27.912 | 17.025 | 252.350 | 2.429 | | 0.008 | 321.532 |
| **1898** | 22.189 | 27.883 | 17.080 | 257.373 | 2.609 | | 0.012 | 327.146 |
| **1899** | 22.399 | 27.701 | 17.167 | 274.624 | 2.675 | | 0.016 | 344.582 |
| **1900** | 22.736 | 27.779 | 17.256 | 286.477 | 2.818 | 0.001 | 0.020 | 357.086 |
| **1901** | 22.869 | 27.834 | 17.216 | 281.200 | 2.827 | 0.001 | 0.038 | 351.985 |
| **1902** | 23.608 | 27.935 | 17.439 | 283.418 | 2.957 | 0.001 | 0.047 | 355.404 |
| **1903** | 23.776 | 27.281 | 17.561 | 295.509 | 3.047 | 0.002 | 0.058 | 367.233 |
| **1904** | 23.967 | 26.520 | 17.713 | 300.007 | 3.131 | 0.002 | 0.066 | 371.407 |
| **1905** | 24.037 | 26.196 | 17.861 | 306.124 | 3.056 | 0.003 | 0.075 | 377.352 |
| **1906** | 24.346 | 26.173 | 18.090 | 330.291 | 3.084 | 0.005 | 0.096 | 402.084 |
| **1907** | 24.930 | 25.993 | 18.393 | 348.412 | 3.175 | 0.005 | 0.128 | 421.035 |
| **1908** | 24.875 | 25.902 | 18.625 | 347.433 | 3.439 | 0.006 | 0.151 | 420.431 |
| **1909** | 25.211 | 25.780 | 18.937 | 350.723 | 3.527 | 0.007 | 0.174 | 424.359 |
| **1910** | 25.875 | 26.505 | 19.313 | 354.563 | 3.510 | 0.007 | 0.209 | 429.983 |
| **1911** | 26.188 | 26.190 | 19.555 | 364.461 | 3.600 | 0.008 | 0.240 | 440.242 |
| **1912** | 26.028 | 26.463 | 19.763 | 369.710 | 4.040 | 0.006 | 0.292 | 446.303 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1913** | 25.880 | 26.767 | 19.948 | 398.996 | 4.701 | 0.005 | 0.316 | | 476.614 |
| **1914** | 25.083 | 27.262 | 18.962 | 360.752 | 3.621 | 0.005 | 0.395 | | 436.080 |
| **1915** | 24.666 | 28.558 | 19.255 | 346.818 | 3.379 | 0.005 | 0.454 | | 423.135 |
| **1916** | 24.399 | 29.361 | 19.229 | 366.059 | 2.982 | 0.005 | 0.521 | | 442.556 |
| **1917** | 24.123 | 30.450 | 19.179 | 360.539 | 4.156 | 0.006 | 0.615 | | 439.069 |
| **1918** | 24.557 | 30.572 | 19.373 | 339.777 | 5.753 | 0.006 | 0.750 | | 420.788 |
| **1919** | 24.812 | 30.108 | 19.059 | 314.554 | 4.065 | 0.007 | 0.726 | | 393.331 |
| **1920** | 25.086 | 29.962 | 18.856 | 341.806 | 5.205 | 0.006 | 0.772 | | 421.694 |
| **1921** | 25.040 | 28.383 | 17.132 | 301.161 | 6.240 | 0.006 | 0.802 | | 378.764 |
| **1922** | 25.036 | 28.329 | 17.325 | 360.607 | 6.610 | 0.005 | 0.856 | | 438.768 |
| **1923** | 25.625 | 28.533 | 17.428 | 344.109 | 7.844 | 0.006 | 1.335 | | 424.879 |
| **1924** | 25.683 | 28.533 | 17.655 | 399.312 | 9.420 | 0.005 | 1.457 | | 482.067 |
| **1925** | 25.817 | 29.820 | 17.784 | 389.743 | 11.865 | 0.006 | 1.934 | | 476.967 |
| **1926** | 26.512 | 27.969 | 17.754 | 319.534 | 13.878 | 0.005 | 2.241 | | 407.893 |
| **1927** | 26.655 | 27.253 | 18.261 | 406.769 | 15.405 | 0.005 | 2.357 | | 496.705 |
| **1928** | 26.543 | 26.922 | 17.521 | 408.147 | 17.246 | 0.005 | 2.606 | | 498.991 |
| **1929** | 26.922 | 27.026 | 17.568 | 438.342 | 18.360 | 0.006 | 3.328 | | 531.552 |
| **1930** | 27.004 | 26.219 | 17.481 | 408.356 | 21.340 | 0.007 | 3.455 | | 503.861 |
| **1931** | 26.859 | 25.806 | 17.625 | 366.852 | 21.172 | 0.010 | 3.405 | | 461.731 |
| **1932** | 27.002 | 25.162 | 17.614 | 335.873 | 21.232 | 0.011 | 3.429 | | 430.323 |
| **1933** | 27.254 | 24.978 | 17.665 | 340.182 | 23.723 | 0.012 | 3.755 | | 437.570 |
| **1934** | 27.016 | 24.920 | 17.023 | 365.281 | 25.944 | 0.013 | 4.073 | | 464.271 |
| **1935** | 27.106 | 24.857 | 17.426 | 361.234 | 27.988 | 0.011 | 4.871 | | 463.492 |
| **1936** | 27.320 | 24.364 | 17.362 | 377.436 | 30.800 | 0.012 | 5.093 | | 482.388 |
| **1937** | 27.476 | 24.831 | 17.144 | 411.811 | 28.144 | 0.014 | 6.046 | | 515.466 |
| **1938** | 27.720 | 24.850 | 16.711 | 407.615 | 29.745 | 0.016 | 6.142 | | 512.799 |
| **1939** | 27.355 | 27.838 | 16.527 | 416.188 | 29.433 | 0.018 | 6.892 | | 524.252 |
| **1940** | 27.775 | 29.192 | 17.194 | 410.772 | 23.431 | 0.025 | 6.854 | | 515.244 |
| **1941** | 27.246 | 32.073 | 17.166 | 399.679 | 18.371 | 0.034 | 7.176 | | 501.745 |
| **1942** | 26.848 | 36.294 | 17.048 | 404.433 | 15.145 | 0.044 | 7.414 | | 507.226 |
| **1943** | 26.175 | 33.805 | 16.537 | 395.042 | 19.996 | 0.087 | 7.793 | | 499.434 |
| **1944** | 25.418 | 30.703 | 16.035 | 340.791 | 24.948 | 0.099 | 6.889 | | 444.884 |
| **1945** | 24.800 | 34.608 | 15.530 | 254.302 | 22.540 | 0.183 | 6.891 | | 358.852 |
| **1946** | 24.661 | 27.758 | 14.414 | 308.237 | 30.429 | 0.286 | 7.254 | | 413.038 |
| **1947** | 25.351 | 28.415 | 14.264 | 339.824 | 36.227 | 0.363 | 8.446 | | 452.890 |
| **1948** | 26.301 | 27.153 | 14.762 | 354.509 | 47.156 | 0.599 | 9.172 | | 479.652 |
| **1949** | 26.871 | 26.235 | 14.806 | 375.159 | 48.200 | 0.462 | 8.871 | | 500.604 |
| **1950** | 28.290 | 27.152 | 15.249 | 392.688 | 55.634 | 1.300 | 10.057 | | 530.371 |
| **1951** | 29.344 | 27.030 | 14.790 | 428.748 | 71.125 | 1.599 | 12.678 | | 585.314 |
| **1952** | 29.848 | 27.088 | 14.872 | 441.195 | 74.260 | 1.970 | 13.579 | | 602.811 |
| **1953** | 29.490 | 26.904 | 14.691 | 425.293 | 79.877 | 2.986 | 13.562 | | 592.803 |
| **1954** | 30.053 | 27.001 | 14.661 | 431.486 | 96.796 | 3.724 | 14.936 | | 618.657 |
| **1955** | 30.465 | 27.204 | 14.059 | 447.272 | 111.341 | 4.553 | 15.793 | | 650.686 |
| **1956** | 30.975 | 27.071 | 13.516 | 467.356 | 120.942 | 5.550 | 16.348 | 0.031 | 681.789 |
| **1957** | 31.322 | 27.347 | 13.370 | 476.639 | 131.716 | 6.368 | 17.287 | 0.124 | 704.173 |
| **1958** | 31.897 | 27.251 | 12.902 | 459.873 | 144.564 | 6.833 | 18.874 | 0.094 | 702.289 |
| **1959** | 32.418 | 26.959 | 12.614 | 434.755 | 165.140 | 8.825 | 20.085 | 0.386 | 701.181 |
| **1960** | 33.367 | 27.442 | 12.131 | 418.958 | 186.138 | 10.734 | 23.171 | 0.695 | 712.636 |
| **1961** | 34.214 | 28.194 | 11.647 | 414.982 | 208.041 | 12.305 | 23.463 | 0.826 | 733.673 |
| **1962** | 35.257 | 27.854 | 11.096 | 429.532 | 241.686 | 13.588 | 23.726 | 1.227 | 783.966 |
| **1963** | 35.526 | 28.307 | 10.686 | 434.447 | 276.497 | 14.281 | 26.095 | 2.062 | 827.902 |
| **1964** | 36.085 | 28.975 | 10.161 | 430.061 | 318.266 | 15.707 | 25.443 | 3.245 | 867.943 |
| **1965** | 36.548 | 29.271 | 9.628 | 411.673 | 358.260 | 17.316 | 28.128 | 5.710 | 896.535 |
| **1966** | 36.613 | 29.376 | 9.108 | 386.575 | 394.479 | 20.265 | 30.568 | 7.547 | 914.531 |
| **1967** | 37.320 | 29.866 | 8.431 | 377.169 | 427.115 | 25.702 | 30.602 | 8.970 | 945.175 |
| **1968** | 37.753 | 30.241 | 7.955 | 372.933 | 471.780 | 36.334 | 31.853 | 9.961 | 998.811 |
| **1969** | 37.771 | 30.636 | 7.519 | 365.276 | 521.104 | 49.760 | 31.111 | 12.391 | 1 055.568 |
| **1970** | 38.856 | 31.515 | 6.999 | 345.827 | 587.802 | 64.011 | 32.833 | 13.092 | 1 120.935 |
| **1971** | 39.172 | 30.812 | 6.155 | 335.036 | 612.362 | 84.000 | 33.074 | 15.079 | 1 155.690 |
| **1972** | 39.322 | 31.557 | 5.645 | 307.755 | 656.724 | 107.831 | 33.650 | 19.419 | 1 201.902 |
| **1973** | 39.977 | 31.650 | 5.381 | 311.954 | 702.475 | 125.292 | 34.497 | 21.329 | 1 272.555 |
| **1974** | 40.043 | 32.026 | 4.813 | 300.131 | 659.879 | 144.214 | 36.740 | 24.408 | 1 242.253 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1975** | 39.864 | 31.617 | 4.405 | 296.565 | 623.231 | 153.906 | 37.532 | 32.590 | 1 219.710 |
| **1976** | 40.462 | 31.182 | 4.151 | 306.443 | 668.482 | 166.506 | 34.380 | 37.739 | 1 289.343 |
| **1977** | 40.641 | 31.623 | 3.803 | 299.910 | 652.909 | 169.914 | 41.436 | 44.969 | 1 285.206 |
| **1978** | 41.257 | 32.665 | 3.468 | 303.011 | 677.000 | 175.815 | 41.359 | 50.542 | 1 325.118 |
| **1979** | 41.511 | 33.752 | 3.196 | 315.291 | 686.134 | 186.773 | 43.378 | 55.912 | 1 365.946 |
| **1980** | 41.349 | 33.987 | 3.028 | 332.099 | 632.281 | 184.833 | 41.665 | 65.622 | 1 334.863 |
| **1981** | 41.247 | 34.199 | 2.913 | 323.003 | 582.101 | 180.171 | 42.344 | 88.297 | 1 294.276 |
| **1982** | 41.879 | 34.705 | 2.592 | 325.923 | 548.218 | 173.877 | 41.919 | 96.395 | 1 265.508 |
| **1983** | 42.071 | 37.392 | 2.475 | 318.005 | 535.311 | 181.597 | 43.887 | 113.008 | 1 273.746 |
| **1984** | 41.810 | 38.501 | 2.225 | 287.600 | 535.501 | 190.529 | 43.965 | 143.588 | 1 283.719 |
| **1985** | 42.089 | 40.508 | 1.896 | 327.669 | 524.305 | 198.939 | 43.978 | 172.527 | 1 351.912 |
| **1986** | 42.399 | 39.792 | 1.715 | 323.332 | 548.787 | 203.373 | 42.944 | 186.323 | 1 388.664 |
| **1987** | 42.327 | 40.297 | 1.445 | 319.456 | 538.796 | 215.112 | 46.338 | 190.551 | 1 394.324 |
| **1988** | 42.592 | 42.190 | 1.455 | 315.792 | 545.391 | 210.957 | 48.800 | 203.616 | 1 410.792 |
| **1989** | 42.617 | 43.714 | 1.194 | 308.183 | 542.670 | 217.295 | 43.217 | 215.213 | 1 414.104 |
| **1990** | 42.194 | 46.220 | 1.115 | 300.876 | 556.368 | 224.766 | 46.160 | 214.060 | 1 431.759 |
| **1991** | 42.559 | 49.686 | 1.027 | 288.779 | 569.844 | 242.982 | 46.315 | 221.566 | 1 462.758 |
| **1992** | 43.464 | 49.637 | 0.971 | 266.727 | 579.922 | 240.954 | 49.387 | 225.207 | 1 456.269 |
| **1993** | 42.906 | 50.262 | 0.880 | 246.652 | 573.255 | 255.088 | 51.277 | 235.090 | 1 455.410 |
| **1994** | 42.906 | 50.711 | 0.822 | 243.503 | 576.423 | 256.010 | 52.219 | 234.850 | 1 457.444 |
| **1995** | 43.211 | 53.281 | 0.742 | 238.831 | 582.010 | 276.719 | 53.245 | 240.414 | 1 488.453 |
| **1996** | 44.193 | 55.669 | 0.657 | 234.092 | 596.412 | 307.234 | 51.015 | 252.114 | 1 541.387 |
| **1997** | 44.193 | 57.482 | 0.600 | 224.988 | 598.555 | 306.031 | 55.480 | 255.016 | 1 542.346 |
| **1998** | 44.775 | 59.788 | 0.534 | 220.894 | 608.200 | 318.811 | 59.549 | 252.304 | 1 564.854 |
| **1999** | 45.030 | 60.044 | 0.528 | 209.925 | 603.645 | 333.139 | 62.273 | 257.081 | 1 571.665 |
| **2000** | 45.436 | 62.504 | 0.488 | 220.537 | 596.300 | 343.692 | 69.934 | 257.104 | 1 595.995 |
| **2001** | 45.777 | 61.171 | 0.480 | 221.954 | 612.569 | 355.152 | 72.279 | 264.970 | 1 634.352 |
| **2002** | 46.022 | 62.807 | 0.470 | 220.304 | 619.564 | 357.567 | 72.228 | 266.117 | 1 645.078 |
| **2003** | 45.973 | 66.880 | 0.458 | 227.387 | 624.962 | 375.218 | 74.961 | 267.811 | 1 683.650 |
| **2004** | 46.086 | 70.378 | 0.449 | 226.754 | 624.539 | 386.144 | 84.987 | 271.330 | 1 710.667 |
| **2005** | 46.413 | 72.302 | 0.439 | 218.614 | 624.384 | 395.499 | 92.335 | 267.775 | 1 717.762 |
| **2006** | 46.589 | 72.441 | 0.393 | 222.299 | 625.140 | 388.453 | 99.172 | 267.384 | 1 721.872 |
| **2007** | 47.020 | 76.469 | 0.379 | 223.795 | 603.975 | 386.437 | 112.305 | 252.683 | 1 703.063 |
| **2008** | 47.656 | 79.240 | 0.366 | 203.846 | 599.139 | 393.551 | 123.342 | 250.838 | 1 697.979 |
| **2009** | 47.896 | 81.106 | 0.351 | 176.639 | 558.696 | 373.246 | 129.774 | 236.791 | 1 604.499 |
| **2010** | 47.959 | 81.745 | 0.340 | 181.091 | 558.397 | 397.669 | 144.829 | 245.674 | 1 657.705 |
| **2011** | 48.186 | 82.623 | 0.334 | 188.514 | 540.687 | 357.488 | 160.737 | 243.754 | 1 622.322 |
| **2012** | 47.989 | 82.712 | 0.318 | 200.496 | 522.625 | 345.378 | 184.645 | 234.256 | 1 618.419 |
| **2013** | 48.197 | 83.337 | 0.275 | 194.716 | 514.594 | 340.235 | 203.238 | 230.553 | 1 615.145 |
| **2014** | 49.522 | 84.581 | 0.261 | 179.880 | 502.581 | 300.816 | 214.295 | 230.373 | 1 562.309 |
| **2015** | 48.477 | 84.909 | 0.262 | 173.313 | 510.972 | 315.173 | 234.410 | 225.197 | 1 592.712 |
| **2016** | 48.542 | 86.046 | 0.249 | 152.488 | 517.750 | 339.765 | 237.519 | 219.768 | 1 602.127 |
| **2017** | 48.610 | 86.228 | 0.220 | 147.039 | 523.691 | 352.041 | 256.683 | 215.280 | 1 629.792 |
| **2018** | 48.735 | 85.225 | 0.116 | 135.096 | 519.214 | 345.462 | 272.833 | 216.263 | 1 622.944 |

**Table A 7.** Total energy consumption per source in Eastern Europe 1820-2018 (Mtoe) (Figure 13; Total and per capita)



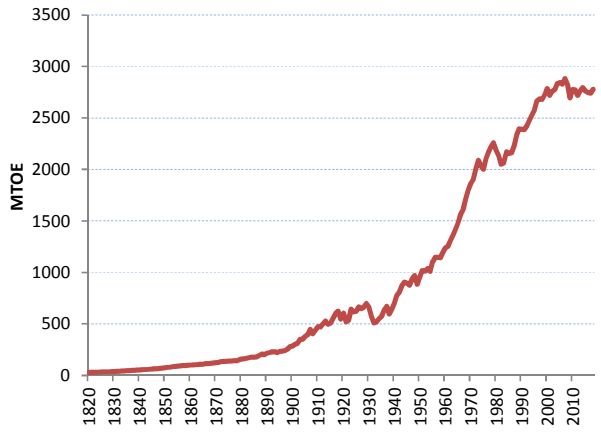

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 7.514 | 22.581 | 9.088 | 0.245 | | | | | 39.429 |
| **1821** | 7.585 | 22.776 | 9.162 | 0.271 | | | | | 39.794 |
| **1822** | 7.657 | 22.972 | 9.236 | 0.297 | | | | | 40.163 |
| **1823** | 7.730 | 23.170 | 9.311 | 0.399 | | | | | 40.610 |
| **1824** | 7.804 | 23.370 | 9.385 | 0.417 | | | | | 40.976 |
| **1825** | 7.878 | 23.572 | 9.460 | 0.434 | | | | | 41.343 |
| **1826** | 7.952 | 23.775 | 9.534 | 0.399 | | | | | 41.661 |
| **1827** | 8.028 | 23.981 | 9.609 | 0.428 | | | | | 42.046 |
| **1828** | 8.104 | 24.188 | 9.685 | 0.396 | | | | | 42.373 |
| **1829** | 8.181 | 24.397 | 9.760 | 0.349 | | | | | 42.687 |
| **1830** | 8.259 | 24.608 | 9.836 | 0.428 | | | | | 43.131 |
| **1831** | 8.338 | 24.820 | 9.913 | 0.368 | | | | | 43.439 |
| **1832** | 8.417 | 25.035 | 9.989 | 0.447 | | | | | 43.888 |
| **1833** | 8.497 | 25.252 | 10.066 | 0.458 | | | | | 44.274 |
| **1834** | 8.578 | 25.470 | 10.144 | 0.499 | | | | | 44.691 |
| **1835** | 8.660 | 25.691 | 10.222 | 0.529 | | | | | 45.102 |
| **1836** | 8.742 | 25.914 | 10.301 | 0.593 | | | | | 45.549 |
| **1837** | 8.826 | 26.138 | 10.380 | 0.630 | | | | | 45.974 |
| **1838** | 8.910 | 26.365 | 10.460 | 0.699 | | | | | 46.433 |
| **1839** | 8.995 | 26.594 | 10.540 | 0.776 | | | | | 46.905 |
| **1840** | 9.080 | 26.824 | 10.622 | 0.889 | | | | | 47.416 |
| **1841** | 9.167 | 27.057 | 10.704 | 0.971 | | | | | 47.899 |
| **1842** | 9.254 | 27.292 | 10.787 | 1.020 | | | | | 48.353 |
| **1843** | 9.343 | 27.529 | 10.870 | 0.996 | | | | | 48.738 |
| **1844** | 9.432 | 27.768 | 10.955 | 1.115 | | | | | 49.269 |
| **1845** | 9.522 | 28.010 | 11.040 | 1.291 | | | | | 49.862 |
| **1846** | 9.613 | 28.253 | 11.126 | 1.393 | | | | | 50.386 |
| **1847** | 9.705 | 28.499 | 11.214 | 1.429 | | | | | 50.846 |
| **1848** | 9.797 | 28.747 | 11.302 | 1.468 | | | | | 51.314 |
| **1849** | 9.891 | 28.997 | 11.391 | 1.377 | | | | | 51.657 |
| **1850** | 9.986 | 29.250 | 11.482 | 1.452 | | | | | 52.169 |
| **1851** | 10.085 | 29.409 | 11.582 | 1.585 | | | | | 52.661 |
| **1852** | 10.183 | 29.562 | 11.680 | 1.831 | | | | | 53.256 |
| **1853** | 10.283 | 29.716 | 11.780 | 2.016 | | | | | 53.795 |
| **1854** | 10.383 | 29.871 | 11.881 | 2.165 | | | | | 54.300 |

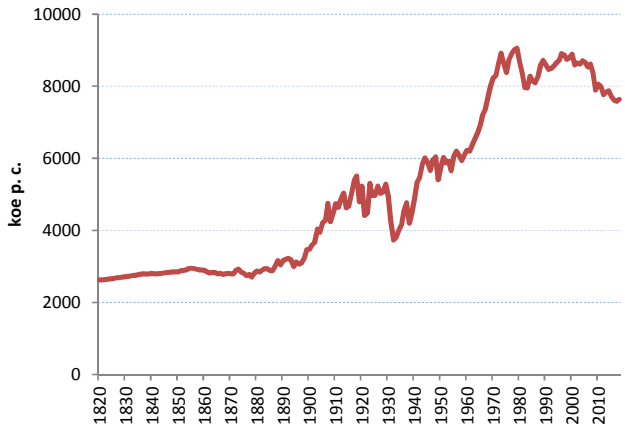
| | | | | | | |
|---|---|---|---|---|---|---|
| **1855** | 10.484 | 30.027 | 11.983 | 2.544 | | 55.037 |
| **1856** | 10.587 | 30.184 | 12.085 | 2.861 | | 55.717 |
| **1857** | 10.690 | 30.342 | 12.189 | 3.115 | | 56.336 |
| **1858** | 10.795 | 30.501 | 12.293 | 2.938 | | 56.527 |
| **1859** | 10.900 | 30.662 | 12.398 | 3.521 | | 57.481 |
| **1860** | 11.007 | 30.823 | 12.504 | 3.724 | 0.004 | 58.062 |
| **1861** | 11.115 | 31.152 | 12.610 | 4.110 | 0.003 | 58.990 |
| **1862** | 11.224 | 31.485 | 12.716 | 4.568 | 0.004 | 59.997 |
| **1863** | 11.334 | 31.821 | 12.822 | 5.023 | 0.006 | 61.007 |
| **1864** | 11.446 | 32.162 | 12.929 | 5.393 | 0.008 | 61.937 |
| **1865** | 11.558 | 32.506 | 13.035 | 6.051 | 0.009 | 63.159 |
| **1866** | 11.672 | 32.854 | 13.140 | 6.444 | 0.011 | 64.121 |
| **1867** | 11.787 | 33.206 | 13.245 | 7.254 | 0.016 | 65.508 |
| **1868** | 11.903 | 33.563 | 13.349 | 7.969 | 0.029 | 66.812 |
| **1869** | 12.020 | 33.923 | 13.453 | 8.530 | 0.028 | 67.954 |
| **1870** | 12.136 | 34.279 | 13.551 | 9.148 | 0.028 | 69.142 |
| **1871** | 12.288 | 34.579 | 13.667 | 10.758 | 0.023 | 71.316 |
| **1872** | 12.442 | 34.883 | 13.783 | 11.311 | 0.025 | 72.444 |
| **1873** | 12.599 | 35.189 | 13.897 | 12.040 | 0.056 | 73.781 |
| **1874** | 12.757 | 35.499 | 14.009 | 12.923 | 0.109 | 75.298 |
| **1875** | 12.917 | 35.811 | 14.121 | 13.108 | 0.164 | 76.121 |
| **1876** | 13.080 | 36.127 | 14.231 | 13.964 | 0.255 | 77.657 |
| **1877** | 13.244 | 36.445 | 14.340 | 13.416 | 0.354 | 77.800 |
| **1878** | 13.411 | 36.767 | 14.448 | 14.636 | 0.421 | 79.683 |
| **1879** | 13.580 | 37.092 | 14.555 | 15.588 | 0.525 | 81.340 |
| **1880** | 13.751 | 37.420 | 14.661 | 16.482 | 0.593 | 82.907 |
| **1881** | 13.924 | 37.671 | 14.765 | 16.773 | 0.814 | 83.946 |
| **1882** | 14.099 | 37.923 | 14.868 | 17.397 | 0.887 | 85.174 |
| **1883** | 14.277 | 38.178 | 14.971 | 19.282 | 0.961 | 87.669 |
| **1884** | 14.457 | 38.435 | 15.072 | 19.427 | 1.386 | 88.776 |
| **1885** | 14.639 | 38.693 | 15.172 | 20.123 | 1.758 | 90.386 |
| **1886** | 14.736 | 38.954 | 15.271 | 20.437 | 1.809 | 91.207 |
| **1887** | 15.129 | 39.217 | 15.369 | 20.664 | 2.294 | 92.673 |
| **1888** | 15.231 | 39.482 | 15.466 | 22.405 | 2.494 | 95.078 |
| **1889** | 15.282 | 39.749 | 15.563 | 24.035 | 2.500 | 97.129 |
| **1890** | 15.439 | 40.018 | 15.658 | 25.372 | 3.068 | 99.556 |
| **1891** | 15.466 | 40.271 | 15.754 | 26.909 | 3.728 | 102.128 |
| **1892** | 15.777 | 40.525 | 15.849 | 26.726 | 3.871 | 102.747 |
| **1893** | 16.148 | 40.781 | 15.945 | 28.894 | 4.575 | 106.342 |
| **1894** | 16.531 | 41.039 | 16.042 | 29.738 | 4.226 | 107.576 |
| **1895** | 16.581 | 41.298 | 16.141 | 31.362 | 5.808 | 111.190 |
| **1896** | 16.920 | 41.560 | 16.245 | 32.892 | 6.006 | 113.623 |
| **1897** | 17.074 | 41.824 | 16.354 | 35.407 | 6.748 | 117.406 |
| **1898** | 17.303 | 42.089 | 16.469 | 38.543 | 8.585 | 122.989 |
| **1899** | 17.592 | 42.356 | 16.591 | 41.462 | 8.142 | 126.143 |
| **1900** | 17.628 | 42.625 | 16.722 | 43.446 | 10.507 | 130.928 |
| **1901** | 18.044 | 42.857 | 16.923 | 44.679 | 10.713 | 133.215 |
| **1902** | 18.453 | 43.091 | 17.136 | 43.388 | 10.277 | 132.345 |
| **1903** | 18.590 | 43.328 | 17.362 | 44.946 | 9.543 | 133.769 |
| **1904** | 19.045 | 43.566 | 17.601 | 47.453 | 10.142 | 137.807 |
| **1905** | 19.093 | 43.807 | 17.855 | 49.256 | 7.819 | 137.831 |
| **1906** | 19.285 | 44.050 | 18.123 | 53.648 | 8.844 | 143.950 |
| **1907** | 19.489 | 44.295 | 18.405 | 59.401 | 9.721 | 151.312 |
| **1908** | 19.945 | 44.542 | 18.701 | 60.947 | 10.284 | 154.419 |
| **1909** | 20.310 | 44.792 | 19.011 | 62.255 | 11.467 | 157.835 |
| **1910** | 20.610 | 45.044 | 19.334 | 60.815 | 11.262 | 157.065 |
| **1911** | 20.874 | 45.146 | 19.665 | 64.670 | 10.672 | 161.028 |
| **1912** | 21.335 | 45.250 | 20.009 | 72.836 | 10.580 | 170.009 |
| **1913** | 21.605 | 45.356 | 20.363 | 77.955 | 10.036 | 175.315 |
| **1914** | 21.576 | 44.660 | 20.360 | 67.253 | 10.518 | 164.368 |
| **1915** | 21.563 | 43.977 | 20.356 | 59.598 | 11.605 | 157.098 |
| **1916** | 21.246 | 43.305 | 20.347 | 68.838 | 11.684 | 165.421 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1917** | 20.907 | 42.645 | 20.329 | 70.821 | 10.306 | | | | 165.008 |
| **1918** | 19.828 | 41.996 | 20.296 | 51.996 | 5.458 | | | | 139.574 |
| **1919** | 19.458 | 41.358 | 20.244 | 17.202 | 6.175 | | | | 104.438 |
| **1920** | 19.403 | 40.731 | 20.169 | 43.650 | 5.819 | | | | 129.772 |
| **1921** | 19.148 | 40.153 | 20.054 | 44.445 | 5.750 | | 0.001 | | 129.552 |
| **1922** | 19.526 | 39.892 | 20.067 | 44.659 | 6.913 | 0.548 | 0.001 | | 131.607 |
| **1923** | 19.985 | 39.818 | 20.146 | 40.700 | 7.770 | 0.661 | 0.002 | | 129.082 |
| **1924** | 20.792 | 40.020 | 20.339 | 44.429 | 8.382 | 0.773 | 0.003 | | 134.737 |
| **1925** | 21.667 | 40.367 | 20.582 | 42.829 | 8.829 | 0.885 | 0.007 | | 135.166 |
| **1926** | 22.345 | 40.736 | 20.815 | 49.397 | 10.353 | 0.998 | 0.009 | | 144.653 |
| **1927** | 22.842 | 41.048 | 21.000 | 59.535 | 11.561 | 1.110 | 0.031 | | 157.127 |
| **1928** | 23.334 | 41.296 | 21.137 | 63.369 | 12.468 | 1.222 | 0.073 | | 162.899 |
| **1929** | 23.677 | 41.469 | 21.221 | 70.776 | 13.600 | 1.558 | 0.078 | | 172.379 |
| **1930** | 24.096 | 41.546 | 21.246 | 68.370 | 17.621 | 1.894 | 0.089 | | 174.862 |
| **1931** | 24.382 | 41.729 | 21.233 | 72.077 | 21.035 | 2.230 | 0.105 | | 182.791 |
| **1932** | 24.517 | 41.750 | 21.133 | 71.125 | 19.259 | 2.566 | 0.123 | | 180.473 |
| **1933** | 24.752 | 41.729 | 21.007 | 77.721 | 19.926 | 2.902 | 0.162 | | 188.199 |
| **1934** | 25.150 | 41.772 | 20.914 | 90.288 | 23.751 | 3.238 | 0.272 | | 205.385 |
| **1935** | 25.668 | 41.824 | 20.826 | 100.767 | 25.536 | 3.574 | 0.401 | | 218.596 |
| **1936** | 26.091 | 41.978 | 20.792 | 113.829 | 28.905 | 3.910 | 0.454 | | 235.958 |
| **1937** | 26.668 | 42.313 | 20.853 | 120.429 | 30.301 | 4.246 | 0.485 | | 245.296 |
| **1938** | 27.125 | 42.769 | 20.978 | 122.764 | 32.733 | 4.301 | 0.567 | | 251.237 |
| **1939** | 27.684 | 43.209 | 21.100 | 128.876 | 37.281 | 4.357 | 0.535 | | 263.042 |
| **1940** | 27.417 | 43.311 | 21.060 | 179.621 | 37.416 | 4.412 | 0.582 | | 313.819 |
| **1941** | 22.871 | 41.854 | 20.467 | 155.079 | 38.900 | 4.468 | 0.105 | | 283.744 |
| **1942** | 21.970 | 40.472 | 19.903 | 127.865 | 37.999 | 4.524 | 0.084 | | 252.817 |
| **1943** | 21.093 | 39.136 | 19.351 | 157.242 | 34.443 | 4.580 | 0.068 | | 275.914 |
| **1944** | 20.752 | 37.878 | 18.826 | 138.791 | 42.561 | 4.636 | 0.100 | | 263.542 |
| **1945** | 21.712 | 37.215 | 18.584 | 123.435 | 25.773 | 4.783 | 0.568 | | 232.070 |
| **1946** | 25.638 | 36.564 | 18.335 | 153.660 | 29.933 | 5.038 | 0.790 | | 269.957 |
| **1947** | 25.898 | 35.924 | 18.080 | 168.156 | 33.280 | 5.691 | 0.901 | | 287.931 |
| **1948** | 26.162 | 35.296 | 17.817 | 185.951 | 35.513 | 7.481 | 1.208 | | 309.428 |
| **1949** | 26.427 | 34.678 | 17.547 | 206.586 | 39.867 | 9.904 | 1.385 | | 336.394 |
| **1950** | 26.696 | 34.071 | 17.268 | 222.660 | 41.698 | 8.939 | 1.524 | | 352.857 |
| **1951** | 27.406 | 33.673 | 17.257 | 241.996 | 46.008 | 10.304 | 1.655 | | 378.300 |
| **1952** | 28.159 | 33.309 | 17.247 | 258.389 | 51.390 | 11.507 | 1.797 | | 401.797 |
| **1953** | 28.947 | 32.965 | 17.228 | 275.048 | 56.721 | 12.647 | 2.218 | | 425.773 |
| **1954** | 29.762 | 32.629 | 17.196 | 294.906 | 63.106 | 13.514 | 2.189 | | 453.302 |
| **1955** | 30.597 | 32.295 | 17.145 | 290.606 | 74.305 | 15.173 | 2.843 | | 462.964 |
| **1956** | 31.449 | 31.956 | 17.072 | 354.411 | 86.176 | 18.571 | 3.420 | | 543.056 |
| **1957** | 32.313 | 31.611 | 16.978 | 383.148 | 99.013 | 25.325 | 4.516 | | 592.904 |
| **1958** | 33.189 | 31.257 | 16.860 | 402.823 | 110.426 | 35.175 | 5.299 | | 635.029 |
| **1959** | 34.075 | 30.895 | 16.721 | 417.272 | 120.292 | 42.874 | 5.430 | | 667.558 |
| **1960** | 34.972 | 30.526 | 16.561 | 426.200 | 132.232 | 52.624 | 6.000 | | 699.115 |
| **1961** | 35.855 | 29.996 | 16.381 | 430.570 | 144.563 | 64.057 | 6.784 | | 728.207 |
| **1962** | 37.234 | 29.461 | 16.182 | 442.168 | 164.295 | 78.230 | 8.240 | | 775.809 |
| **1963** | 38.164 | 28.918 | 15.963 | 458.887 | 181.200 | 94.509 | 8.712 | | 826.353 |
| **1964** | 38.812 | 28.364 | 15.724 | 432.662 | 196.593 | 112.955 | 8.847 | 0.383 | 834.339 |
| **1965** | 39.690 | 27.796 | 15.466 | 439.722 | 200.424 | 123.101 | 9.522 | 0.538 | 856.258 |
| **1966** | 40.916 | 27.214 | 15.193 | 450.542 | 215.942 | 137.166 | 10.601 | 0.597 | 898.172 |
| **1967** | 41.019 | 26.624 | 14.910 | 455.178 | 236.653 | 151.555 | 10.770 | 0.652 | 937.361 |
| **1968** | 41.639 | 26.030 | 14.624 | 454.585 | 253.781 | 164.317 | 12.322 | 0.905 | 968.204 |
| **1969** | 42.201 | 25.443 | 14.344 | 469.063 | 273.199 | 178.504 | 13.584 | 1.050 | 1 017.388 |
| **1970** | 42.331 | 24.866 | 14.075 | 471.645 | 300.725 | 196.828 | 14.827 | 1.268 | 1 066.565 |
| **1971** | 43.119 | 24.406 | 13.822 | 482.039 | 321.098 | 214.651 | 15.150 | 1.556 | 1 115.843 |
| **1972** | 43.280 | 23.953 | 13.589 | 495.767 | 346.810 | 225.037 | 15.379 | 2.840 | 1 166.656 |
| **1973** | 44.060 | 23.508 | 13.378 | 500.696 | 378.295 | 244.167 | 15.211 | 4.199 | 1 223.515 |
| **1974** | 45.173 | 23.070 | 13.193 | 503.697 | 408.907 | 258.758 | 16.832 | 6.602 | 1 276.232 |
| **1975** | 45.458 | 22.638 | 13.037 | 521.753 | 430.571 | 282.211 | 16.125 | 9.042 | 1 340.836 |
| **1976** | 46.507 | 22.214 | 12.912 | 526.852 | 446.015 | 312.117 | 17.113 | 12.561 | 1 396.290 |
| **1977** | 46.508 | 21.796 | 12.821 | 538.388 | 466.240 | 334.650 | 18.905 | 16.430 | 1 455.738 |
| **1978** | 47.244 | 21.386 | 12.766 | 544.225 | 495.083 | 356.214 | 20.240 | 16.824 | 1 513.981 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1979** | 47.410 | 20.981 | 12.747 | 550.191 | 504.520 | 374.944 | 21.959 | 19.556 | 1 552.309 |
| **1980** | 48.019 | 20.583 | 12.766 | 548.300 | 521.030 | 389.120 | 22.786 | 24.371 | 1 586.974 |
| **1981** | 48.193 | 20.352 | 12.821 | 535.629 | 518.720 | 411.044 | 22.731 | 29.280 | 1 598.769 |
| **1982** | 48.152 | 20.120 | 12.912 | 546.495 | 512.038 | 439.806 | 21.181 | 34.313 | 1 635.016 |
| **1983** | 48.723 | 19.888 | 13.039 | 549.978 | 502.445 | 466.637 | 21.457 | 39.120 | 1 661.286 |
| **1984** | 49.159 | 19.657 | 13.201 | 553.701 | 506.451 | 505.802 | 24.116 | 49.392 | 1 721.480 |
| **1985** | 49.446 | 19.428 | 13.398 | 539.020 | 481.601 | 531.856 | 22.261 | 56.837 | 1 713.847 |
| **1986** | 50.181 | 19.202 | 13.627 | 550.968 | 484.936 | 549.733 | 22.651 | 57.327 | 1 748.625 |
| **1987** | 50.949 | 18.975 | 13.882 | 560.557 | 490.963 | 574.288 | 22.701 | 67.428 | 1 799.744 |
| **1988** | 51.435 | 18.742 | 14.155 | 550.997 | 483.909 | 599.998 | 23.085 | 79.654 | 1 821.975 |
| **1989** | 51.454 | 18.491 | 14.429 | 529.183 | 483.612 | 613.442 | 22.248 | 80.017 | 1 812.876 |
| **1990** | 50.744 | 18.219 | 14.692 | 485.140 | 481.159 | 634.320 | 22.438 | 77.610 | 1 784.321 |
| **1991** | 47.803 | 17.653 | 14.930 | 448.150 | 454.621 | 631.560 | 22.957 | 77.086 | 1 714.761 |
| **1992** | 47.271 | 17.081 | 15.134 | 428.147 | 411.185 | 595.390 | 23.144 | 75.466 | 1 612.818 |
| **1993** | 46.239 | 16.508 | 15.294 | 397.840 | 339.267 | 582.020 | 23.982 | 75.935 | 1 497.086 |
| **1994** | 45.197 | 15.941 | 15.403 | 354.604 | 301.971 | 544.780 | 24.638 | 67.692 | 1 370.226 |
| **1995** | 45.201 | 15.384 | 15.454 | 339.454 | 278.272 | 530.876 | 25.070 | 69.830 | 1 319.541 |
| **1996** | 44.889 | 14.838 | 15.441 | 332.373 | 253.046 | 541.644 | 23.129 | 76.574 | 1 301.934 |
| **1997** | 44.829 | 14.305 | 15.360 | 322.151 | 250.693 | 506.895 | 23.213 | 76.810 | 1 254.255 |
| **1998** | 45.240 | 13.786 | 15.211 | 300.282 | 247.107 | 514.313 | 24.233 | 74.744 | 1 234.916 |
| **1999** | 44.834 | 13.284 | 14.996 | 289.672 | 241.840 | 518.884 | 24.526 | 77.423 | 1 225.458 |
| **2000** | 45.019 | 12.800 | 14.720 | 290.058 | 236.291 | 524.447 | 24.104 | 83.399 | 1 230.839 |
| **2001** | 45.449 | 12.485 | 14.389 | 291.444 | 241.545 | 534.403 | 25.329 | 86.793 | 1 251.836 |
| **2002** | 45.814 | 12.526 | 14.008 | 290.934 | 237.873 | 538.407 | 24.358 | 91.117 | 1 255.037 |
| **2003** | 45.928 | 13.082 | 13.586 | 299.979 | 244.143 | 548.408 | 23.029 | 95.306 | 1 283.459 |
| **2004** | 46.421 | 12.179 | 13.131 | 293.228 | 248.863 | 557.406 | 26.457 | 95.895 | 1 293.580 |
| **2005** | 46.732 | 12.469 | 12.650 | 284.820 | 252.786 | 566.464 | 27.565 | 96.012 | 1 299.497 |
| **2006** | 46.874 | 12.461 | 12.152 | 297.107 | 263.059 | 585.365 | 27.784 | 99.092 | 1 343.893 |
| **2007** | 46.561 | 12.888 | 11.641 | 296.233 | 264.631 | 592.894 | 27.461 | 100.056 | 1 352.365 |
| **2008** | 46.890 | 13.285 | 11.123 | 304.645 | 269.064 | 589.423 | 27.971 | 102.338 | 1 364.739 |
| **2009** | 46.793 | 14.326 | 10.599 | 277.771 | 258.764 | 534.974 | 30.407 | 100.494 | 1 274.129 |
| **2010** | 46.640 | 15.599 | 10.072 | 286.415 | 262.951 | 573.421 | 32.919 | 101.566 | 1 329.582 |
| **2011** | 46.871 | 15.729 | 9.543 | 300.192 | 276.465 | 591.619 | 32.289 | 103.610 | 1 376.319 |
| **2012** | 46.822 | 16.195 | 9.014 | 298.162 | 279.661 | 583.420 | 34.885 | 105.297 | 1 373.455 |
| **2013** | 47.164 | 16.325 | 8.482 | 293.972 | 273.583 | 571.476 | 40.767 | 101.688 | 1 353.458 |
| **2014** | 47.757 | 15.649 | 7.949 | 279.253 | 283.391 | 565.675 | 41.966 | 106.019 | 1 347.658 |
| **2015** | 47.985 | 15.645 | 7.412 | 273.065 | 277.149 | 557.349 | 43.740 | 109.084 | 1 331.430 |
| **2016** | 48.205 | 16.478 | 6.872 | 271.534 | 285.015 | 552.598 | 45.939 | 106.746 | 1 333.387 |
| **2017** | 48.415 | 16.503 | 6.329 | 270.943 | 292.179 | 558.919 | 46.648 | 111.745 | 1 351.680 |
| **2018** | 48.477 | 16.524 | 6.337 | 283.636 | 298.222 | 587.682 | 47.707 | 112.993 | 1 401.578 |

**Table A 8.** Total energy consumption per source in North America 1820-2018 (Mtoe) (Figure 14; Total and per capita)



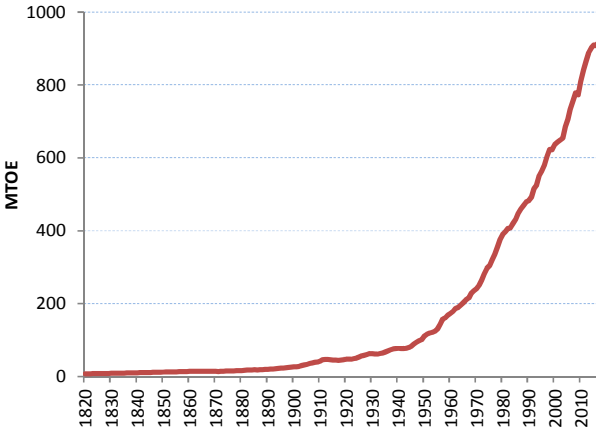

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 1.106 | 23.524 | 2.456 | 0.268 | | | | | 27.354 |
| **1821** | 1.139 | 24.300 | 2.537 | 0.281 | | | | | 28.257 |
| **1822** | 1.174 | 25.101 | 2.624 | 0.289 | | | | | 29.188 |
| **1823** | 1.209 | 26.046 | 2.735 | 0.299 | | | | | 30.289 |
| **1824** | 1.261 | 27.041 | 2.830 | 0.331 | | | | | 31.462 |
| **1825** | 1.296 | 28.060 | 2.933 | 0.364 | | | | | 32.653 |
| **1826** | 1.330 | 28.997 | 3.068 | 0.413 | | | | | 33.808 |
| **1827** | 1.388 | 29.937 | 3.251 | 0.450 | | | | | 35.026 |
| **1828** | 1.423 | 30.785 | 3.251 | 0.513 | | | | | 35.971 |
| **1829** | 1.457 | 31.636 | 3.330 | 0.568 | | | | | 36.990 |
| **1830** | 1.491 | 32.490 | 3.417 | 0.648 | | | | | 38.046 |
| **1831** | 1.536 | 33.550 | 3.493 | 0.696 | | | | | 39.275 |
| **1832** | 1.582 | 34.663 | 3.674 | 0.902 | | | | | 40.821 |
| **1833** | 1.627 | 35.779 | 3.789 | 1.040 | | | | | 42.234 |
| **1834** | 1.672 | 36.900 | 3.937 | 1.025 | | | | | 43.534 |
| **1835** | 1.718 | 38.049 | 4.061 | 1.288 | | | | | 45.115 |
| **1836** | 1.763 | 39.111 | 4.220 | 1.392 | | | | | 46.485 |
| **1837** | 1.843 | 40.197 | 4.333 | 1.547 | | | | | 47.919 |
| **1838** | 1.894 | 41.260 | 4.481 | 1.499 | | | | | 49.133 |
| **1839** | 1.963 | 42.347 | 4.605 | 1.632 | | | | | 50.546 |
| **1840** | 2.038 | 43.434 | 4.741 | 1.730 | | | | | 51.943 |
| **1841** | 2.031 | 44.997 | 4.843 | 1.846 | | | | | 53.716 |
| **1842** | 2.051 | 46.536 | 4.932 | 2.038 | | | | | 55.558 |
| **1843** | 2.043 | 48.100 | 5.046 | 2.270 | | | | | 57.459 |
| **1844** | 2.031 | 49.641 | 5.173 | 2.713 | | | | | 59.558 |
| **1845** | 2.089 | 51.206 | 5.250 | 3.232 | | | | | 61.777 |
| **1846** | 2.171 | 52.607 | 5.363 | 3.645 | | | | | 63.786 |
| **1847** | 2.229 | 53.999 | 5.453 | 4.313 | | | | | 65.994 |
| **1848** | 2.287 | 55.405 | 5.581 | 4.786 | | | | | 68.058 |
| **1849** | 2.369 | 57.208 | 5.728 | 5.208 | | | | | 70.513 |
| **1850** | 2.464 | 59.098 | 5.890 | 5.644 | | | | | 73.096 |
| **1851** | 2.579 | 61.562 | 6.229 | 6.990 | | | | | 77.359 |
| **1852** | 2.671 | 63.392 | 6.373 | 7.608 | | | | | 80.043 |
| **1853** | 2.798 | 65.234 | 6.605 | 8.548 | | | | | 83.184 |
| **1854** | 2.882 | 67.063 | 6.828 | 10.053 | | | | | 86.826 |
| **1855** | 2.977 | 68.881 | 7.052 | 10.799 | | | | | 89.708 |

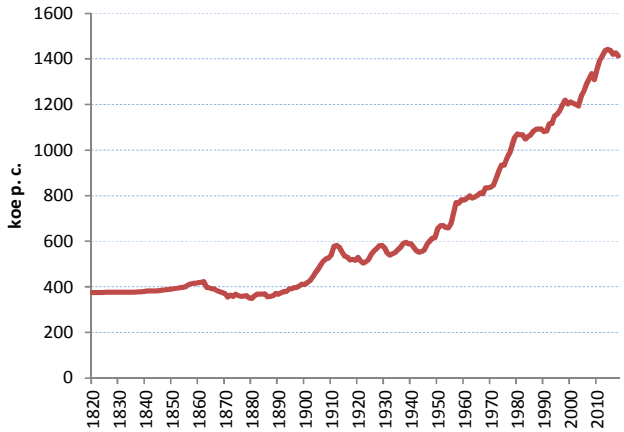
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1856** | 3.097 | 70.330 | 7.294 | 11.345 | | | | 92.065 |
| **1857** | 3.193 | 71.770 | 7.499 | 11.644 | | | | 94.105 |
| **1858** | 3.291 | 73.152 | 7.723 | 11.836 | | | | 96.002 |
| **1859** | 3.413 | 74.526 | 7.946 | 12.867 | | | | 98.752 |
| **1860** | 3.619 | 75.866 | 8.085 | 13.416 | 0.073 | | | 101.059 |
| **1861** | 3.700 | 76.930 | 8.400 | 12.768 | 0.108 | | | 101.906 |
| **1862** | 3.816 | 77.869 | 8.424 | 13.169 | 0.143 | | | 103.422 |
| **1863** | 3.934 | 78.780 | 8.448 | 15.272 | 0.178 | | | 106.613 |
| **1864** | 4.053 | 79.663 | 8.494 | 16.425 | 0.213 | | | 108.847 |
| **1865** | 4.174 | 80.540 | 8.497 | 16.432 | 0.248 | | | 109.891 |
| **1866** | 4.319 | 80.765 | 8.521 | 19.292 | 0.258 | | | 113.155 |
| **1867** | 4.443 | 80.938 | 8.546 | 20.040 | 0.267 | | | 114.233 |
| **1868** | 4.568 | 81.082 | 8.694 | 22.727 | 0.276 | | | 117.347 |
| **1869** | 4.695 | 81.150 | 8.815 | 25.571 | 0.285 | | | 120.516 |
| **1870** | 4.855 | 81.093 | 9.053 | 27.029 | 0.294 | | | 122.324 |
| **1871** | 4.986 | 82.003 | 9.395 | 28.336 | 0.294 | | | 125.013 |
| **1872** | 5.141 | 82.755 | 9.758 | 34.697 | 0.293 | | | 132.644 |
| **1873** | 5.322 | 83.493 | 10.033 | 38.148 | 0.293 | | | 137.289 |
| **1874** | 5.480 | 83.883 | 10.312 | 36.753 | 0.293 | | | 136.721 |
| **1875** | 5.641 | 84.354 | 10.581 | 37.361 | 0.293 | | | 138.230 |
| **1876** | 5.804 | 84.131 | 10.872 | 36.648 | 0.737 | | | 138.191 |
| **1877** | 5.993 | 84.014 | 11.158 | 40.247 | 1.181 | | | 142.592 |
| **1878** | 6.159 | 83.502 | 11.462 | 39.119 | 1.626 | | | 141.868 |
| **1879** | 6.282 | 83.074 | 11.782 | 47.288 | 2.070 | | | 150.495 |
| **1880** | 6.439 | 82.680 | 12.147 | 53.184 | 2.562 | | | 157.012 |
| **1881** | 6.521 | 82.253 | 12.404 | 56.157 | 2.269 | | | 159.604 |
| **1882** | 6.671 | 81.730 | 12.660 | 63.095 | 1.999 | 0.092 | | 166.247 |
| **1883** | 6.821 | 81.016 | 13.025 | 69.369 | 1.706 | 0.210 | | 172.147 |
| **1884** | 6.995 | 80.111 | 13.466 | 73.387 | 1.437 | 0.650 | | 176.046 |
| **1885** | 7.145 | 79.111 | 13.873 | 74.070 | 1.144 | 2.059 | | 177.402 |
| **1886** | 7.189 | 78.247 | 14.379 | 76.533 | 1.742 | 2.942 | | 181.033 |
| **1887** | 7.337 | 77.306 | 14.882 | 88.081 | 2.341 | 3.825 | | 193.771 |
| **1888** | 7.484 | 76.263 | 15.482 | 99.999 | 2.940 | 4.708 | | 206.875 |
| **1889** | 7.656 | 75.094 | 15.955 | 95.212 | 3.538 | 5.591 | | 203.047 |
| **1890** | 7.767 | 73.800 | 16.483 | 106.423 | 4.137 | 6.474 | 0.555 | 215.638 |
| **1891** | 7.954 | 72.502 | 16.971 | 113.872 | 4.197 | 5.921 | 0.735 | 222.154 |
| **1892** | 8.105 | 71.052 | 17.467 | 120.917 | 4.258 | 5.369 | 0.975 | 228.143 |
| **1893** | 8.305 | 69.498 | 17.831 | 123.122 | 4.319 | 4.816 | 1.292 | 229.183 |
| **1894** | 8.477 | 67.841 | 18.216 | 115.330 | 4.379 | 4.264 | 1.712 | 220.219 |
| **1895** | 8.648 | 66.081 | 18.381 | 129.813 | 4.440 | 3.711 | 2.270 | 233.343 |
| **1896** | 8.821 | 65.212 | 18.536 | 129.426 | 4.728 | 4.242 | 2.784 | 233.749 |
| **1897** | 8.995 | 64.278 | 18.516 | 135.083 | 5.039 | 4.773 | 3.415 | 240.099 |
| **1898** | 9.193 | 63.302 | 18.539 | 148.212 | 5.327 | 5.304 | 4.190 | 254.065 |
| **1899** | 9.368 | 62.259 | 18.664 | 171.268 | 5.614 | 5.835 | 5.140 | 278.148 |
| **1900** | 9.529 | 59.104 | 18.868 | 177.723 | 5.878 | 6.366 | 6.329 | 283.796 |
| **1901** | 9.694 | 56.295 | 18.997 | 194.322 | 6.403 | 7.070 | 6.901 | 299.682 |
| **1902** | 9.879 | 55.451 | 19.083 | 202.326 | 9.251 | 7.530 | 7.525 | 311.046 |
| **1903** | 10.075 | 54.532 | 19.276 | 238.083 | 11.390 | 7.991 | 8.206 | 349.553 |
| **1904** | 10.279 | 53.538 | 19.572 | 234.210 | 13.562 | 8.316 | 8.972 | 348.450 |
| **1905** | 10.497 | 52.469 | 19.743 | 261.186 | 15.530 | 9.372 | 9.782 | 378.581 |
| **1906** | 10.374 | 52.541 | 20.051 | 275.391 | 14.130 | 10.348 | 10.455 | 393.288 |
| **1907** | 10.575 | 52.776 | 20.461 | 319.074 | 19.852 | 10.889 | 11.197 | 444.824 |
| **1908** | 10.696 | 52.866 | 20.995 | 277.321 | 20.828 | 10.754 | 11.965 | 405.425 |
| **1909** | 10.920 | 52.905 | 21.309 | 306.025 | 21.448 | 12.867 | 12.787 | 438.260 |
| **1910** | 11.153 | 52.893 | 21.706 | 333.793 | 25.628 | 13.598 | 13.689 | 472.459 |
| **1911** | 11.451 | 52.771 | 22.147 | 328.978 | 26.545 | 14.017 | 14.246 | 470.155 |
| **1912** | 11.637 | 52.554 | 22.477 | 355.792 | 27.192 | 15.386 | 14.851 | 499.888 |
| **1913** | 11.908 | 52.386 | 22.710 | 378.936 | 31.243 | 16.179 | 15.479 | 528.840 |
| **1914** | 12.179 | 52.147 | 23.072 | 342.183 | 34.113 | 16.474 | 16.132 | 496.300 |
| **1915** | 12.399 | 51.790 | 23.292 | 350.207 | 36.513 | 17.483 | 16.810 | 508.492 |
| **1916** | 12.594 | 50.750 | 23.306 | 390.348 | 38.753 | 20.985 | 17.215 | 553.951 |
| **1917** | 12.794 | 49.793 | 23.589 | 429.614 | 45.386 | 22.116 | 17.628 | 600.920 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1918** | 12.958 | 48.800 | 23.314 | 449.809 | 49.722 | 19.948 | 18.050 | | 622.600 |
| **1919** | 13.075 | 47.841 | 23.108 | 366.257 | 56.441 | 20.516 | 18.505 | | 545.746 |
| **1920** | 13.645 | 46.870 | 22.477 | 411.768 | 68.640 | 20.930 | 18.970 | | 603.299 |
| **1921** | 14.071 | 46.365 | 21.944 | 331.067 | 69.942 | 17.250 | 18.650 | | 519.289 |
| **1922** | 14.214 | 45.600 | 21.407 | 334.943 | 80.351 | 19.821 | 18.386 | | 534.722 |
| **1923** | 14.541 | 44.789 | 20.832 | 421.313 | 98.616 | 25.968 | 18.105 | | 644.164 |
| **1924** | 14.928 | 43.933 | 19.758 | 389.972 | 98.774 | 29.325 | 17.878 | | 614.568 |
| **1925** | 15.263 | 43.009 | 18.878 | 388.789 | 109.525 | 30.453 | 17.611 | | 623.528 |
| **1926** | 15.560 | 43.085 | 18.469 | 421.357 | 114.513 | 33.537 | 18.158 | | 664.677 |
| **1927** | 15.857 | 43.137 | 17.867 | 399.971 | 117.049 | 36.815 | 18.834 | | 649.530 |
| **1928** | 16.040 | 43.213 | 17.339 | 397.982 | 127.618 | 39.886 | 19.449 | | 661.526 |
| **1929** | 16.222 | 43.265 | 16.807 | 410.859 | 142.524 | 48.767 | 20.049 | | 698.494 |
| **1930** | 16.374 | 43.580 | 16.325 | 364.637 | 152.111 | 49.467 | 20.493 | | 662.987 |
| **1931** | 16.542 | 43.358 | 15.799 | 298.772 | 134.103 | 42.994 | 20.639 | | 572.207 |
| **1932** | 16.689 | 41.847 | 15.355 | 249.803 | 122.852 | 39.806 | 20.931 | | 507.283 |
| **1933** | 16.734 | 41.649 | 14.872 | 255.977 | 129.227 | 39.875 | 21.299 | | 519.633 |
| **1934** | 16.833 | 41.403 | 14.588 | 279.297 | 129.672 | 45.291 | 21.886 | | 548.969 |
| **1935** | 16.523 | 41.157 | 14.369 | 284.168 | 147.377 | 49.032 | 22.357 | | 574.984 |
| **1936** | 16.598 | 41.010 | 14.060 | 321.349 | 163.126 | 55.495 | 22.884 | | 634.521 |
| **1937** | 16.693 | 40.886 | 13.686 | 335.786 | 177.193 | 61.753 | 23.251 | | 669.247 |
| **1938** | 16.934 | 40.738 | 13.252 | 268.042 | 173.739 | 58.802 | 23.719 | | 595.226 |
| **1939** | 17.014 | 40.590 | 12.914 | 299.358 | 184.162 | 63.264 | 24.314 | | 641.616 |
| **1940** | 17.242 | 39.009 | 12.747 | 337.748 | 201.649 | 68.259 | 24.844 | | 701.498 |
| **1941** | 17.445 | 39.619 | 12.455 | 382.792 | 223.128 | 71.295 | 27.434 | | 774.168 |
| **1942** | 17.669 | 39.153 | 12.115 | 419.976 | 209.428 | 77.499 | 30.360 | | 806.199 |
| **1943** | 17.920 | 38.999 | 11.744 | 457.038 | 224.327 | 86.757 | 33.406 | | 870.190 |
| **1944** | 18.120 | 38.319 | 11.240 | 455.667 | 252.087 | 93.873 | 36.481 | | 905.786 |
| **1945** | 18.091 | 37.963 | 10.571 | 428.720 | 264.371 | 98.943 | 39.845 | | 898.504 |
| **1946** | 18.217 | 39.536 | 9.696 | 392.566 | 273.110 | 101.715 | 39.927 | | 874.767 |
| **1947** | 18.520 | 40.903 | 8.846 | 419.632 | 296.210 | 112.044 | 40.081 | | 936.235 |
| **1948** | 18.818 | 41.796 | 8.151 | 405.632 | 327.882 | 125.184 | 39.996 | | 967.458 |
| **1949** | 18.945 | 44.686 | 7.444 | 327.830 | 312.729 | 131.404 | 40.198 | | 883.236 |
| **1950** | 19.261 | 45.125 | 6.822 | 340.079 | 350.566 | 152.408 | 40.321 | | 954.583 |
| **1951** | 19.614 | 44.520 | 6.134 | 344.794 | 381.737 | 179.987 | 41.059 | | 1 017.845 |
| **1952** | 19.951 | 43.259 | 5.409 | 311.535 | 396.480 | 192.699 | 42.502 | | 1 011.835 |
| **1953** | 20.330 | 42.038 | 4.779 | 311.293 | 413.913 | 202.015 | 41.524 | | 1 035.891 |
| **1954** | 20.734 | 41.659 | 4.231 | 266.374 | 423.068 | 213.272 | 40.519 | | 1 009.857 |
| **1955** | 21.098 | 39.185 | 3.798 | 303.003 | 462.700 | 230.928 | 41.023 | | 1 101.733 |
| **1956** | 21.232 | 37.165 | 3.534 | 309.494 | 484.602 | 247.112 | 43.415 | | 1 146.554 |
| **1957** | 21.611 | 35.079 | 3.224 | 293.304 | 484.790 | 263.238 | 45.744 | 0.003 | 1 146.993 |
| **1958** | 21.968 | 34.608 | 3.022 | 256.840 | 499.781 | 276.589 | 48.245 | 0.048 | 1 141.101 |
| **1959** | 22.355 | 35.241 | 2.814 | 255.507 | 523.772 | 304.639 | 47.745 | 0.055 | 1 192.127 |
| **1960** | 22.400 | 34.361 | 2.699 | 263.062 | 539.681 | 323.949 | 49.997 | 0.152 | 1 236.301 |
| **1961** | 22.766 | 33.723 | 2.558 | 256.529 | 549.065 | 336.544 | 51.381 | 0.497 | 1 253.062 |
| **1962** | 23.112 | 34.168 | 2.429 | 263.813 | 570.855 | 358.532 | 55.868 | 0.666 | 1 309.443 |
| **1963** | 23.836 | 34.183 | 2.305 | 277.105 | 590.094 | 376.833 | 55.209 | 0.963 | 1 360.527 |
| **1964** | 24.165 | 34.369 | 2.191 | 292.387 | 605.717 | 400.077 | 59.196 | 1.005 | 1 419.107 |
| **1965** | 24.538 | 34.224 | 2.072 | 309.173 | 631.093 | 414.643 | 63.231 | 1.090 | 1 480.063 |
| **1966** | 24.941 | 35.061 | 1.962 | 323.050 | 663.402 | 447.784 | 64.411 | 1.620 | 1 562.231 |
| **1967** | 25.262 | 34.262 | 1.881 | 316.979 | 687.016 | 472.808 | 72.054 | 2.233 | 1 612.496 |
| **1968** | 25.589 | 36.178 | 1.784 | 327.925 | 733.400 | 507.605 | 72.441 | 3.836 | 1 708.758 |
| **1969** | 25.989 | 36.668 | 1.706 | 329.232 | 769.063 | 547.295 | 81.184 | 4.032 | 1 795.170 |
| **1970** | 26.413 | 35.733 | 1.622 | 329.102 | 802.472 | 578.643 | 81.534 | 6.340 | 1 861.857 |
| **1971** | 26.766 | 35.700 | 1.553 | 310.866 | 834.003 | 596.871 | 86.509 | 11.572 | 1 903.839 |
| **1972** | 27.099 | 37.384 | 1.487 | 324.585 | 899.384 | 607.026 | 89.114 | 16.660 | 2 002.739 |
| **1973** | 27.334 | 38.021 | 1.415 | 344.352 | 954.319 | 605.520 | 89.905 | 27.080 | 2 087.944 |
| **1974** | 27.585 | 38.307 | 1.367 | 335.444 | 909.613 | 586.924 | 99.814 | 36.102 | 2 035.156 |
| **1975** | 27.857 | 37.356 | 1.298 | 339.602 | 902.751 | 542.938 | 99.186 | 51.344 | 2 002.331 |
| **1976** | 28.218 | 42.631 | 1.256 | 362.457 | 965.222 | 553.133 | 95.769 | 57.856 | 2 106.541 |
| **1977** | 28.499 | 45.644 | 1.184 | 371.270 | 1 025.717 | 543.289 | 79.248 | 75.882 | 2 170.733 |
| **1978** | 28.773 | 50.626 | 1.184 | 366.892 | 1 046.134 | 545.673 | 96.100 | 85.790 | 2 221.172 |
| **1979** | 29.086 | 53.456 | 1.139 | 402.852 | 1 032.655 | 563.103 | 95.848 | 79.583 | 2 257.722 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1980** | 29.422 | 61.411 | 1.165 | 412.686 | 956.883 | 551.530 | 96.311 | 79.399 | 2 188.808 |
| **1981** | 29.684 | 62.109 | 1.094 | 426.083 | 891.606 | 539.289 | 95.842 | 86.264 | 2 131.973 |
| **1982** | 30.040 | 62.512 | 1.025 | 413.336 | 836.820 | 504.919 | 112.988 | 90.044 | 2 051.683 |
| **1983** | 30.787 | 66.872 | 1.025 | 427.953 | 827.833 | 493.757 | 122.377 | 94.794 | 2 065.399 |
| **1984** | 31.125 | 66.981 | 0.957 | 462.737 | 854.206 | 526.232 | 122.897 | 104.663 | 2 169.798 |
| **1985** | 31.884 | 67.028 | 0.932 | 471.923 | 848.072 | 499.715 | 115.390 | 120.250 | 2 155.194 |
| **1986** | 32.243 | 64.002 | 0.863 | 463.770 | 879.142 | 470.946 | 119.953 | 131.023 | 2 161.942 |
| **1987** | 33.342 | 61.531 | 0.887 | 485.197 | 900.112 | 497.583 | 110.788 | 142.179 | 2 231.618 |
| **1988** | 33.641 | 64.238 | 0.888 | 511.064 | 936.281 | 523.621 | 102.980 | 164.817 | 2 337.530 |
| **1989** | 33.906 | 66.734 | 0.842 | 514.118 | 938.379 | 558.042 | 118.742 | 164.178 | 2 394.942 |
| **1990** | 35.190 | 55.414 | 0.866 | 516.522 | 923.488 | 556.143 | 126.197 | 174.888 | 2 388.708 |
| **1991** | 36.594 | 55.626 | 0.866 | 510.977 | 900.646 | 566.912 | 128.071 | 186.319 | 2 386.010 |
| **1992** | 37.089 | 57.844 | 0.798 | 515.256 | 915.977 | 589.748 | 120.264 | 186.521 | 2 423.497 |
| **1993** | 37.675 | 56.553 | 0.820 | 531.583 | 925.724 | 608.291 | 129.006 | 188.591 | 2 478.244 |
| **1994** | 39.175 | 58.001 | 0.820 | 534.222 | 948.601 | 623.344 | 125.862 | 199.704 | 2 529.731 |
| **1995** | 39.645 | 59.009 | 0.751 | 538.935 | 943.559 | 650.790 | 140.103 | 206.490 | 2 579.283 |
| **1996** | 40.209 | 60.485 | 0.752 | 563.810 | 978.920 | 666.026 | 151.941 | 205.328 | 2 667.471 |
| **1997** | 41.812 | 58.726 | 0.751 | 577.029 | 995.588 | 668.719 | 153.300 | 190.049 | 2 685.973 |
| **1998** | 42.352 | 54.033 | 0.751 | 576.317 | 1 010.797 | 654.659 | 143.388 | 198.789 | 2 681.088 |
| **1999** | 42.841 | 54.672 | 0.682 | 574.325 | 1 037.790 | 655.719 | 144.577 | 213.053 | 2 723.660 |
| **2000** | 44.367 | 55.764 | 0.683 | 600.152 | 1 052.527 | 677.721 | 134.197 | 219.220 | 2 784.632 |
| **2001** | 44.726 | 49.501 | 0.682 | 584.581 | 1 052.005 | 646.738 | 114.688 | 224.533 | 2 717.454 |
| **2002** | 45.104 | 49.243 | 0.682 | 584.518 | 1 053.697 | 669.507 | 131.104 | 227.143 | 2 760.998 |
| **2003** | 45.460 | 49.408 | 0.682 | 594.968 | 1 074.996 | 653.146 | 135.988 | 222.272 | 2 776.920 |
| **2004** | 45.914 | 52.326 | 0.614 | 596.702 | 1 115.427 | 653.434 | 135.906 | 233.329 | 2 833.653 |
| **2005** | 46.262 | 52.696 | 0.613 | 605.088 | 1 122.082 | 643.567 | 141.794 | 232.236 | 2 844.339 |
| **2006** | 46.650 | 52.024 | 0.613 | 595.388 | 1 111.198 | 633.936 | 152.390 | 235.283 | 2 827.481 |
| **2007** | 47.072 | 51.768 | 0.613 | 604.137 | 1 110.242 | 676.086 | 151.534 | 240.167 | 2 881.620 |
| **2008** | 47.473 | 50.440 | 0.614 | 594.060 | 1 043.525 | 678.062 | 169.932 | 240.077 | 2 824.184 |
| **2009** | 47.867 | 46.434 | 0.613 | 520.214 | 993.142 | 663.320 | 184.594 | 236.589 | 2 692.772 |
| **2010** | 48.266 | 49.014 | 0.544 | 549.868 | 997.987 | 696.354 | 194.072 | 238.750 | 2 774.856 |
| **2011** | 48.602 | 51.106 | 0.544 | 517.669 | 981.911 | 713.903 | 223.672 | 235.401 | 2 772.807 |
| **2012** | 48.945 | 49.289 | 0.544 | 459.281 | 964.855 | 742.255 | 223.009 | 230.541 | 2 718.720 |
| **2013** | 49.278 | 50.078 | 0.544 | 453.058 | 978.828 | 766.415 | 227.756 | 237.595 | 2 763.553 |
| **2014** | 49.607 | 50.216 | 0.544 | 450.935 | 987.333 | 785.585 | 230.362 | 241.040 | 2 795.624 |
| **2015** | 49.939 | 50.354 | 0.544 | 392.513 | 992.470 | 806.127 | 230.664 | 239.354 | 2 761.965 |
| **2016** | 50.277 | 50.492 | 0.544 | 359.603 | 1 002.968 | 808.064 | 232.946 | 240.379 | 2 745.273 |
| **2017** | 50.323 | 50.629 | 0.544 | 350.227 | 1 011.805 | 802.121 | 233.266 | 240.276 | 2 739.193 |
| **2018** | 50.652 | 50.987 | 0.507 | 331.762 | 1 030.733 | 802.906 | 238.737 | 272.440 | 2 778.724 |

**Table A 9.** Total energy consumption per source in Latin America 1820-2018 (Mtoe) (Figure 15; Total and per capita)



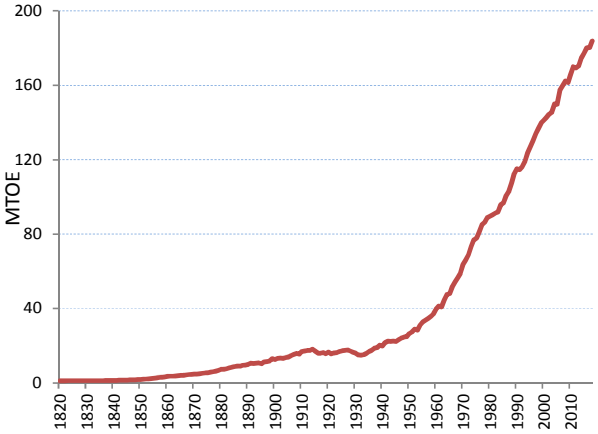

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 1.682 | 3.476 | 2.653 | | | | | | 7.812 |
| **1821** | 1.704 | 3.520 | 2.686 | | | | | | 7.910 |
| **1822** | 1.726 | 3.564 | 2.720 | | | | | | 8.010 |
| **1823** | 1.749 | 3.609 | 2.754 | | | | | | 8.112 |
| **1824** | 1.772 | 3.654 | 2.789 | | | | | | 8.215 |
| **1825** | 1.795 | 3.701 | 2.825 | | | | | | 8.320 |
| **1826** | 1.819 | 3.748 | 2.860 | | | | | | 8.427 |
| **1827** | 1.843 | 3.796 | 2.897 | | | | | | 8.535 |
| **1828** | 1.867 | 3.844 | 2.934 | | | | | | 8.645 |
| **1829** | 1.892 | 3.894 | 2.972 | | | | | | 8.757 |
| **1830** | 1.917 | 3.944 | 3.010 | | | | | | 8.871 |
| **1831** | 1.943 | 3.995 | 3.049 | | | | | | 8.987 |
| **1832** | 1.969 | 4.047 | 3.089 | | | | | | 9.104 |
| **1833** | 1.995 | 4.099 | 3.129 | | | | | | 9.224 |
| **1834** | 2.022 | 4.153 | 3.170 | | | | | | 9.345 |
| **1835** | 2.050 | 4.207 | 3.214 | | | | | | 9.472 |
| **1836** | 2.078 | 4.263 | 3.271 | | | | | | 9.611 |
| **1837** | 2.106 | 4.319 | 3.330 | | | | | | 9.754 |
| **1838** | 2.135 | 4.376 | 3.390 | | | | | | 9.901 |
| **1839** | 2.164 | 4.434 | 3.453 | | | | | | 10.052 |
| **1840** | 2.194 | 4.494 | 3.518 | | | | | | 10.206 |
| **1841** | 2.224 | 4.554 | 3.586 | 0.011 | | | | | 10.376 |
| **1842** | 2.255 | 4.615 | 3.656 | 0.037 | | | | | 10.563 |
| **1843** | 2.287 | 4.678 | 3.728 | 0.006 | | | | | 10.698 |
| **1844** | 2.319 | 4.741 | 3.803 | 0.005 | | | | | 10.868 |
| **1845** | 2.352 | 4.806 | 3.881 | 0.006 | | | | | 11.045 |
| **1846** | 2.385 | 4.872 | 3.961 | 0.007 | | | | | 11.225 |
| **1847** | 2.419 | 4.940 | 4.044 | 0.018 | | | | | 11.420 |
| **1848** | 2.454 | 5.009 | 4.130 | 0.023 | | | | | 11.616 |
| **1849** | 2.490 | 5.079 | 4.218 | 0.033 | | | | | 11.820 |
| **1850** | 2.526 | 5.152 | 4.310 | 0.045 | | | | | 12.032 |
| **1851** | 2.557 | 5.234 | 4.395 | 0.063 | | | | | 12.249 |
| **1852** | 2.589 | 5.318 | 4.482 | 0.050 | | | | | 12.439 |
| **1853** | 2.621 | 5.403 | 4.571 | 0.060 | | | | | 12.656 |
| **1854** | 2.654 | 5.490 | 4.663 | 0.055 | | | | | 12.862 |
| **1855** | 2.687 | 5.578 | 4.757 | 0.074 | | | | | 13.096 |
| **1856** | 2.721 | 5.668 | 4.854 | 0.268 | | | | | 13.510 |
| **1857** | 2.755 | 5.760 | 4.952 | 0.352 | | | | | 13.819 |
| **1858** | 2.789 | 5.853 | 5.054 | 0.371 | | | | | 14.067 |

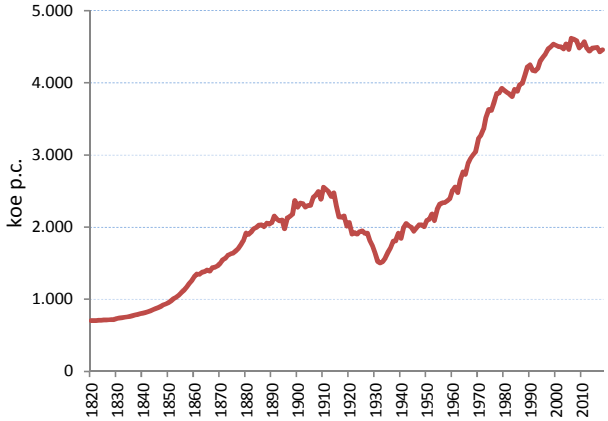
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1859** | 2.824 | 5.948 | 5.158 | 0.306 | | | 14.235 |
| **1860** | 2.860 | 6.044 | 5.264 | 0.377 | | | 14.545 |
| **1861** | 2.896 | 6.122 | 5.373 | 0.396 | | | 14.788 |
| **1862** | 2.933 | 6.202 | 5.485 | 0.424 | | | 15.043 |
| **1863** | 2.970 | 6.282 | 4.679 | 0.382 | | | 14.313 |
| **1864** | 3.008 | 6.364 | 4.535 | 0.507 | | | 14.414 |
| **1865** | 3.046 | 6.446 | 4.396 | 0.562 | | | 14.450 |
| **1866** | 3.085 | 6.531 | 4.261 | 0.709 | | | 14.585 |
| **1867** | 3.124 | 6.616 | 3.988 | 0.748 | | | 14.476 |
| **1868** | 3.164 | 6.703 | 3.832 | 0.830 | | | 14.529 |
| **1869** | 3.205 | 6.791 | 3.745 | 0.783 | | | 14.524 |
| **1870** | 3.246 | 6.880 | 3.603 | 0.785 | | | 14.514 |
| **1871** | 3.300 | 7.016 | 3.053 | 0.814 | | | 14.183 |
| **1872** | 3.355 | 7.155 | 3.206 | 1.032 | | | 14.749 |
| **1873** | 3.412 | 7.298 | 2.892 | 1.124 | | | 14.725 |
| **1874** | 3.469 | 7.444 | 3.172 | 1.249 | | | 15.335 |
| **1875** | 3.528 | 7.594 | 3.074 | 1.109 | | | 15.305 |
| **1876** | 3.589 | 7.749 | 2.993 | 1.072 | | | 15.402 |
| **1877** | 3.651 | 7.907 | 3.133 | 1.022 | | | 15.713 |
| **1878** | 3.714 | 8.070 | 3.226 | 1.036 | | | 16.045 |
| **1879** | 3.779 | 8.236 | 2.778 | 1.072 | | | 15.864 |
| **1880** | 3.845 | 8.407 | 2.626 | 1.166 | 0.001 | | 16.044 |
| **1881** | 3.912 | 8.597 | 3.021 | 1.245 | 0.001 | | 16.776 |
| **1882** | 3.981 | 8.793 | 3.372 | 1.275 | 0.005 | | 17.427 |
| **1883** | 4.052 | 8.993 | 3.329 | 1.341 | 0.005 | | 17.720 |
| **1884** | 4.124 | 9.199 | 3.206 | 1.491 | 0.006 | | 18.026 |
| **1885** | 4.197 | 9.410 | 3.202 | 1.550 | 0.008 | | 18.367 |
| **1886** | 4.270 | 9.621 | 2.645 | 1.463 | 0.007 | | 18.005 |
| **1887** | 4.345 | 9.839 | 2.504 | 1.707 | 0.009 | | 18.405 |
| **1888** | 4.422 | 10.064 | 2.319 | 2.066 | 0.007 | | 18.876 |
| **1889** | 4.501 | 10.294 | 2.495 | 2.433 | 0.012 | | 19.734 |
| **1890** | 4.581 | 10.532 | 2.588 | 2.138 | 0.021 | | 19.860 |
| **1891** | 4.663 | 10.754 | 2.687 | 2.426 | 0.030 | | 20.560 |
| **1892** | 4.746 | 10.981 | 2.792 | 2.638 | 0.022 | | 21.179 |
| **1893** | 4.832 | 11.214 | 2.904 | 2.566 | 0.020 | | 21.536 |
| **1894** | 4.919 | 11.452 | 3.024 | 3.106 | 0.020 | | 22.522 |
| **1895** | 5.009 | 11.696 | 3.150 | 3.118 | 0.022 | 0.001 | 22.996 |
| **1896** | 5.100 | 11.946 | 3.286 | 3.294 | 0.021 | 0.001 | 23.648 |
| **1897** | 5.193 | 12.203 | 3.430 | 3.281 | 0.028 | 0.001 | 24.136 |
| **1898** | 5.288 | 12.465 | 3.583 | 3.555 | 0.037 | 0.001 | 24.930 |
| **1899** | 5.386 | 12.735 | 3.747 | 3.882 | 0.047 | 0.001 | 25.798 |
| **1900** | 5.487 | 13.012 | 3.921 | 3.746 | 0.050 | 0.002 | 26.218 |
| **1901** | 5.605 | 13.405 | 4.115 | 4.161 | 0.043 | 0.010 | 27.339 |
| **1902** | 5.717 | 13.790 | 4.279 | 4.442 | 0.048 | 0.010 | 28.286 |
| **1903** | 5.845 | 14.220 | 5.085 | 4.787 | 0.117 | 0.010 | 30.064 |
| **1904** | 5.962 | 14.629 | 6.063 | 5.049 | 0.126 | 0.011 | 31.840 |
| **1905** | 6.090 | 15.071 | 6.386 | 5.732 | 0.165 | 0.013 | 33.457 |
| **1906** | 6.230 | 15.549 | 6.798 | 6.621 | 0.226 | 0.014 | 35.437 |
| **1907** | 6.379 | 16.058 | 7.258 | 7.354 | 0.319 | 0.023 | 37.392 |
| **1908** | 6.514 | 16.537 | 7.742 | 7.245 | 0.794 | 0.045 | 38.876 |
| **1909** | 6.669 | 17.077 | 8.297 | 7.291 | 0.622 | 0.060 | 40.016 |
| **1910** | 6.831 | 17.651 | 8.567 | 8.008 | 0.780 | 0.077 | 41.915 |
| **1911** | 6.985 | 18.015 | 9.602 | 8.932 | 2.071 | 0.088 | 45.692 |
| **1912** | 7.155 | 18.419 | 11.015 | 8.879 | 1.515 | 0.112 | 47.095 |
| **1913** | 7.294 | 18.735 | 11.155 | 8.876 | 0.927 | 0.125 | 47.111 |
| **1914** | 7.391 | 18.974 | 11.010 | 7.631 | 0.784 | 0.145 | 45.934 |
| **1915** | 7.464 | 19.152 | 10.867 | 5.612 | 1.638 | 0.148 | 44.880 |
| **1916** | 7.527 | 19.302 | 9.933 | 5.263 | 2.690 | 0.149 | 44.865 |
| **1917** | 7.639 | 19.580 | 9.919 | 4.967 | 2.172 | 0.155 | 44.432 |
| **1918** | 7.776 | 19.919 | 10.135 | 4.806 | 2.604 | 0.157 | 45.396 |
| **1919** | 7.922 | 20.282 | 10.346 | 4.820 | 2.418 | 0.166 | 45.954 |
| **1920** | 8.048 | 20.594 | 9.988 | 5.790 | 3.088 | 0.175 | 47.682 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1921** | 8.207 | 21.013 | 9.643 | 4.732 | 3.422 | | 0.183 | | 47.201 |
| **1922** | 8.375 | 21.455 | 9.351 | 4.989 | 2.757 | 0.055 | 0.193 | | 47.175 |
| **1923** | 8.556 | 21.931 | 9.453 | 5.887 | 2.709 | 0.084 | 0.213 | | 48.833 |
| **1924** | 8.742 | 22.419 | 9.490 | 6.735 | 3.010 | 0.112 | 0.240 | | 50.748 |
| **1925** | 8.919 | 22.884 | 9.574 | 6.428 | 5.481 | 0.519 | 0.259 | | 54.063 |
| **1926** | 9.110 | 23.387 | 10.091 | 6.201 | 6.987 | 0.579 | 0.294 | | 56.649 |
| **1927** | 9.302 | 23.893 | 10.632 | 6.855 | 7.159 | 0.642 | 0.324 | | 58.807 |
| **1928** | 9.478 | 24.359 | 11.177 | 6.356 | 8.661 | 0.707 | 0.349 | | 61.087 |
| **1929** | 9.741 | 25.048 | 11.852 | 6.459 | 8.617 | 0.777 | 0.379 | | 62.873 |
| **1930** | 9.876 | 25.408 | 12.397 | 6.386 | 7.268 | 0.844 | 0.397 | | 62.576 |
| **1931** | 10.104 | 25.898 | 12.684 | 5.231 | 6.264 | 0.916 | 0.389 | | 61.487 |
| **1932** | 10.297 | 26.291 | 12.911 | 4.774 | 5.277 | 1.435 | 0.381 | | 61.368 |
| **1933** | 10.493 | 26.691 | 13.126 | 5.403 | 5.647 | 1.535 | 0.417 | | 63.312 |
| **1934** | 10.694 | 27.099 | 13.356 | 5.653 | 6.136 | 1.670 | 0.454 | | 65.062 |
| **1935** | 10.900 | 27.518 | 13.577 | 6.068 | 6.913 | 2.035 | 0.461 | | 67.473 |
| **1936** | 11.113 | 27.948 | 13.821 | 6.444 | 8.135 | 2.130 | 0.505 | | 70.097 |
| **1937** | 11.331 | 28.388 | 13.597 | 6.913 | 10.763 | 2.080 | 0.546 | | 73.618 |
| **1938** | 11.552 | 28.831 | 13.884 | 6.722 | 11.349 | 2.694 | 0.608 | | 75.641 |
| **1939** | 11.789 | 29.313 | 13.225 | 5.974 | 12.025 | 3.214 | 0.592 | | 76.133 |
| **1940** | 12.012 | 29.749 | 13.348 | 5.800 | 12.736 | 3.306 | 0.619 | | 77.569 |
| **1941** | 12.296 | 30.446 | 13.077 | 5.106 | 12.568 | 3.018 | 0.656 | | 77.165 |
| **1942** | 12.583 | 31.150 | 12.908 | 4.591 | 11.947 | 2.780 | 0.721 | | 76.680 |
| **1943** | 12.903 | 31.935 | 12.788 | 4.838 | 11.834 | 2.538 | 0.773 | | 77.608 |
| **1944** | 13.191 | 32.641 | 12.463 | 4.798 | 12.992 | 2.909 | 0.808 | | 79.802 |
| **1945** | 13.582 | 33.602 | 12.838 | 4.875 | 13.925 | 3.055 | 0.912 | | 82.789 |
| **1946** | 13.985 | 34.591 | 12.951 | 5.328 | 17.960 | 3.197 | 0.971 | | 88.984 |
| **1947** | 14.401 | 35.612 | 11.949 | 5.952 | 20.858 | 3.725 | 1.065 | | 93.562 |
| **1948** | 14.828 | 36.660 | 11.975 | 6.234 | 23.602 | 3.563 | 1.209 | | 98.071 |
| **1949** | 15.266 | 37.735 | 11.843 | 5.829 | 25.294 | 3.875 | 1.302 | | 101.145 |
| **1950** | 15.749 | 38.912 | 11.872 | 6.258 | 31.991 | 4.721 | 1.366 | | 110.868 |
| **1951** | 16.223 | 39.430 | 11.308 | 6.343 | 36.649 | 4.537 | 1.498 | | 115.987 |
| **1952** | 16.675 | 39.962 | 11.781 | 6.370 | 38.146 | 4.736 | 1.688 | | 119.358 |
| **1953** | 17.147 | 40.503 | 11.777 | 6.270 | 38.195 | 5.193 | 1.792 | | 120.878 |
| **1954** | 17.672 | 41.050 | 11.320 | 6.422 | 39.984 | 5.570 | 1.912 | | 123.930 |
| **1955** | 18.223 | 41.600 | 11.499 | 6.806 | 44.205 | 6.291 | 2.076 | | 130.701 |
| **1956** | 18.747 | 42.156 | 13.926 | 7.360 | 52.235 | 6.645 | 2.401 | | 143.470 |
| **1957** | 19.345 | 42.718 | 13.691 | 7.145 | 63.192 | 8.168 | 2.623 | | 156.881 |
| **1958** | 19.917 | 43.290 | 13.986 | 7.181 | 63.047 | 10.245 | 3.023 | | 160.688 |
| **1959** | 20.444 | 43.876 | 13.852 | 7.205 | 68.034 | 11.739 | 3.126 | | 168.277 |
| **1960** | 21.086 | 44.521 | 13.721 | 7.726 | 69.525 | 12.755 | 3.311 | | 172.647 |
| **1961** | 21.716 | 44.849 | 13.599 | 7.781 | 73.063 | 14.721 | 3.440 | | 179.169 |
| **1962** | 22.351 | 45.185 | 13.489 | 7.930 | 77.826 | 16.224 | 3.747 | | 186.751 |
| **1963** | 22.979 | 45.521 | 13.389 | 8.186 | 77.877 | 17.744 | 3.944 | | 189.640 |
| **1964** | 23.706 | 45.847 | 13.299 | 8.409 | 81.157 | 19.293 | 4.335 | | 196.046 |
| **1965** | 24.403 | 46.158 | 11.734 | 8.516 | 86.695 | 20.842 | 4.801 | | 203.149 |
| **1966** | 25.111 | 46.449 | 11.747 | 9.094 | 92.166 | 21.320 | 5.347 | | 211.235 |
| **1967** | 25.818 | 46.724 | 11.788 | 9.648 | 95.178 | 21.115 | 5.673 | | 215.944 |
| **1968** | 26.572 | 46.982 | 11.852 | 9.755 | 105.018 | 22.392 | 6.108 | | 228.678 |
| **1969** | 27.353 | 47.230 | 11.887 | 10.382 | 106.705 | 24.375 | 6.550 | | 234.481 |
| **1970** | 28.166 | 47.562 | 11.938 | 10.835 | 109.793 | 24.672 | 8.109 | | 241.075 |
| **1971** | 28.972 | 48.078 | 11.986 | 10.250 | 116.142 | 25.333 | 9.142 | | 249.903 |
| **1972** | 29.810 | 48.588 | 12.048 | 10.368 | 126.089 | 27.097 | 10.227 | | 264.226 |
| **1973** | 30.715 | 49.088 | 12.138 | 10.734 | 136.566 | 30.700 | 11.399 | | 281.339 |
| **1974** | 31.571 | 49.578 | 12.247 | 12.363 | 145.579 | 32.494 | 12.914 | 0.304 | 297.050 |
| **1975** | 32.352 | 50.055 | 11.758 | 12.878 | 149.951 | 32.665 | 13.841 | 0.678 | 304.179 |
| **1976** | 33.226 | 50.531 | 11.316 | 13.541 | 160.007 | 35.827 | 15.503 | 0.695 | 320.645 |
| **1977** | 34.078 | 50.981 | 11.116 | 15.284 | 168.295 | 38.329 | 17.146 | 0.479 | 335.708 |
| **1978** | 34.928 | 51.419 | 10.952 | 14.312 | 182.690 | 42.026 | 18.506 | 0.847 | 355.680 |
| **1979** | 35.860 | 51.848 | 10.787 | 14.670 | 194.458 | 46.775 | 20.962 | 0.786 | 376.147 |
| **1980** | 36.781 | 52.320 | 10.618 | 15.444 | 202.052 | 49.385 | 22.835 | 0.683 | 390.117 |
| **1981** | 37.536 | 52.802 | 10.436 | 15.782 | 203.836 | 51.942 | 24.213 | 0.822 | 397.369 |
| **1982** | 38.226 | 53.275 | 10.243 | 15.242 | 206.292 | 56.377 | 25.920 | 0.549 | 406.125 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1983** | 38.858 | 53.736 | 10.059 | 16.502 | 201.510 | 58.372 | 27.597 | 0.994 | 407.627 |
| **1984** | 39.748 | 54.179 | 9.884 | 18.627 | 204.246 | 61.293 | 30.358 | 1.839 | 420.173 |
| **1985** | 40.612 | 54.602 | 9.714 | 21.433 | 207.904 | 62.466 | 32.498 | 2.701 | 431.929 |
| **1986** | 41.520 | 55.003 | 9.541 | 21.531 | 221.043 | 63.083 | 33.975 | 1.728 | 447.424 |
| **1987** | 42.390 | 55.382 | 9.362 | 23.218 | 228.134 | 63.320 | 35.762 | 2.195 | 459.763 |
| **1988** | 43.164 | 55.740 | 9.178 | 23.033 | 231.999 | 67.074 | 37.357 | 1.890 | 469.435 |
| **1989** | 43.954 | 56.082 | 8.990 | 24.441 | 235.904 | 68.457 | 38.296 | 2.136 | 478.260 |
| **1990** | 44.718 | 56.454 | 8.805 | 20.361 | 236.573 | 71.933 | 39.693 | 3.674 | 482.211 |
| **1991** | 45.629 | 56.832 | 8.517 | 21.184 | 240.799 | 73.562 | 41.749 | 3.965 | 492.237 |
| **1992** | 46.513 | 57.195 | 8.382 | 22.093 | 257.777 | 75.366 | 44.282 | 3.765 | 515.373 |
| **1993** | 47.436 | 57.540 | 8.372 | 22.808 | 259.444 | 78.980 | 46.762 | 3.873 | 525.215 |
| **1994** | 48.407 | 57.864 | 8.653 | 23.763 | 276.676 | 82.816 | 48.381 | 3.699 | 550.258 |
| **1995** | 49.213 | 58.163 | 8.287 | 24.709 | 277.564 | 89.294 | 50.837 | 5.320 | 563.385 |
| **1996** | 50.110 | 58.437 | 8.583 | 25.307 | 283.426 | 96.117 | 52.899 | 5.242 | 580.121 |
| **1997** | 51.093 | 58.688 | 10.404 | 27.131 | 296.736 | 97.435 | 54.928 | 6.370 | 602.785 |
| **1998** | 51.926 | 58.912 | 10.089 | 26.492 | 309.555 | 104.137 | 55.571 | 5.894 | 622.576 |
| **1999** | 52.639 | 59.107 | 9.786 | 25.847 | 309.461 | 102.899 | 57.030 | 6.218 | 622.987 |
| **2000** | 53.584 | 59.313 | 9.492 | 26.946 | 312.297 | 109.444 | 59.832 | 6.029 | 636.937 |
| **2001** | 54.431 | 58.903 | 9.206 | 27.529 | 314.368 | 112.361 | 57.107 | 8.861 | 642.768 |
| **2002** | 54.614 | 58.469 | 8.929 | 31.887 | 309.479 | 116.997 | 59.607 | 8.664 | 648.647 |
| **2003** | 57.011 | 58.018 | 8.660 | 29.431 | 305.224 | 124.073 | 62.130 | 9.271 | 653.817 |
| **2004** | 58.011 | 57.558 | 8.402 | 30.844 | 320.060 | 137.089 | 65.029 | 8.445 | 685.439 |
| **2005** | 58.939 | 57.095 | 8.153 | 32.152 | 328.992 | 143.813 | 69.367 | 8.102 | 706.614 |
| **2006** | 60.105 | 56.632 | 7.914 | 36.055 | 333.863 | 155.895 | 72.837 | 9.513 | 732.814 |
| **2007** | 61.265 | 56.166 | 7.684 | 36.359 | 351.267 | 157.466 | 76.983 | 8.831 | 756.021 |
| **2008** | 63.287 | 55.698 | 7.461 | 36.677 | 365.610 | 161.089 | 79.423 | 9.167 | 778.412 |
| **2009** | 63.700 | 55.223 | 7.137 | 32.757 | 362.336 | 160.571 | 82.064 | 9.301 | 773.089 |
| **2010** | 65.213 | 54.858 | 6.924 | 40.263 | 377.943 | 169.397 | 86.686 | 8.109 | 809.391 |
| **2011** | 66.790 | 55.664 | 6.716 | 43.874 | 390.622 | 176.472 | 92.009 | 9.414 | 841.563 |
| **2012** | 67.233 | 56.482 | 6.517 | 43.469 | 401.325 | 188.363 | 93.207 | 9.128 | 865.723 |
| **2013** | 68.339 | 57.297 | 6.323 | 45.597 | 411.095 | 195.366 | 94.681 | 9.793 | 888.492 |
| **2014** | 69.168 | 58.109 | 6.136 | 47.238 | 410.598 | 200.730 | 100.706 | 9.018 | 901.703 |
| **2015** | 69.918 | 58.917 | 5.953 | 46.438 | 404.375 | 208.657 | 105.532 | 9.781 | 909.571 |
| **2016** | 70.666 | 59.726 | 5.772 | 45.628 | 392.962 | 209.531 | 113.232 | 10.186 | 907.704 |
| **2017** | 71.390 | 60.377 | 5.795 | 47.853 | 390.794 | 213.118 | 121.799 | 9.571 | 920.697 |
| **2018** | 72.099 | 60.978 | 5.853 | 44.971 | 385.866 | 211.740 | 128.886 | 10.549 | 920.942 |

**Table A 10.** Total energy consumption per source in Oceania 1820-2018 (Mtoe) (Figure 16; Total and per capita)



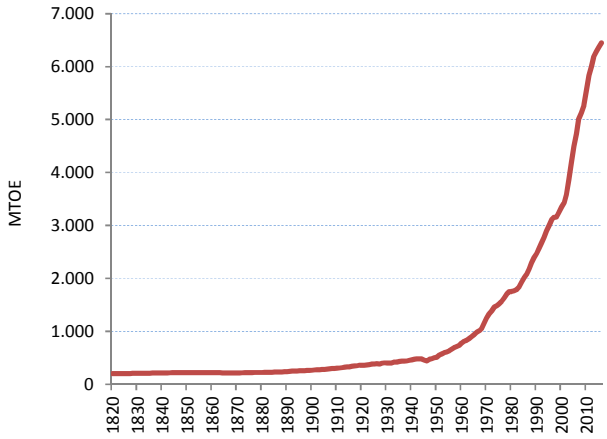

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 0.128 | 1.000 | 0.014 | | | | | | 1.142 |
| **1821** | 0.128 | 0.998 | 0.016 | | | | | | 1.142 |
| **1822** | 0.129 | 0.998 | 0.017 | | | | | | 1.144 |
| **1823** | 0.130 | 0.998 | 0.019 | | | | | | 1.147 |
| **1824** | 0.130 | 1.000 | 0.022 | | | | | | 1.152 |
| **1825** | 0.131 | 1.002 | 0.024 | | | | | | 1.157 |
| **1826** | 0.131 | 1.000 | 0.027 | | | | | | 1.159 |
| **1827** | 0.132 | 1.000 | 0.030 | | | | | | 1.162 |
| **1828** | 0.132 | 0.999 | 0.034 | | | | | | 1.165 |
| **1829** | 0.133 | 0.999 | 0.038 | | | | | | 1.171 |
| **1830** | 0.134 | 1.002 | 0.043 | 0.017 | | | | | 1.196 |
| **1831** | 0.135 | 1.003 | 0.052 | 0.018 | | | | | 1.207 |
| **1832** | 0.135 | 1.004 | 0.058 | 0.020 | | | | | 1.217 |
| **1833** | 0.137 | 1.009 | 0.064 | 0.022 | | | | | 1.232 |
| **1834** | 0.138 | 1.011 | 0.071 | 0.024 | | | | | 1.244 |
| **1835** | 0.138 | 1.012 | 0.080 | 0.026 | | | | | 1.257 |
| **1836** | 0.139 | 1.016 | 0.089 | 0.029 | | | | | 1.274 |
| **1837** | 0.140 | 1.019 | 0.100 | 0.032 | | | | | 1.291 |
| **1838** | 0.142 | 1.027 | 0.111 | 0.035 | | | | | 1.315 |
| **1839** | 0.144 | 1.035 | 0.126 | 0.038 | | | | | 1.343 |
| **1840** | 0.147 | 1.044 | 0.139 | 0.042 | | | | | 1.372 |
| **1841** | 0.151 | 1.064 | 0.150 | 0.046 | | | | | 1.410 |
| **1842** | 0.153 | 1.077 | 0.165 | 0.050 | | | | | 1.445 |
| **1843** | 0.155 | 1.084 | 0.184 | 0.055 | | | | | 1.477 |
| **1844** | 0.157 | 1.092 | 0.205 | 0.061 | | | | | 1.514 |
| **1845** | 0.159 | 1.102 | 0.227 | 0.066 | | | | | 1.555 |
| **1846** | 0.161 | 1.112 | 0.253 | 0.073 | | | | | 1.598 |
| **1847** | 0.163 | 1.123 | 0.281 | 0.080 | | | | | 1.647 |
| **1848** | 0.166 | 1.138 | 0.310 | 0.088 | | | | | 1.702 |
| **1849** | 0.170 | 1.164 | 0.337 | 0.096 | | | | | 1.768 |
| **1850** | 0.174 | 1.185 | 0.371 | 0.105 | | | | | 1.836 |
| **1851** | 0.178 | 1.262 | 0.379 | 0.095 | | | | | 1.914 |
| **1852** | 0.185 | 1.374 | 0.376 | 0.109 | | | | | 2.043 |
| **1853** | 0.193 | 1.500 | 0.373 | 0.102 | | | | | 2.168 |
| **1854** | 0.202 | 1.642 | 0.371 | 0.109 | | | | | 2.325 |
| **1855** | 0.212 | 1.797 | 0.372 | 0.123 | | | | | 2.503 |
| **1856** | 0.220 | 1.952 | 0.377 | 0.122 | | | | | 2.671 |
| **1857** | 0.229 | 2.126 | 0.395 | 0.131 | | | | | 2.881 |

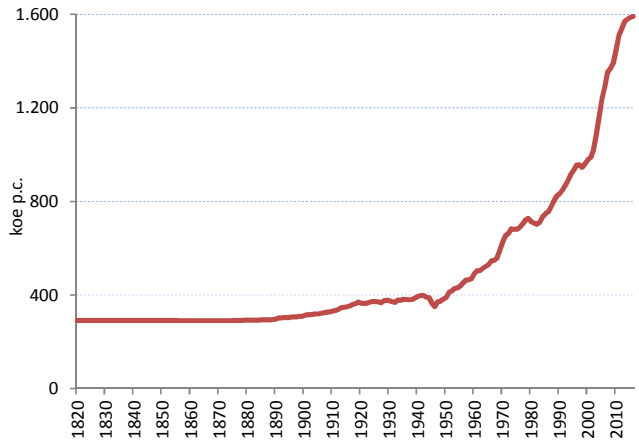
| | | | | | | |
|---|---|---|---|---|---|---|
| **1858** | 0.237 | 2.301 | 0.409 | 0.138 | | 3.086 |
| **1859** | 0.242 | 2.455 | 0.431 | 0.115 | | 3.243 |
| **1860** | 0.248 | 2.654 | 0.453 | 0.094 | | 3.449 |
| **1861** | 0.251 | 2.707 | 0.475 | 0.140 | | 3.572 |
| **1862** | 0.255 | 2.778 | 0.502 | 0.094 | | 3.628 |
| **1863** | 0.261 | 2.866 | 0.524 | 0.133 | | 3.784 |
| **1864** | 0.268 | 2.970 | 0.551 | 0.112 | | 3.901 |
| **1865** | 0.275 | 3.077 | 0.575 | 0.142 | | 4.070 |
| **1866** | 0.282 | 3.174 | 0.600 | 0.061 | | 4.117 |
| **1867** | 0.287 | 3.261 | 0.629 | 0.148 | | 4.324 |
| **1868** | 0.294 | 3.367 | 0.654 | 0.134 | | 4.448 |
| **1869** | 0.301 | 3.473 | 0.682 | 0.143 | | 4.598 |
| **1870** | 0.305 | 3.556 | 0.714 | 0.203 | | 4.778 |
| **1871** | 0.297 | 3.503 | 0.759 | 0.234 | | 4.792 |
| **1872** | 0.305 | 3.615 | 0.791 | 0.238 | | 4.948 |
| **1873** | 0.313 | 3.730 | 0.826 | 0.293 | | 5.162 |
| **1874** | 0.321 | 3.875 | 0.859 | 0.301 | | 5.355 |
| **1875** | 0.331 | 4.030 | 0.893 | 0.279 | | 5.533 |
| **1876** | 0.338 | 4.180 | 0.936 | 0.314 | | 5.767 |
| **1877** | 0.346 | 4.331 | 0.981 | 0.349 | | 6.007 |
| **1878** | 0.356 | 4.488 | 1.037 | 0.477 | | 6.358 |
| **1879** | 0.363 | 4.659 | 1.074 | 0.613 | | 6.709 |
| **1880** | 0.373 | 4.843 | 1.121 | 0.927 | | 7.265 |
| **1881** | 0.383 | 4.968 | 1.172 | 0.843 | | 7.365 |
| **1882** | 0.388 | 5.098 | 1.224 | 0.956 | | 7.667 |
| **1883** | 0.402 | 5.259 | 1.276 | 1.127 | | 8.066 |
| **1884** | 0.414 | 5.441 | 1.330 | 1.220 | | 8.405 |
| **1885** | 0.425 | 5.593 | 1.386 | 1.355 | | 8.760 |
| **1886** | 0.434 | 5.738 | 1.440 | 1.366 | | 8.977 |
| **1887** | 0.447 | 5.889 | 1.292 | 1.433 | | 9.061 |
| **1888** | 0.456 | 6.039 | 1.354 | 1.640 | | 9.489 |
| **1889** | 0.468 | 6.178 | 1.397 | 1.586 | | 9.629 |
| **1890** | 0.474 | 6.314 | 1.449 | 1.665 | | 9.902 |
| **1891** | 0.485 | 6.395 | 1.828 | 1.843 | | 10.552 |
| **1892** | 0.487 | 6.465 | 1.659 | 1.894 | | 10.505 |
| **1893** | 0.491 | 6.519 | 1.693 | 1.845 | | 10.548 |
| **1894** | 0.499 | 6.571 | 1.698 | 1.999 | | 10.766 |
| **1895** | 0.503 | 6.622 | 1.732 | 1.443 | | 10.300 |
| **1896** | 0.513 | 6.670 | 1.974 | 2.100 | | 11.257 |
| **1897** | 0.517 | 6.720 | 1.965 | 2.305 | | 11.507 |
| **1898** | 0.529 | 6.760 | 1.960 | 2.559 | | 11.808 |
| **1899** | 0.535 | 6.790 | 1.944 | 3.679 | 0.036 | 12.983 |
| **1900** | 0.543 | 6.820 | 1.935 | 3.280 | 0.036 | 12.613 |
| **1901** | 0.550 | 6.878 | 1.920 | 3.706 | 0.073 | 13.127 |
| **1902** | 0.559 | 6.940 | 1.939 | 3.828 | 0.038 | 13.304 |
| **1903** | 0.572 | 6.994 | 1.852 | 3.754 | 0.056 | 13.227 |
| **1904** | 0.583 | 7.055 | 1.892 | 3.988 | 0.057 | 13.575 |
| **1905** | 0.594 | 7.125 | 1.953 | 4.098 | 0.061 | 13.831 |
| **1906** | 0.608 | 7.196 | 2.047 | 4.826 | 0.063 | 14.739 |
| **1907** | 0.620 | 7.269 | 2.153 | 5.111 | 0.074 | 15.226 |
| **1908** | 0.631 | 7.351 | 2.272 | 5.499 | 0.070 | 15.822 |
| **1909** | 0.647 | 7.446 | 2.342 | 4.924 | 0.098 | 15.456 |
| **1910** | 0.665 | 7.551 | 2.444 | 6.104 | 0.107 | 16.872 |
| **1911** | 0.681 | 7.191 | 2.602 | 6.500 | 0.120 | 17.094 |
| **1912** | 0.702 | 6.882 | 2.710 | 6.936 | 0.162 | 17.391 |
| **1913** | 0.723 | 6.585 | 2.826 | 7.167 | 0.140 | 17.441 |
| **1914** | 0.738 | 6.247 | 2.925 | 8.152 | 0.148 | 18.210 |
| **1915** | 0.743 | 5.856 | 2.926 | 7.343 | 0.160 | 17.029 |
| **1916** | 0.744 | 5.445 | 2.788 | 6.758 | 0.203 | 15.938 |
| **1917** | 0.744 | 5.067 | 2.860 | 7.064 | 0.213 | 15.949 |
| **1918** | 0.752 | 4.775 | 2.925 | 7.673 | 0.183 | 16.308 |
| **1919** | 0.777 | 4.566 | 2.927 | 7.184 | 0.230 | 15.685 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1920** | 0.803 | 4.488 | 2.790 | 8.197 | 0.289 | | | 16.566 |
| **1921** | 0.820 | 4.327 | 2.772 | 7.307 | 0.364 | | | 15.590 |
| **1922** | 0.838 | 4.173 | 2.786 | 7.828 | 0.461 | | 0.011 | 16.097 |
| **1923** | 0.858 | 4.025 | 2.735 | 8.036 | 0.585 | | 0.013 | 16.251 |
| **1924** | 0.878 | 3.881 | 2.665 | 8.690 | 0.743 | | 0.015 | 16.872 |
| **1925** | 0.899 | 3.745 | 2.623 | 9.074 | 0.947 | | 0.016 | 17.305 |
| **1926** | 0.917 | 3.611 | 2.566 | 9.111 | 1.143 | | 0.026 | 17.373 |
| **1927** | 0.934 | 3.479 | 2.428 | 9.456 | 1.380 | | 0.035 | 17.711 |
| **1928** | 0.950 | 3.346 | 2.351 | 8.731 | 1.667 | | 0.042 | 17.086 |
| **1929** | 0.962 | 3.208 | 2.247 | 8.122 | 2.014 | | 0.048 | 16.600 |
| **1930** | 0.965 | 3.121 | 2.151 | 7.694 | 1.966 | | 0.064 | 15.960 |
| **1931** | 0.967 | 3.129 | 2.101 | 6.762 | 1.920 | | 0.063 | 14.941 |
| **1932** | 0.980 | 3.132 | 2.072 | 6.769 | 1.874 | | 0.062 | 14.889 |
| **1933** | 0.996 | 3.135 | 2.061 | 7.089 | 1.829 | | 0.081 | 15.192 |
| **1934** | 1.010 | 3.137 | 2.060 | 7.554 | 2.025 | | 0.084 | 15.870 |
| **1935** | 1.025 | 3.139 | 2.066 | 8.264 | 2.241 | | 0.090 | 16.825 |
| **1936** | 1.041 | 3.141 | 2.070 | 8.757 | 2.480 | | 0.097 | 17.586 |
| **1937** | 1.056 | 3.146 | 2.079 | 9.330 | 3.039 | | 0.106 | 18.755 |
| **1938** | 1.071 | 3.153 | 2.065 | 9.105 | 3.469 | | 0.122 | 18.984 |
| **1939** | 1.084 | 3.163 | 2.039 | 10.268 | 3.647 | | 0.137 | 20.338 |
| **1940** | 1.100 | 3.171 | 2.015 | 9.560 | 3.836 | | 0.137 | 19.819 |
| **1941** | 1.119 | 3.212 | 1.979 | 11.136 | 4.036 | | 0.167 | 21.649 |
| **1942** | 1.142 | 3.257 | 1.928 | 11.724 | 4.246 | | 0.176 | 22.473 |
| **1943** | 1.155 | 3.298 | 1.803 | 11.412 | 4.467 | | 0.192 | 22.327 |
| **1944** | 1.165 | 3.350 | 1.736 | 11.221 | 4.701 | | 0.202 | 22.374 |
| **1945** | 1.183 | 3.432 | 1.645 | 10.785 | 4.948 | | 0.216 | 22.209 |
| **1946** | 1.203 | 3.515 | 1.535 | 11.507 | 5.207 | | 0.222 | 23.190 |
| **1947** | 1.231 | 3.601 | 1.461 | 12.159 | 5.482 | | 0.232 | 24.166 |
| **1948** | 1.258 | 3.689 | 1.439 | 12.261 | 5.771 | | 0.244 | 24.661 |
| **1949** | 1.290 | 3.779 | 1.356 | 12.070 | 6.076 | | 0.267 | 24.838 |
| **1950** | 1.323 | 3.871 | 1.271 | 13.357 | 6.398 | | 0.286 | 26.506 |
| **1951** | 1.355 | 3.975 | 1.214 | 13.931 | 6.598 | | 0.282 | 27.354 |
| **1952** | 1.386 | 4.072 | 1.148 | 15.229 | 6.804 | | 0.321 | 28.961 |
| **1953** | 1.419 | 4.168 | 1.094 | 14.371 | 7.016 | | 0.328 | 28.396 |
| **1954** | 1.457 | 4.265 | 1.026 | 15.321 | 8.691 | | 0.388 | 31.147 |
| **1955** | 1.493 | 4.363 | 0.980 | 15.249 | 10.367 | | 0.405 | 32.857 |
| **1956** | 1.529 | 4.466 | 0.929 | 15.457 | 11.018 | | 0.446 | 33.844 |
| **1957** | 1.563 | 4.571 | 0.872 | 15.512 | 11.669 | | 0.469 | 34.656 |
| **1958** | 1.602 | 4.680 | 0.817 | 15.781 | 12.425 | | 0.530 | 35.835 |
| **1959** | 1.644 | 4.789 | 0.787 | 16.124 | 13.234 | | 0.521 | 37.100 |
| **1960** | 1.682 | 4.898 | 0.756 | 17.607 | 14.098 | 0.105 | 0.599 | 39.746 |
| **1961** | 1.716 | 4.901 | 0.689 | 18.000 | 15.192 | 0.106 | 0.678 | 41.283 |
| **1962** | 1.758 | 4.901 | 0.653 | 16.956 | 15.773 | 0.103 | 0.767 | 40.909 |
| **1963** | 1.801 | 4.902 | 0.640 | 18.188 | 18.001 | 0.111 | 0.948 | 44.591 |
| **1964** | 1.848 | 4.905 | 0.588 | 18.986 | 20.034 | 0.109 | 1.042 | 47.512 |
| **1965** | 1.895 | 4.914 | 0.572 | 19.587 | 18.840 | 0.114 | 2.102 | 48.024 |
| **1966** | 1.943 | 4.928 | 0.487 | 20.192 | 22.061 | 0.114 | 2.150 | 51.876 |
| **1967** | 1.995 | 4.946 | 0.519 | 20.568 | 24.023 | 0.111 | 2.172 | 54.335 |
| **1968** | 2.049 | 4.963 | 0.282 | 21.050 | 25.960 | 0.115 | 2.322 | 56.742 |
| **1969** | 2.107 | 4.977 | 0.417 | 21.758 | 26.723 | 0.386 | 2.444 | 58.812 |
| **1970** | 2.158 | 4.993 | 0.517 | 21.973 | 29.795 | 1.646 | 2.547 | 63.629 |
| **1971** | 2.207 | 5.055 | 0.255 | 21.890 | 31.286 | 2.418 | 2.779 | 65.891 |
| **1972** | 2.251 | 5.111 | 0.079 | 22.839 | 32.096 | 3.520 | 2.958 | 68.855 |
| **1973** | 2.324 | 5.161 | 0.071 | 23.906 | 34.213 | 4.444 | 3.157 | 73.277 |
| **1974** | 2.313 | 5.206 | 0.079 | 24.932 | 35.747 | 5.078 | 3.533 | 76.889 |
| **1975** | 2.398 | 5.246 | 0.231 | 25.591 | 35.240 | 5.462 | 3.668 | 77.836 |
| **1976** | 2.457 | 5.281 | 0.375 | 26.455 | 36.065 | 6.860 | 3.704 | 81.196 |
| **1977** | 2.448 | 5.311 | 0.485 | 27.481 | 37.551 | 8.297 | 3.521 | 85.094 |
| **1978** | 2.451 | 5.340 | 0.504 | 28.050 | 37.557 | 8.736 | 3.724 | 86.363 |
| **1979** | 2.467 | 5.370 | 0.540 | 29.119 | 38.186 | 9.419 | 3.917 | 89.019 |
| **1980** | 2.536 | 5.407 | 0.566 | 29.969 | 36.658 | 10.619 | 3.952 | 89.708 |
| **1981** | 2.570 | 5.513 | 0.556 | 30.707 | 35.388 | 11.621 | 4.018 | 90.371 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1982** | 2.645 | 5.625 | 0.531 | 30.997 | 35.520 | 12.130 | 3.825 | 91.272 |
| **1983** | 2.629 | 5.743 | 0.565 | 31.113 | 34.810 | 13.167 | 3.880 | 91.905 |
| **1984** | 2.720 | 5.865 | 0.572 | 32.735 | 36.333 | 13.537 | 4.097 | 95.858 |
| **1985** | 2.788 | 5.989 | 0.565 | 33.726 | 34.720 | 14.965 | 4.072 | 96.825 |
| **1986** | 2.823 | 6.117 | 0.552 | 34.721 | 35.522 | 16.686 | 4.342 | 100.763 |
| **1987** | 2.891 | 6.247 | 0.449 | 35.914 | 36.344 | 16.833 | 4.287 | 102.965 |
| **1988** | 2.938 | 6.380 | 0.478 | 37.811 | 38.029 | 17.457 | 4.555 | 107.647 |
| **1989** | 2.992 | 6.514 | 0.461 | 39.703 | 39.359 | 18.789 | 4.710 | 112.528 |
| **1990** | 3.102 | 6.649 | 0.449 | 40.587 | 40.504 | 18.847 | 4.927 | 115.065 |
| **1991** | 3.104 | 6.920 | 0.436 | 41.320 | 39.336 | 18.578 | 5.037 | 114.730 |
| **1992** | 3.152 | 7.199 | 0.422 | 41.677 | 39.608 | 19.335 | 4.864 | 116.258 |
| **1993** | 3.143 | 7.486 | 0.395 | 41.917 | 41.211 | 19.751 | 5.189 | 119.093 |
| **1994** | 3.190 | 7.783 | 0.408 | 42.678 | 43.290 | 21.139 | 5.356 | 123.845 |
| **1995** | 3.279 | 8.087 | 0.078 | 44.129 | 44.932 | 21.071 | 5.500 | 127.076 |
| **1996** | 3.307 | 8.400 | 0.077 | 45.844 | 45.432 | 21.757 | 5.428 | 130.245 |
| **1997** | 3.377 | 8.723 | 0.350 | 48.193 | 46.491 | 21.763 | 5.193 | 134.090 |
| **1998** | 3.350 | 9.056 | 0.350 | 50.168 | 46.541 | 21.726 | 5.549 | 136.740 |
| **1999** | 3.390 | 9.402 | 0.325 | 50.457 | 47.840 | 22.820 | 5.475 | 139.709 |
| **2000** | 3.414 | 9.792 | 0.325 | 50.583 | 48.026 | 23.395 | 5.679 | 141.214 |
| **2001** | 3.503 | 9.598 | 0.344 | 50.286 | 48.342 | 25.106 | 5.344 | 142.522 |
| **2002** | 3.581 | 9.409 | 0.313 | 51.358 | 48.442 | 25.428 | 5.906 | 144.439 |
| **2003** | 3.657 | 9.228 | 0.092 | 53.419 | 48.805 | 24.300 | 5.960 | 145.461 |
| **2004** | 3.671 | 9.057 | 0.348 | 55.695 | 50.020 | 24.362 | 6.808 | 149.961 |
| **2005** | 3.781 | 8.898 | 0.351 | 55.635 | 50.066 | 23.917 | 7.163 | 149.809 |
| **2006** | 3.895 | 8.751 | 0.375 | 57.013 | 53.626 | 26.337 | 7.587 | 157.584 |
| **2007** | 4.009 | 8.613 | 0.382 | 55.988 | 53.468 | 29.418 | 7.963 | 159.841 |
| **2008** | 4.091 | 8.480 | 0.073 | 58.666 | 54.272 | 28.707 | 8.007 | 162.296 |
| **2009** | 4.157 | 8.347 | 0.368 | 56.362 | 54.182 | 29.347 | 8.733 | 161.496 |
| **2010** | 4.238 | 8.257 | 0.073 | 55.227 | 54.521 | 33.787 | 9.619 | 165.721 |
| **2011** | 4.332 | 8.282 | 0.323 | 53.886 | 57.120 | 34.760 | 11.383 | 170.086 |
| **2012** | 4.419 | 8.302 | 0.074 | 50.977 | 58.528 | 35.265 | 11.779 | 169.344 |
| **2013** | 4.507 | 8.318 | 0.074 | 48.364 | 58.956 | 37.092 | 13.181 | 170.492 |
| **2014** | 4.609 | 8.331 | 0.073 | 47.778 | 59.824 | 40.147 | 13.874 | 174.636 |
| **2015** | 4.700 | 8.346 | 0.072 | 49.374 | 57.995 | 41.543 | 15.226 | 177.255 |
| **2016** | 4.787 | 8.352 | 0.072 | 49.146 | 59.955 | 41.199 | 16.674 | 180.186 |
| **2017** | 4.856 | 8.472 | 0.073 | 47.705 | 61.411 | 40.946 | 16.742 | 180.203 |
| **2018** | 4.924 | 8.590 | 0.074 | 46.908 | 63.596 | 40.514 | 19.293 | 183.898 |

**Table A 11.** Total energy consumption per source in Asia 1820-2018 (Mtoe) (Figure 17; Total and per capita)



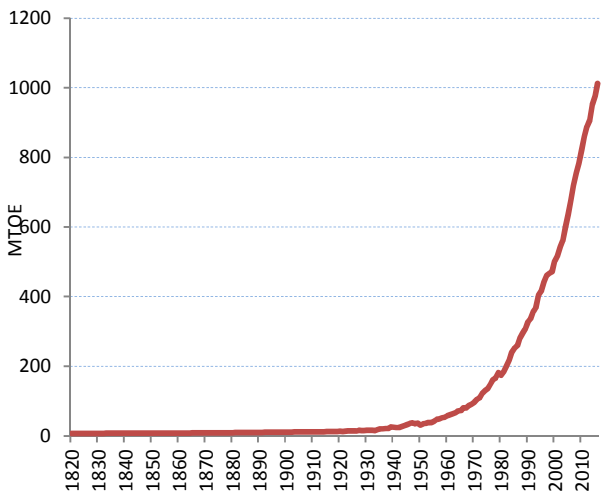

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 54.760 | 108.294 | 34.895 | 2.065 | | | | | 200.014 |
| **1821** | 54.934 | 108.648 | 35.009 | 2.074 | | | | | 200.665 |
| **1822** | 55.109 | 109.002 | 35.123 | 2.084 | | | | | 201.318 |
| **1823** | 55.284 | 109.358 | 35.237 | 2.093 | | | | | 201.973 |
| **1824** | 55.460 | 109.715 | 35.352 | 2.102 | | | | | 202.630 |
| **1825** | 55.637 | 110.073 | 35.468 | 2.112 | | | | | 203.289 |
| **1826** | 55.814 | 110.432 | 35.583 | 2.121 | | | | | 203.950 |
| **1827** | 55.991 | 110.792 | 35.700 | 2.131 | | | | | 204.614 |
| **1828** | 56.170 | 111.154 | 35.816 | 2.140 | | | | | 205.280 |
| **1829** | 56.348 | 111.516 | 35.933 | 2.150 | | | | | 205.948 |
| **1830** | 56.528 | 111.880 | 36.050 | 2.160 | | | | | 206.618 |
| **1831** | 56.708 | 112.245 | 36.168 | 2.164 | | | | | 207.284 |
| **1832** | 56.888 | 112.611 | 36.286 | 2.168 | | | | | 207.953 |
| **1833** | 57.069 | 112.979 | 36.404 | 2.172 | | | | | 208.624 |
| **1834** | 57.251 | 113.348 | 36.523 | 2.176 | | | | | 209.297 |
| **1835** | 57.433 | 113.717 | 36.642 | 2.180 | | | | | 209.973 |
| **1836** | 57.616 | 114.088 | 36.762 | 2.184 | | | | | 210.650 |
| **1837** | 57.799 | 114.461 | 36.882 | 2.188 | | | | | 211.330 |
| **1838** | 57.983 | 114.834 | 37.002 | 2.192 | | | | | 212.011 |
| **1839** | 58.168 | 115.209 | 37.123 | 2.196 | | | | | 212.695 |
| **1840** | 58.353 | 115.585 | 37.244 | 2.200 | | | | | 213.382 |
| **1841** | 58.539 | 115.962 | 37.365 | 2.204 | | | | | 214.069 |
| **1842** | 58.725 | 116.340 | 37.487 | 2.207 | | | | | 214.759 |
| **1843** | 58.912 | 116.720 | 37.610 | 2.210 | | | | | 215.452 |
| **1844** | 59.099 | 117.101 | 37.732 | 2.214 | | | | | 216.146 |
| **1845** | 59.287 | 117.483 | 37.855 | 2.217 | | | | | 216.843 |
| **1846** | 59.476 | 117.866 | 37.979 | 2.220 | | | | | 217.542 |
| **1847** | 59.665 | 118.251 | 38.103 | 2.224 | | | | | 218.243 |
| **1848** | 59.855 | 118.636 | 38.227 | 2.227 | | | | | 218.946 |
| **1849** | 60.046 | 119.024 | 38.352 | 2.230 | | | | | 219.652 |
| **1850** | 60.237 | 119.412 | 38.477 | 2.234 | | | | | 220.360 |
| **1851** | 60.149 | 119.199 | 38.424 | 2.218 | | | | | 219.990 |
| **1852** | 60.061 | 118.986 | 38.371 | 2.203 | | | | | 219.620 |
| **1853** | 59.973 | 118.774 | 38.317 | 2.187 | | | | | 219.251 |
| **1854** | 59.885 | 118.562 | 38.264 | 2.172 | | | | | 218.883 |
| **1855** | 59.797 | 118.350 | 38.211 | 2.156 | | | | | 218.515 |
| **1856** | 59.710 | 118.139 | 38.158 | 2.141 | | | | | 218.148 |

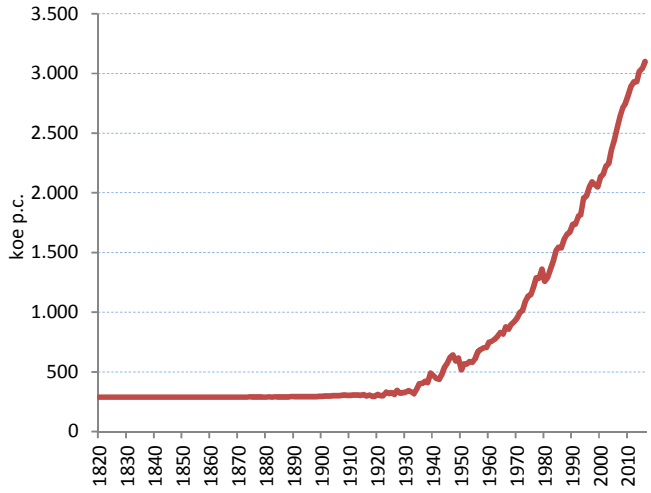
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **1857** | 59.622 | 117.928 | 38.106 | 2.125 | | | 217.781 |
| **1858** | 59.535 | 117.718 | 38.053 | 2.110 | | | 217.415 |
| **1859** | 59.448 | 117.507 | 38.000 | 2.094 | | | 217.049 |
| **1860** | 59.361 | 117.298 | 37.947 | 2.341 | | | 216.947 |
| **1861** | 59.274 | 117.051 | 37.895 | 2.343 | | | 216.563 |
| **1862** | 59.187 | 116.806 | 37.842 | 2.346 | | | 216.181 |
| **1863** | 59.100 | 116.560 | 37.790 | 2.349 | | | 215.800 |
| **1864** | 59.014 | 116.315 | 37.738 | 2.354 | | | 215.420 |
| **1865** | 58.927 | 116.071 | 37.685 | 2.359 | | | 215.043 |
| **1866** | 58.841 | 115.827 | 37.633 | 2.365 | | | 214.667 |
| **1867** | 58.755 | 115.584 | 37.581 | 2.373 | | | 214.292 |
| **1868** | 58.668 | 115.341 | 37.529 | 2.384 | | | 213.923 |
| **1869** | 58.583 | 115.099 | 37.477 | 2.396 | | | 213.554 |
| **1870** | 58.497 | 114.858 | 37.425 | 2.405 | | | 213.185 |
| **1871** | 58.823 | 115.474 | 37.603 | 2.440 | | | 214.341 |
| **1872** | 59.152 | 116.094 | 37.782 | 2.476 | | | 215.503 |
| **1873** | 59.482 | 116.717 | 37.962 | 2.511 | | | 216.672 |
| **1874** | 59.815 | 117.343 | 38.143 | 2.705 | | | 218.005 |
| **1875** | 60.149 | 117.973 | 38.324 | 3.019 | | | 219.465 |
| **1876** | 60.485 | 118.606 | 38.506 | 3.050 | | | 220.647 |
| **1877** | 60.822 | 119.243 | 38.690 | 3.058 | | | 221.813 |
| **1878** | 61.162 | 119.882 | 38.874 | 3.255 | | | 223.173 |
| **1879** | 61.504 | 120.526 | 39.059 | 3.430 | 0.023 | | 224.542 |
| **1880** | 61.847 | 121.173 | 39.245 | 3.495 | 0.036 | | 225.796 |
| **1881** | 62.193 | 121.746 | 39.405 | 3.579 | 0.032 | | 226.954 |
| **1882** | 62.540 | 122.321 | 39.565 | 3.618 | 0.071 | | 228.115 |
| **1883** | 62.889 | 122.899 | 39.727 | 3.716 | 0.048 | | 229.279 |
| **1884** | 63.240 | 123.480 | 39.890 | 3.857 | 0.093 | | 230.561 |
| **1885** | 63.594 | 124.064 | 40.053 | 4.028 | 0.066 | | 231.805 |
| **1886** | 63.949 | 124.651 | 40.217 | 4.138 | 0.111 | | 233.066 |
| **1887** | 64.306 | 125.240 | 40.383 | 4.477 | 0.106 | | 234.512 |
| **1888** | 64.665 | 125.832 | 40.549 | 4.737 | 0.134 | | 235.917 |
| **1889** | 65.026 | 126.427 | 40.716 | 5.072 | 0.194 | | 237.435 |
| **1890** | 65.390 | 127.025 | 41.846 | 5.308 | 0.199 | | 239.767 |
| **1891** | 65.813 | 127.710 | 46.548 | 5.853 | 0.216 | | 246.140 |
| **1892** | 66.238 | 128.399 | 46.785 | 6.046 | 0.251 | | 247.719 |
| **1893** | 66.667 | 129.092 | 47.024 | 6.169 | 0.420 | | 249.372 |
| **1894** | 67.098 | 129.789 | 47.264 | 7.113 | 0.331 | | 251.595 |
| **1895** | 67.532 | 130.489 | 47.003 | 7.765 | 0.454 | | 253.244 |
| **1896** | 67.969 | 131.193 | 47.749 | 8.385 | 0.502 | | 255.798 |
| **1897** | 68.409 | 131.901 | 47.993 | 8.667 | 0.751 | | 257.721 |
| **1898** | 68.851 | 132.613 | 48.239 | 10.132 | 0.798 | | 260.633 |
| **1899** | 69.297 | 133.328 | 48.487 | 10.471 | 0.680 | | 262.263 |
| **1900** | 69.745 | 134.048 | 50.251 | 11.647 | 0.866 | | 266.558 |
| **1901** | 70.306 | 134.994 | 51.957 | 13.125 | 1.277 | | 271.658 |
| **1902** | 70.871 | 135.947 | 52.309 | 14.133 | 1.046 | | 274.306 |
| **1903** | 71.441 | 136.907 | 52.664 | 14.504 | 1.611 | | 277.127 |
| **1904** | 72.015 | 137.873 | 53.022 | 15.852 | 1.926 | | 280.689 |
| **1905** | 72.594 | 138.846 | 53.383 | 16.363 | 2.142 | | 283.328 |
| **1906** | 73.178 | 139.826 | 53.746 | 18.278 | 2.320 | | 287.348 |
| **1907** | 73.766 | 140.813 | 54.111 | 20.039 | 2.596 | | 291.325 |
| **1908** | 74.359 | 141.807 | 54.480 | 22.357 | 2.761 | | 295.764 |
| **1909** | 74.957 | 142.808 | 54.851 | 22.997 | 3.144 | | 298.757 |
| **1910** | 75.559 | 143.816 | 58.909 | 23.815 | 2.638 | | 304.737 |
| **1911** | 76.167 | 144.603 | 58.692 | 26.405 | 2.911 | | 308.777 |
| **1912** | 76.779 | 145.394 | 59.077 | 31.583 | 2.540 | | 315.373 |
| **1913** | 77.407 | 146.190 | 62.617 | 36.139 | 2.764 | | 325.117 |
| **1914** | 77.940 | 146.966 | 63.022 | 37.980 | 2.822 | | 328.729 |
| **1915** | 78.475 | 147.747 | 66.625 | 36.565 | 2.774 | 0.130 | 332.317 |
| **1916** | 79.015 | 148.531 | 67.058 | 40.459 | 2.946 | 0.166 | 338.175 |
| **1917** | 79.558 | 149.320 | 70.737 | 44.428 | 2.847 | 0.193 | 347.083 |
| **1918** | 80.105 | 150.113 | 71.199 | 48.003 | 2.848 | 0.229 | 352.498 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1919** | 80.656 | 150.910 | 71.666 | 56.086 | 2.997 | | 0.271 | | 362.585 |
| **1920** | 81.210 | 151.714 | 74.199 | 49.968 | 3.124 | | 0.296 | | 360.512 |
| **1921** | 81.934 | 152.909 | 76.108 | 48.106 | 3.243 | 0.076 | 0.328 | | 362.705 |
| **1922** | 82.665 | 154.113 | 76.776 | 49.363 | 3.331 | 0.112 | 0.373 | | 366.734 |
| **1923** | 83.402 | 155.327 | 77.450 | 53.512 | 3.675 | 0.207 | 0.408 | | 373.981 |
| **1924** | 84.145 | 156.551 | 78.131 | 56.943 | 3.974 | 0.254 | 0.443 | | 380.441 |
| **1925** | 84.896 | 157.784 | 78.817 | 57.828 | 4.564 | 0.355 | 0.609 | | 384.854 |
| **1926** | 85.653 | 159.027 | 79.510 | 56.991 | 4.300 | 0.304 | 0.705 | | 386.490 |
| **1927** | 86.416 | 160.280 | 80.209 | 51.953 | 5.259 | 0.313 | 0.923 | | 385.352 |
| **1928** | 87.187 | 161.542 | 80.914 | 61.543 | 5.351 | 0.410 | 1.076 | | 398.023 |
| **1929** | 87.964 | 162.815 | 81.626 | 62.929 | 5.906 | 0.459 | 1.312 | | 403.011 |
| **1930** | 88.748 | 164.098 | 83.044 | 62.003 | 6.602 | 0.464 | 1.344 | | 406.303 |
| **1931** | 89.540 | 165.172 | 83.070 | 58.027 | 6.780 | 0.705 | 1.448 | | 404.740 |
| **1932** | 90.338 | 166.252 | 83.793 | 55.727 | 6.937 | 0.739 | 1.489 | | 405.275 |
| **1933** | 91.143 | 167.339 | 89.571 | 62.889 | 6.076 | 0.844 | 1.656 | | 419.519 |
| **1934** | 91.956 | 168.434 | 85.260 | 67.076 | 6.978 | 0.898 | 1.732 | | 422.334 |
| **1935** | 92.776 | 169.535 | 86.004 | 72.909 | 7.806 | 0.908 | 1.774 | | 431.713 |
| **1936** | 93.603 | 170.644 | 86.755 | 76.780 | 3.816 | 0.872 | 2.022 | | 434.493 |
| **1937** | 94.438 | 171.760 | 83.605 | 78.806 | 5.064 | 0.947 | 2.260 | | 436.879 |
| **1938** | 95.280 | 172.884 | 84.381 | 81.683 | 4.969 | 1.013 | 2.368 | | 442.578 |
| **1939** | 96.129 | 174.015 | 85.118 | 88.370 | 5.397 | 1.039 | 2.521 | | 452.588 |
| **1940** | 96.987 | 175.159 | 85.860 | 99.329 | 4.230 | 1.072 | 2.454 | | 465.091 |
| **1941** | 98.072 | 177.010 | 86.804 | 107.067 | 3.814 | 0.045 | 2.523 | | 475.334 |
| **1942** | 99.169 | 178.880 | 87.759 | 108.221 | 4.047 | 0.044 | 3.061 | | 481.181 |
| **1943** | 100.278 | 180.770 | 88.725 | 101.878 | 3.550 | 0.042 | 2.824 | | 478.068 |
| **1944** | 101.400 | 182.679 | 89.702 | 100.173 | 4.196 | 0.041 | 3.116 | | 481.308 |
| **1945** | 102.475 | 184.502 | 96.752 | 64.295 | 4.810 | 0.040 | 3.268 | | 456.141 |
| **1946** | 103.561 | 186.342 | 96.833 | 49.511 | 4.591 | 0.039 | 2.435 | | 443.312 |
| **1947** | 104.658 | 188.201 | 109.906 | 61.850 | 5.535 | 0.071 | 3.546 | | 473.767 |
| **1948** | 105.767 | 190.078 | 110.045 | 66.367 | 5.757 | 0.464 | 3.725 | | 482.203 |
| **1949** | 106.888 | 191.974 | 107.463 | 80.760 | 5.911 | 0.716 | 4.159 | | 497.870 |
| **1950** | 108.021 | 193.890 | 110.222 | 86.315 | 9.097 | 0.750 | 4.546 | | 512.840 |
| **1951** | 110.121 | 197.933 | 126.475 | 99.501 | 13.009 | 0.946 | 4.768 | | 552.752 |
| **1952** | 112.642 | 201.676 | 128.154 | 110.549 | 13.462 | 1.263 | 4.801 | | 572.548 |
| **1953** | 115.462 | 205.255 | 128.883 | 124.081 | 17.441 | 1.605 | 5.084 | | 597.811 |
| **1954** | 117.871 | 208.781 | 129.586 | 128.989 | 20.103 | 1.868 | 5.533 | | 612.732 |
| **1955** | 120.196 | 212.341 | 130.316 | 138.738 | 24.798 | 2.364 | 5.970 | | 634.723 |
| **1956** | 122.556 | 215.998 | 134.971 | 154.549 | 29.191 | 2.674 | 6.448 | | 666.387 |
| **1957** | 125.037 | 219.788 | 130.962 | 176.389 | 34.604 | 2.991 | 6.979 | | 696.750 |
| **1958** | 127.605 | 223.728 | 129.233 | 183.808 | 36.948 | 3.111 | 7.676 | | 712.109 |
| **1959** | 130.197 | 227.818 | 129.972 | 185.829 | 46.874 | 3.495 | 8.659 | | 732.844 |
| **1960** | 132.816 | 232.056 | 142.726 | 200.017 | 60.761 | 2.638 | 9.302 | | 780.316 |
| **1961** | 135.555 | 235.612 | 140.252 | 213.701 | 78.039 | 3.217 | 9.304 | | 815.681 |
| **1962** | 138.898 | 239.328 | 129.798 | 221.802 | 89.980 | 3.853 | 10.665 | | 834.322 |
| **1963** | 142.005 | 243.266 | 133.989 | 225.560 | 108.185 | 4.625 | 10.610 | | 868.240 |
| **1964** | 145.336 | 247.500 | 134.808 | 226.959 | 128.222 | 4.933 | 12.099 | | 899.855 |
| **1965** | 148.670 | 252.072 | 131.885 | 235.050 | 149.276 | 4.973 | 13.356 | | 935.281 |
| **1966** | 152.433 | 257.002 | 137.514 | 248.027 | 169.828 | 5.187 | 15.154 | 0.126 | 985.272 |
| **1967** | 155.344 | 262.247 | 138.694 | 239.066 | 198.926 | 5.334 | 13.741 | 0.288 | 1 013.640 |
| **1968** | 159.521 | 267.707 | 139.828 | 241.884 | 228.771 | 5.875 | 14.233 | 0.245 | 1 058.063 |
| **1969** | 164.490 | 273.248 | 141.216 | 276.161 | 271.656 | 6.333 | 15.482 | 0.564 | 1 149.152 |
| **1970** | 168.849 | 278.791 | 143.151 | 313.060 | 319.287 | 7.695 | 15.687 | 1.567 | 1 248.086 |
| **1971** | 174.625 | 282.865 | 148.513 | 336.873 | 359.854 | 8.782 | 17.032 | 2.739 | 1 331.283 |
| **1972** | 179.185 | 286.850 | 146.542 | 350.823 | 388.562 | 9.204 | 17.833 | 3.293 | 1 382.292 |
| **1973** | 184.787 | 290.705 | 147.583 | 356.798 | 446.783 | 10.759 | 16.977 | 3.884 | 1 458.277 |
| **1974** | 188.424 | 294.391 | 148.590 | 364.391 | 443.646 | 19.623 | 18.534 | 6.914 | 1 484.512 |
| **1975** | 191.718 | 297.886 | 141.205 | 394.660 | 438.078 | 24.100 | 19.660 | 8.099 | 1 515.406 |
| **1976** | 196.641 | 301.173 | 139.966 | 402.677 | 465.472 | 25.989 | 20.314 | 13.395 | 1 565.627 |
| **1977** | 200.475 | 304.270 | 143.470 | 430.328 | 485.562 | 33.517 | 19.643 | 10.220 | 1 627.485 |
| **1978** | 204.461 | 307.243 | 143.964 | 453.136 | 510.184 | 43.690 | 20.186 | 18.511 | 1 701.374 |
| **1979** | 208.346 | 310.184 | 143.014 | 473.131 | 520.488 | 50.796 | 22.365 | 21.940 | 1 750.263 |
| **1980** | 211.886 | 313.291 | 132.264 | 500.872 | 485.292 | 53.005 | 24.947 | 29.070 | 1 750.626 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1981** | 216.235 | 317.922 | 135.782 | 516.801 | 468.662 | 52.148 | 27.285 | 30.141 | 1 764.975 |
| **1982** | 221.005 | 322.615 | 133.100 | 535.911 | 453.960 | 54.108 | 30.142 | 37.014 | 1 787.856 |
| **1983** | 222.562 | 327.415 | 135.248 | 565.385 | 458.669 | 60.627 | 33.037 | 38.330 | 1 841.273 |
| **1984** | 228.579 | 332.373 | 130.156 | 615.718 | 479.041 | 74.730 | 32.951 | 44.894 | 1 938.442 |
| **1985** | 231.478 | 337.514 | 130.902 | 667.596 | 471.623 | 81.662 | 35.487 | 53.798 | 2 010.060 |
| **1986** | 236.393 | 342.860 | 131.779 | 693.722 | 486.508 | 89.163 | 35.883 | 59.070 | 2 075.378 |
| **1987** | 243.307 | 348.368 | 135.018 | 751.667 | 501.653 | 93.387 | 36.198 | 67.198 | 2 176.795 |
| **1988** | 250.783 | 353.912 | 135.912 | 809.416 | 542.248 | 99.941 | 39.538 | 62.602 | 2 294.351 |
| **1989** | 258.941 | 359.325 | 136.779 | 852.438 | 572.102 | 107.156 | 43.676 | 66.060 | 2 396.478 |
| **1990** | 261.336 | 364.513 | 138.165 | 877.561 | 600.630 | 114.582 | 42.469 | 70.126 | 2 469.382 |
| **1991** | 264.570 | 367.843 | 138.875 | 918.836 | 622.492 | 128.127 | 44.101 | 74.612 | 2 559.456 |
| **1992** | 272.413 | 370.872 | 147.636 | 959.669 | 658.752 | 135.540 | 43.178 | 78.090 | 2 666.149 |
| **1993** | 278.056 | 373.625 | 147.968 | 1 015.094 | 679.029 | 139.870 | 47.323 | 89.333 | 2 770.298 |
| **1994** | 286.509 | 376.152 | 148.460 | 1 075.348 | 714.168 | 151.180 | 49.006 | 97.296 | 2 898.120 |
| **1995** | 295.931 | 378.490 | 148.723 | 1 101.076 | 753.683 | 158.260 | 54.640 | 107.451 | 2 998.255 |
| **1996** | 301.365 | 380.640 | 149.245 | 1 149.855 | 792.434 | 170.651 | 53.697 | 111.622 | 3 109.509 |
| **1997** | 307.091 | 382.598 | 132.288 | 1 145.891 | 826.593 | 184.682 | 56.507 | 120.608 | 3 156.257 |
| **1998** | 312.778 | 384.397 | 132.803 | 1 138.838 | 815.801 | 190.046 | 61.009 | 122.796 | 3 158.469 |
| **1999** | 318.706 | 386.080 | 133.255 | 1 171.133 | 853.432 | 202.959 | 61.111 | 120.223 | 3 246.899 |
| **2000** | 323.781 | 387.807 | 131.128 | 1 206.617 | 893.356 | 220.003 | 64.376 | 122.619 | 3 349.688 |
| **2001** | 326.086 | 387.019 | 131.647 | 1 261.822 | 895.014 | 229.416 | 70.948 | 124.469 | 3 426.422 |
| **2002** | 329.104 | 386.157 | 132.519 | 1 367.272 | 931.808 | 238.324 | 72.530 | 125.214 | 3 582.928 |
| **2003** | 333.758 | 385.213 | 132.936 | 1 581.147 | 986.160 | 261.431 | 74.498 | 101.764 | 3 856.907 |
| **2004** | 338.910 | 384.170 | 133.470 | 1 797.137 | 1 050.502 | 267.501 | 86.916 | 123.211 | 4 181.816 |
| **2005** | 344.435 | 383.018 | 125.875 | 2 067.448 | 1 063.266 | 289.363 | 95.664 | 127.060 | 4 496.129 |
| **2006** | 351.411 | 381.757 | 126.418 | 2 242.265 | 1 083.623 | 311.026 | 107.530 | 131.846 | 4 735.874 |
| **2007** | 360.975 | 380.400 | 133.676 | 2 445.771 | 1 118.078 | 336.658 | 117.028 | 125.419 | 5 018.005 |
| **2008** | 368.298 | 378.966 | 134.183 | 2 501.361 | 1 121.913 | 365.651 | 141.323 | 117.196 | 5 128.890 |
| **2009** | 373.331 | 377.482 | 133.238 | 2 602.031 | 1 126.147 | 377.434 | 149.556 | 130.864 | 5 270.081 |
| **2010** | 381.876 | 376.338 | 124.351 | 2 723.891 | 1 208.886 | 422.983 | 176.433 | 136.189 | 5 550.947 |
| **2011** | 388.829 | 373.913 | 124.859 | 2 935.270 | 1 255.042 | 465.618 | 193.073 | 98.541 | 5 835.145 |
| **2012** | 393.843 | 371.460 | 125.378 | 3 015.520 | 1 322.001 | 497.386 | 229.097 | 52.033 | 6 006.718 |
| **2013** | 399.569 | 368.960 | 125.900 | 3 108.960 | 1 346.640 | 514.936 | 267.295 | 55.935 | 6 188.195 |
| **2014** | 404.508 | 366.391 | 126.416 | 3 122.532 | 1 370.801 | 526.474 | 309.707 | 58.687 | 6 285.516 |
| **2015** | 410.685 | 363.981 | 125.606 | 3 096.015 | 1 420.255 | 527.401 | 351.988 | 75.036 | 6 370.967 |
| **2016** | 415.897 | 360.984 | 124.733 | 3 086.355 | 1 466.500 | 541.508 | 358.183 | 94.672 | 6 448.831 |
| **2017** | 419.501 | 364.112 | 125.813 | 3 118.446 | 1 508.385 | 576.484 | 477.667 | 110.918 | 6 701.325 |
| **2018** | 423.013 | 367.160 | 126.867 | 3 191.568 | 1 563.456 | 625.331 | 561.620 | 118.583 | 6 977.599 |

**Table A 12.** Total energy consumption per source in Middle East 1820-2018 (Mtoe) (Figure 18; Total and per capita)



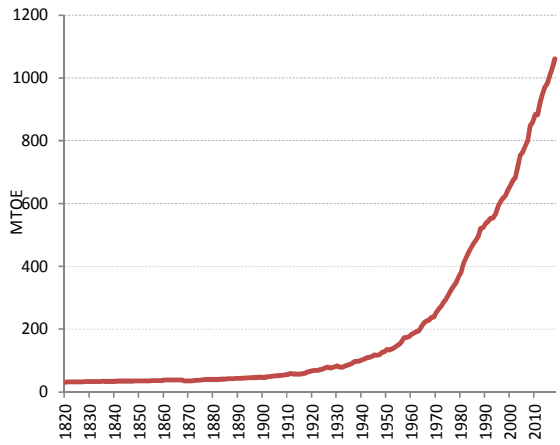

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 2.037 | 3.530 | 1.619 | | | | | | 7.186 |
| **1821** | 2.045 | 3.543 | 1.624 | | | | | | 7.213 |
| **1822** | 2.054 | 3.557 | 1.630 | | | | | | 7.240 |
| **1823** | 2.062 | 3.570 | 1.636 | | | | | | 7.268 |
| **1824** | 2.071 | 3.584 | 1.641 | | | | | | 7.296 |
| **1825** | 2.079 | 3.597 | 1.647 | | | | | | 7.323 |
| **1826** | 2.088 | 3.611 | 1.653 | | | | | | 7.351 |
| **1827** | 2.096 | 3.625 | 1.658 | | | | | | 7.379 |
| **1828** | 2.105 | 3.638 | 1.664 | | | | | | 7.407 |
| **1829** | 2.113 | 3.652 | 1.670 | | | | | | 7.435 |
| **1830** | 2.122 | 3.666 | 1.676 | | | | | | 7.464 |
| **1831** | 2.131 | 3.680 | 1.682 | | | | | | 7.492 |
| **1832** | 2.139 | 3.694 | 1.687 | | | | | | 7.521 |
| **1833** | 2.148 | 3.708 | 1.693 | | | | | | 7.549 |
| **1834** | 2.157 | 3.722 | 1.699 | | | | | | 7.578 |
| **1835** | 2.166 | 3.736 | 1.705 | | | | | | 7.607 |
| **1836** | 2.175 | 3.750 | 1.711 | | | | | | 7.636 |
| **1837** | 2.184 | 3.764 | 1.717 | | | | | | 7.665 |
| **1838** | 2.193 | 3.778 | 1.723 | | | | | | 7.694 |
| **1839** | 2.201 | 3.793 | 1.729 | | | | | | 7.723 |
| **1840** | 2.210 | 3.807 | 1.735 | | | | | | 7.752 |
| **1841** | 2.220 | 3.822 | 1.741 | | | | | | 7.782 |
| **1842** | 2.229 | 3.836 | 1.747 | | | | | | 7.811 |
| **1843** | 2.238 | 3.850 | 1.753 | | | | | | 7.841 |
| **1844** | 2.247 | 3.865 | 1.759 | | | | | | 7.871 |
| **1845** | 2.256 | 3.880 | 1.765 | | | | | | 7.901 |
| **1846** | 2.265 | 3.894 | 1.771 | | | | | | 7.931 |
| **1847** | 2.275 | 3.909 | 1.777 | | | | | | 7.961 |
| **1848** | 2.284 | 3.924 | 1.783 | | | | | | 7.991 |
| **1849** | 2.293 | 3.939 | 1.790 | | | | | | 8.022 |
| **1850** | 2.303 | 3.954 | 1.796 | | | | | | 8.052 |
| **1851** | 2.311 | 3.966 | 1.801 | | | | | | 8.078 |
| **1852** | 2.320 | 3.978 | 1.807 | | | | | | 8.105 |
| **1853** | 2.329 | 3.990 | 1.813 | | | | | | 8.131 |
| **1854** | 2.338 | 4.002 | 1.818 | | | | | | 8.158 |

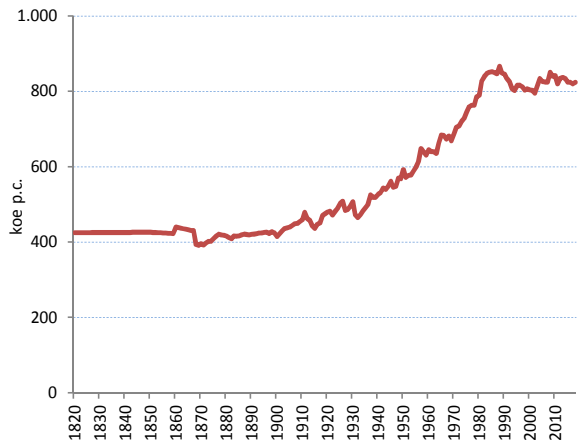
| | | | | | | |
|---|---|---|---|---|---|---|
| **1855** | 2.346 | 4.014 | 1.824 | | | 8.184 |
| **1856** | 2.355 | 4.026 | 1.830 | | | 8.211 |
| **1857** | 2.364 | 4.038 | 1.836 | | | 8.237 |
| **1858** | 2.373 | 4.050 | 1.841 | | | 8.264 |
| **1859** | 2.382 | 4.062 | 1.847 | | | 8.291 |
| **1860** | 2.391 | 4.074 | 1.853 | | | 8.318 |
| **1861** | 2.400 | 4.086 | 1.859 | | | 8.345 |
| **1862** | 2.409 | 4.098 | 1.865 | | | 8.371 |
| **1863** | 2.418 | 4.110 | 1.870 | | | 8.398 |
| **1864** | 2.427 | 4.122 | 1.876 | | | 8.425 |
| **1865** | 2.436 | 4.134 | 1.882 | 0.044 | | 8.496 |
| **1866** | 2.445 | 4.145 | 1.888 | 0.062 | | 8.541 |
| **1867** | 2.455 | 4.157 | 1.894 | 0.067 | | 8.573 |
| **1868** | 2.464 | 4.169 | 1.900 | 0.052 | | 8.585 |
| **1869** | 2.473 | 4.182 | 1.906 | 0.079 | | 8.639 |
| **1870** | 2.482 | 4.194 | 1.912 | 0.047 | | 8.635 |
| **1871** | 2.502 | 4.224 | 1.925 | 0.059 | | 8.710 |
| **1872** | 2.522 | 4.255 | 1.938 | 0.073 | | 8.787 |
| **1873** | 2.542 | 4.286 | 1.951 | 0.071 | | 8.849 |
| **1874** | 2.562 | 4.317 | 1.964 | 0.077 | | 8.919 |
| **1875** | 2.582 | 4.348 | 1.978 | 0.105 | | 9.012 |
| **1876** | 2.603 | 4.380 | 1.991 | 0.082 | | 9.056 |
| **1877** | 2.623 | 4.411 | 2.005 | 0.133 | | 9.172 |
| **1878** | 2.644 | 4.443 | 2.018 | 0.098 | | 9.203 |
| **1879** | 2.665 | 4.476 | 2.032 | 0.038 | | 9.210 |
| **1880** | 2.686 | 4.508 | 2.046 | 0.041 | | 9.281 |
| **1881** | 2.707 | 4.544 | 2.060 | 0.055 | | 9.366 |
| **1882** | 2.729 | 4.581 | 2.074 | 0.046 | | 9.429 |
| **1883** | 2.750 | 4.618 | 2.088 | 0.048 | | 9.504 |
| **1884** | 2.772 | 4.655 | 2.102 | 0.052 | | 9.581 |
| **1885** | 2.794 | 4.693 | 2.116 | 0.058 | | 9.661 |
| **1886** | 2.816 | 4.730 | 2.130 | 0.041 | | 9.717 |
| **1887** | 2.838 | 4.768 | 2.145 | 0.074 | | 9.825 |
| **1888** | 2.861 | 4.807 | 2.159 | 0.080 | | 9.907 |
| **1889** | 2.883 | 4.845 | 2.174 | 0.120 | | 10.023 |
| **1890** | 2.906 | 4.885 | 2.189 | 0.110 | | 10.090 |
| **1891** | 2.929 | 4.917 | 2.204 | 0.121 | | 10.171 |
| **1892** | 2.952 | 4.949 | 2.219 | 0.123 | | 10.244 |
| **1893** | 2.975 | 4.982 | 2.234 | 0.128 | | 10.319 |
| **1894** | 2.999 | 5.015 | 2.249 | 0.118 | | 10.380 |
| **1895** | 3.023 | 5.048 | 2.264 | 0.112 | | 10.446 |
| **1896** | 3.047 | 5.081 | 2.279 | 0.133 | | 10.541 |
| **1897** | 3.071 | 5.115 | 2.295 | 0.095 | | 10.575 |
| **1898** | 3.095 | 5.149 | 2.311 | 0.158 | | 10.712 |
| **1899** | 3.119 | 5.183 | 2.326 | 0.201 | | 10.830 |
| **1900** | 3.144 | 5.217 | 2.342 | 0.200 | | 10.903 |
| **1901** | 3.160 | 5.241 | 2.351 | 0.310 | | 11.062 |
| **1902** | 3.175 | 5.266 | 2.360 | 0.286 | | 11.087 |
| **1903** | 3.191 | 5.291 | 2.369 | 0.333 | | 11.184 |
| **1904** | 3.207 | 5.316 | 2.378 | 0.380 | | 11.280 |
| **1905** | 3.223 | 5.341 | 2.387 | 0.433 | | 11.383 |
| **1906** | 3.239 | 5.366 | 2.396 | 0.444 | | 11.445 |
| **1907** | 3.255 | 5.391 | 2.405 | 0.540 | | 11.591 |
| **1908** | 3.271 | 5.416 | 2.414 | 0.558 | | 11.660 |
| **1909** | 3.287 | 5.442 | 2.424 | 0.488 | | 11.640 |
| **1910** | 3.303 | 5.467 | 2.433 | 0.506 | | 11.710 |
| **1911** | 3.320 | 5.471 | 2.442 | 0.518 | 0.049 | 11.800 |
| **1912** | 3.336 | 5.475 | 2.451 | 0.534 | 0.090 | 11.886 |
| **1913** | 3.353 | 5.479 | 2.461 | 0.621 | 0.066 | 11.979 |
| **1914** | 3.397 | 5.525 | 2.481 | 0.491 | 0.125 | 12.019 |
| **1915** | 3.441 | 5.571 | 2.502 | 0.372 | 0.431 | 12.317 |
| **1916** | 3.485 | 5.617 | 2.523 | 0.184 | 0.280 | 12.090 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1917** | 3.530 | 5.664 | 2.544 | 0.281 | 0.436 | | | 12.456 |
| **1918** | 3.576 | 5.711 | 2.566 | 0.273 | 0.077 | | | 12.203 |
| **1919** | 3.623 | 5.759 | 2.587 | 0.435 | 0.000 | | | 12.404 |
| **1920** | 3.670 | 5.807 | 2.609 | 0.413 | 0.682 | | | 13.181 |
| **1921** | 3.717 | 5.868 | 2.630 | 0.269 | 0.369 | | | 12.853 |
| **1922** | 3.765 | 5.929 | 2.652 | 0.326 | 0.325 | | | 12.997 |
| **1923** | 3.814 | 5.990 | 2.674 | 0.477 | 1.453 | | | 14.409 |
| **1924** | 3.864 | 6.053 | 2.703 | 0.616 | 0.888 | | | 14.123 |
| **1925** | 3.914 | 6.116 | 2.732 | 0.652 | 1.172 | | | 14.585 |
| **1926** | 3.964 | 6.179 | 2.761 | 0.835 | 0.420 | | | 14.160 |
| **1927** | 4.016 | 6.244 | 2.791 | 0.871 | 1.919 | | | 15.841 |
| **1928** | 4.068 | 6.308 | 2.825 | 0.722 | 1.041 | | | 14.964 |
| **1929** | 4.121 | 6.374 | 3.012 | 0.769 | 0.920 | | | 15.196 |
| **1930** | 4.174 | 6.440 | 3.044 | 0.918 | 1.088 | | | 15.665 |
| **1931** | 4.228 | 6.489 | 3.094 | 0.892 | 1.764 | | | 16.467 |
| **1932** | 4.283 | 6.538 | 3.294 | 0.903 | 1.135 | | | 16.153 |
| **1933** | 4.339 | 6.587 | 3.217 | 1.133 | 0.262 | | | 15.538 |
| **1934** | 4.395 | 6.637 | 3.254 | 1.590 | 2.010 | | | 17.887 |
| **1935** | 4.452 | 6.687 | 3.716 | 1.704 | 3.553 | | | 20.112 |
| **1936** | 4.510 | 6.738 | 4.467 | 1.726 | 3.037 | | | 20.478 |
| **1937** | 4.568 | 6.789 | 4.659 | 1.776 | 3.984 | | 0.003 | 21.779 |
| **1938** | 4.627 | 6.840 | 4.846 | 1.210 | 3.889 | | 0.001 | 21.414 |
| **1939** | 4.687 | 6.892 | 4.845 | 1.732 | 7.621 | | 0.003 | 25.780 |
| **1940** | 4.748 | 6.944 | 5.049 | 1.939 | 6.360 | | 0.003 | 25.044 |
| **1941** | 4.810 | 7.008 | 5.177 | 1.988 | 5.064 | | 0.004 | 24.050 |
| **1942** | 4.872 | 7.073 | 5.060 | 1.751 | 5.112 | | 0.005 | 23.872 |
| **1943** | 4.935 | 7.138 | 5.026 | 2.149 | 7.316 | | 0.006 | 26.570 |
| **1944** | 4.999 | 7.203 | 5.151 | 1.604 | 10.978 | | 0.007 | 29.942 |
| **1945** | 5.071 | 7.279 | 5.306 | 2.536 | 12.320 | | 0.006 | 32.519 |
| **1946** | 5.144 | 7.357 | 5.128 | 2.500 | 15.536 | | 0.008 | 35.672 |
| **1947** | 5.218 | 7.435 | 5.192 | 2.668 | 16.821 | | 0.008 | 37.342 |
| **1948** | 5.293 | 7.513 | 5.458 | 2.696 | 13.915 | | 0.009 | 34.885 |
| **1949** | 5.369 | 7.593 | 5.591 | 2.776 | 15.348 | | 0.009 | 36.686 |
| **1950** | 5.448 | 7.674 | 5.679 | 2.826 | 9.742 | | 0.009 | 31.378 |
| **1951** | 5.607 | 7.845 | 5.833 | 2.921 | 13.049 | | 0.009 | 35.263 |
| **1952** | 5.781 | 8.023 | 6.175 | 2.922 | 13.021 | | 0.010 | 35.932 |
| **1953** | 5.972 | 8.204 | 6.215 | 3.526 | 14.315 | 0.059 | 0.012 | 38.304 |
| **1954** | 6.139 | 8.390 | 6.265 | 3.688 | 14.064 | 0.352 | 0.015 | 38.913 |
| **1955** | 6.297 | 8.581 | 6.429 | 3.562 | 16.290 | 0.766 | 0.016 | 41.941 |
| **1956** | 6.485 | 8.775 | 6.621 | 3.754 | 20.557 | 0.971 | 0.024 | 47.188 |
| **1957** | 6.680 | 8.975 | 6.798 | 4.185 | 21.792 | 1.207 | 0.041 | 49.679 |
| **1958** | 6.865 | 9.180 | 6.984 | 4.339 | 23.456 | 1.165 | 0.075 | 52.064 |
| **1959** | 7.070 | 9.392 | 7.220 | 4.242 | 23.951 | 1.507 | 0.113 | 53.495 |
| **1960** | 7.281 | 9.611 | 7.047 | 3.944 | 28.456 | 1.880 | 0.194 | 58.414 |
| **1961** | 7.319 | 9.841 | 7.101 | 3.907 | 30.230 | 1.965 | 0.277 | 60.640 |
| **1962** | 7.525 | 10.080 | 7.172 | 4.173 | 32.146 | 2.078 | 0.331 | 63.505 |
| **1963** | 7.936 | 10.326 | 7.101 | 4.613 | 34.457 | 2.281 | 0.489 | 67.203 |
| **1964** | 8.186 | 10.580 | 7.255 | 5.065 | 37.648 | 3.162 | 0.213 | 72.109 |
| **1965** | 8.423 | 10.840 | 7.275 | 4.504 | 38.968 | 2.634 | 0.287 | 72.930 |
| **1966** | 8.860 | 11.108 | 7.431 | 5.003 | 44.509 | 3.087 | 0.323 | 80.321 |
| **1967** | 9.076 | 11.383 | 7.575 | 4.492 | 44.585 | 3.243 | 0.417 | 80.772 |
| **1968** | 9.419 | 11.668 | 7.544 | 4.886 | 49.281 | 3.612 | 0.532 | 86.941 |
| **1969** | 9.650 | 11.963 | 7.464 | 5.202 | 52.957 | 3.445 | 0.620 | 91.301 |
| **1970** | 10.080 | 12.270 | 7.392 | 5.761 | 55.503 | 5.439 | 0.608 | 97.053 |
| **1971** | 10.542 | 12.594 | 7.237 | 5.797 | 62.019 | 5.806 | 0.676 | 104.671 |
| **1972** | 10.850 | 12.932 | 7.267 | 6.355 | 64.901 | 6.498 | 0.840 | 109.643 |
| **1973** | 10.982 | 13.284 | 7.410 | 6.795 | 74.996 | 7.424 | 0.729 | 121.619 |
| **1974** | 11.306 | 13.650 | 7.474 | 7.425 | 81.488 | 7.889 | 0.899 | 130.132 |
| **1975** | 11.959 | 14.031 | 7.645 | 8.377 | 83.701 | 8.864 | 1.260 | 135.839 |
| **1976** | 12.604 | 14.426 | 7.801 | 8.703 | 92.606 | 10.177 | 1.611 | 147.927 |
| **1977** | 13.027 | 14.835 | 7.885 | 8.937 | 104.584 | 10.805 | 1.740 | 161.813 |
| **1978** | 13.684 | 15.264 | 7.901 | 8.457 | 107.994 | 11.084 | 2.093 | 166.478 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1979** | 14.557 | 15.717 | 8.034 | 9.034 | 118.035 | 14.376 | 2.172 | | 181.927 |
| **1980** | 15.421 | 16.200 | 8.064 | 9.536 | 106.475 | 16.095 | 2.288 | | 174.080 |
| **1981** | 15.814 | 16.726 | 8.348 | 9.468 | 114.383 | 17.200 | 2.470 | | 184.409 |
| **1982** | 16.747 | 17.278 | 8.409 | 11.531 | 123.678 | 19.877 | 2.662 | | 200.183 |
| **1983** | 17.420 | 17.849 | 8.080 | 12.950 | 139.098 | 20.490 | 2.319 | | 218.206 |
| **1984** | 18.006 | 18.429 | 7.864 | 14.646 | 149.809 | 28.207 | 2.574 | | 239.533 |
| **1985** | 19.249 | 19.010 | 7.425 | 17.077 | 157.027 | 29.778 | 2.390 | | 251.956 |
| **1986** | 19.871 | 19.589 | 7.071 | 18.685 | 155.403 | 36.263 | 2.498 | | 259.381 |
| **1987** | 20.734 | 20.168 | 7.066 | 19.736 | 166.653 | 41.558 | 3.606 | | 279.520 |
| **1988** | 21.690 | 20.738 | 6.926 | 19.191 | 175.159 | 47.124 | 4.695 | | 295.522 |
| **1989** | 22.208 | 21.293 | 7.349 | 21.106 | 177.352 | 54.326 | 3.459 | | 307.093 |
| **1990** | 22.558 | 21.828 | 7.077 | 22.234 | 185.451 | 64.586 | 4.135 | | 327.868 |
| **1991** | 21.925 | 22.288 | 6.653 | 24.164 | 188.224 | 69.289 | 3.878 | | 336.422 |
| **1992** | 21.484 | 22.725 | 6.760 | 24.676 | 199.478 | 77.289 | 4.875 | | 357.288 |
| **1993** | 21.928 | 23.146 | 6.942 | 24.053 | 219.688 | 66.127 | 5.942 | | 367.826 |
| **1994** | 22.317 | 23.565 | 7.060 | 24.530 | 241.789 | 79.967 | 5.404 | | 404.633 |
| **1995** | 23.028 | 23.989 | 7.089 | 25.767 | 244.293 | 86.902 | 6.195 | | 417.263 |
| **1996** | 23.548 | 24.424 | 7.080 | 29.408 | 254.536 | 96.614 | 6.633 | | 442.243 |
| **1997** | 23.758 | 24.866 | 7.112 | 32.661 | 264.529 | 102.320 | 6.430 | | 461.676 |
| **1998** | 24.564 | 25.313 | 6.958 | 34.460 | 255.807 | 112.641 | 6.867 | | 466.611 |
| **1999** | 25.081 | 25.758 | 6.736 | 32.477 | 252.968 | 123.859 | 5.424 | | 472.303 |
| **2000** | 25.853 | 26.199 | 6.752 | 36.173 | 267.774 | 134.458 | 4.866 | | 502.075 |
| **2001** | 26.385 | 26.035 | 6.674 | 32.545 | 274.827 | 146.433 | 4.224 | | 517.123 |
| **2002** | 26.934 | 25.861 | 6.681 | 34.023 | 279.802 | 164.673 | 5.771 | | 543.746 |
| **2003** | 27.396 | 25.689 | 6.519 | 36.435 | 285.046 | 173.350 | 6.192 | | 560.627 |
| **2004** | 28.206 | 25.533 | 6.558 | 38.250 | 300.432 | 194.720 | 8.006 | | 601.706 |
| **2005** | 28.951 | 25.402 | 6.541 | 38.660 | 319.624 | 208.763 | 7.332 | | 635.272 |
| **2006** | 29.929 | 25.295 | 6.451 | 43.558 | 337.716 | 225.204 | 8.557 | | 676.711 |
| **2007** | 30.581 | 25.208 | 6.615 | 48.176 | 351.324 | 249.048 | 7.591 | | 718.542 |
| **2008** | 31.061 | 25.126 | 6.674 | 47.966 | 370.565 | 268.113 | 6.121 | | 755.628 |
| **2009** | 31.992 | 25.036 | 6.716 | 49.632 | 384.275 | 278.023 | 6.684 | | 782.358 |
| **2010** | 33.083 | 25.011 | 6.705 | 50.528 | 389.788 | 305.065 | 9.916 | | 820.097 |
| **2011** | 33.884 | 25.050 | 6.841 | 54.264 | 402.894 | 326.174 | 11.083 | | 860.189 |
| **2012** | 34.997 | 25.070 | 6.877 | 58.551 | 418.698 | 330.933 | 12.871 | 0.505 | 888.501 |
| **2013** | 35.786 | 25.070 | 6.907 | 50.814 | 431.437 | 340.467 | 14.736 | 1.485 | 906.702 |
| **2014** | 36.390 | 25.052 | 6.934 | 56.503 | 441.694 | 369.671 | 13.470 | 1.585 | 951.299 |
| **2015** | 37.198 | 25.041 | 6.958 | 54.607 | 450.402 | 381.872 | 19.267 | 1.294 | 976.639 |
| **2016** | 38.083 | 24.936 | 6.986 | 58.233 | 454.384 | 405.385 | 21.925 | 2.284 | 1 012.215 |
| **2017** | 38.725 | 25.357 | 7.104 | 58.829 | 457.203 | 436.615 | 24.177 | 2.593 | 1 050.604 |
| **2018** | 39.354 | 25.769 | 7.219 | 62.221 | 453.982 | 458.325 | 27.069 | 2.570 | 1 076.508 |

**Table A 13.** Total energy consumption per source in Africa 1820-2018 (Mtoe) (Figure 19; Total and per capita)




| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
|---|---|---|---|---|---|---|---|---|---|
| | Food | Fuelwood | Draft Animals | Coal | Oil | Gas | Electricity | Nuclear | Total |
| **1820** | 5.833 | 19.378 | 6.212 | | | | | | 31.423 |
| **1821** | 5.858 | 19.453 | 6.236 | | | | | | 31.547 |
| **1822** | 5.884 | 19.527 | 6.260 | | | | | | 31.672 |
| **1823** | 5.910 | 19.602 | 6.284 | | | | | | 31.796 |
| **1824** | 5.937 | 19.677 | 6.308 | | | | | | 31.922 |
| **1825** | 5.963 | 19.753 | 6.332 | | | | | | 32.048 |
| **1826** | 5.989 | 19.828 | 6.357 | | | | | | 32.174 |
| **1827** | 6.016 | 19.904 | 6.381 | | | | | | 32.301 |
| **1828** | 6.042 | 19.981 | 6.405 | | | | | | 32.428 |
| **1829** | 6.069 | 20.057 | 6.430 | | | | | | 32.556 |
| **1830** | 6.096 | 20.134 | 6.455 | | | | | | 32.684 |
| **1831** | 6.123 | 20.211 | 6.479 | | | | | | 32.813 |
| **1832** | 6.150 | 20.289 | 6.504 | | | | | | 32.943 |
| **1833** | 6.177 | 20.367 | 6.529 | | | | | | 33.073 |
| **1834** | 6.204 | 20.445 | 6.554 | | | | | | 33.203 |
| **1835** | 6.232 | 20.523 | 6.579 | | | | | | 33.334 |
| **1836** | 6.259 | 20.602 | 6.604 | | | | | | 33.465 |
| **1837** | 6.287 | 20.681 | 6.630 | | | | | | 33.597 |
| **1838** | 6.315 | 20.760 | 6.655 | | | | | | 33.730 |
| **1839** | 6.343 | 20.839 | 6.681 | | | | | | 33.863 |
| **1840** | 6.371 | 20.919 | 6.706 | | | | | | 33.996 |
| **1841** | 6.399 | 20.999 | 6.732 | | | | | | 34.130 |
| **1842** | 6.427 | 21.080 | 6.758 | | | | | | 34.265 |
| **1843** | 6.456 | 21.161 | 6.784 | | | | | | 34.400 |
| **1844** | 6.484 | 21.242 | 6.810 | | | | | | 34.536 |
| **1845** | 6.513 | 21.323 | 6.836 | | | | | | 34.672 |
| **1846** | 6.542 | 21.405 | 6.862 | | | | | | 34.809 |
| **1847** | 6.571 | 21.487 | 6.888 | | | | | | 34.946 |
| **1848** | 6.600 | 21.569 | 6.915 | | | | | | 35.084 |
| **1849** | 6.629 | 21.652 | 6.941 | | | | | | 35.222 |
| **1850** | 6.658 | 21.735 | 6.968 | | | | | | 35.361 |
| **1851** | 6.689 | 21.787 | 6.996 | | | | | | 35.473 |
| **1852** | 6.720 | 21.840 | 7.024 | | | | | | 35.584 |
| **1853** | 6.751 | 21.892 | 7.053 | | | | | | 35.697 |
| **1854** | 6.783 | 21.945 | 7.082 | | | | | | 35.809 |
| **1855** | 6.814 | 21.997 | 7.110 | | | | | | 35.922 |
| **1856** | 6.846 | 22.050 | 7.139 | | | | | | 36.035 |
| **1857** | 6.878 | 22.103 | 7.168 | | | | | | 36.149 |
| **1858** | 6.910 | 22.156 | 7.197 | | | | | | 36.263 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **1859** | 6.942 | 22.209 | 7.226 | | | 36.378 |
| **1860** | 6.974 | 22.263 | 8.755 | | | 37.992 |
| **1861** | 7.007 | 22.285 | 8.731 | | | 38.022 |
| **1862** | 7.039 | 22.306 | 8.707 | | | 38.053 |
| **1863** | 7.072 | 22.328 | 8.684 | | | 38.083 |
| **1864** | 7.105 | 22.350 | 8.660 | | | 38.114 |
| **1865** | 7.138 | 22.371 | 8.636 | | | 38.145 |
| **1866** | 7.171 | 22.393 | 8.612 | | | 38.176 |
| **1867** | 7.204 | 22.415 | 8.657 | | | 38.276 |
| **1868** | 7.238 | 22.437 | 5.492 | | | 35.166 |
| **1869** | 7.271 | 22.458 | 5.369 | | | 35.099 |
| **1870** | 7.306 | 22.481 | 5.816 | | | 35.603 |
| **1871** | 7.361 | 22.679 | 5.486 | | | 35.526 |
| **1872** | 7.416 | 22.879 | 6.002 | | | 36.297 |
| **1873** | 7.472 | 23.081 | 6.355 | | | 36.908 |
| **1874** | 7.528 | 23.284 | 6.342 | | | 37.154 |
| **1875** | 7.585 | 23.489 | 7.119 | | | 38.192 |
| **1876** | 7.642 | 23.696 | 7.655 | | | 38.993 |
| **1877** | 7.699 | 23.904 | 8.084 | | | 39.687 |
| **1878** | 7.757 | 24.115 | 7.863 | | | 39.735 |
| **1879** | 7.815 | 24.327 | 7.847 | | | 39.989 |
| **1880** | 7.874 | 24.542 | 7.640 | | | 40.056 |
| **1881** | 7.933 | 24.690 | 7.302 | | | 39.925 |
| **1882** | 7.993 | 24.838 | 7.036 | | | 39.867 |
| **1883** | 8.053 | 24.987 | 7.780 | | | 40.820 |
| **1884** | 8.114 | 25.137 | 7.805 | | | 41.056 |
| **1885** | 8.175 | 25.289 | 7.973 | | | 41.436 |
| **1886** | 8.236 | 25.440 | 8.259 | | | 41.936 |
| **1887** | 8.298 | 25.593 | 8.535 | | | 42.426 |
| **1888** | 8.361 | 25.747 | 8.524 | | | 42.632 |
| **1889** | 8.424 | 25.902 | 8.481 | 0.011 | | 42.818 |
| **1890** | 8.487 | 26.058 | 8.687 | 0.035 | | 43.267 |
| **1891** | 8.551 | 26.228 | 8.771 | 0.039 | | 43.588 |
| **1892** | 8.615 | 26.399 | 8.936 | 0.062 | | 44.012 |
| **1893** | 8.680 | 26.571 | 8.660 | 0.594 | | 44.505 |
| **1894** | 8.745 | 26.745 | 8.470 | 0.801 | | 44.761 |
| **1895** | 8.811 | 26.920 | 8.389 | 1.096 | | 45.215 |
| **1896** | 8.877 | 27.095 | 8.294 | 1.398 | | 45.664 |
| **1897** | 8.944 | 27.272 | 7.745 | 1.563 | | 45.525 |
| **1898** | 9.011 | 27.450 | 7.940 | 1.974 | | 46.376 |
| **1899** | 9.079 | 27.630 | 7.924 | 1.797 | | 46.430 |
| **1900** | 9.147 | 27.810 | 7.908 | 0.756 | | 45.622 |
| **1901** | 9.245 | 28.100 | 8.208 | 1.273 | | 46.826 |
| **1902** | 9.344 | 28.393 | 8.532 | 1.892 | | 48.161 |
| **1903** | 9.444 | 28.689 | 8.719 | 2.565 | | 49.416 |
| **1904** | 9.545 | 28.987 | 8.628 | 2.877 | | 50.037 |
| **1905** | 9.647 | 29.289 | 8.567 | 3.296 | | 50.800 |
| **1906** | 9.750 | 29.595 | 8.645 | 3.711 | | 51.702 |
| **1907** | 9.855 | 29.903 | 8.968 | 4.126 | | 52.852 |
| **1908** | 9.960 | 30.214 | 8.980 | 4.277 | | 53.432 |
| **1909** | 10.067 | 30.529 | 9.087 | 4.905 | | 54.588 |
| **1910** | 10.174 | 30.847 | 9.030 | 5.547 | 0.073 | 55.671 |
| **1911** | 10.283 | 31.140 | 11.249 | 5.920 | 0.094 | 58.686 |
| **1912** | 10.393 | 31.435 | 8.892 | 6.298 | 0.176 | 57.193 |
| **1913** | 10.506 | 31.733 | 7.937 | 6.812 | 0.140 | 57.127 |
| **1914** | 10.677 | 32.240 | 6.266 | 6.665 | 0.381 | 56.229 |
| **1915** | 10.851 | 32.755 | 5.988 | 6.584 | 0.187 | 56.365 |
| **1916** | 11.028 | 33.278 | 6.002 | 8.006 | 0.383 | 58.697 |
| **1917** | 11.208 | 33.809 | 5.979 | 8.529 | 0.630 | 60.155 |
| **1918** | 11.391 | 34.349 | 8.714 | 8.387 | 1.002 | 63.843 |
| **1919** | 11.577 | 34.898 | 9.507 | 8.688 | 0.827 | 65.497 |
| **1920** | 11.766 | 35.455 | 9.165 | 10.172 | 0.628 | 67.186 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1921** | 11.958 | 36.013 | 9.775 | 10.162 | 0.701 | | | 68.608 |
| **1922** | 12.153 | 36.580 | 10.012 | 8.824 | 0.714 | | | 68.284 |
| **1923** | 12.351 | 37.156 | 10.020 | 10.679 | 0.680 | | | 70.887 |
| **1924** | 12.553 | 37.741 | 10.246 | 11.724 | 0.861 | | | 73.125 |
| **1925** | 12.757 | 38.336 | 10.260 | 13.938 | 1.045 | | 0.004 | 76.341 |
| **1926** | 12.966 | 38.939 | 10.458 | 14.899 | 1.293 | | 0.004 | 78.559 |
| **1927** | 13.177 | 39.552 | 6.828 | 14.875 | 1.521 | | 0.004 | 75.956 |
| **1928** | 13.392 | 40.175 | 6.905 | 15.304 | 1.864 | | 0.004 | 77.643 |
| **1929** | 13.611 | 40.807 | 7.244 | 16.232 | 2.314 | | 0.008 | 80.216 |
| **1930** | 13.833 | 41.450 | 10.769 | 15.100 | 2.363 | | 0.009 | 83.523 |
| **1931** | 14.058 | 42.112 | 7.119 | 13.369 | 2.394 | | 0.010 | 79.062 |
| **1932** | 14.288 | 42.785 | 7.338 | 12.269 | 2.467 | | 0.012 | 79.160 |
| **1933** | 14.521 | 43.469 | 7.290 | 13.928 | 2.653 | | 0.019 | 81.880 |
| **1934** | 14.758 | 44.163 | 7.399 | 15.658 | 2.850 | | 0.031 | 84.859 |
| **1935** | 14.999 | 44.869 | 7.592 | 17.180 | 3.099 | | 0.030 | 87.768 |
| **1936** | 15.243 | 45.586 | 7.706 | 18.610 | 3.433 | | 0.031 | 90.609 |
| **1937** | 15.492 | 46.314 | 11.252 | 19.900 | 3.883 | | 0.043 | 96.883 |
| **1938** | 15.745 | 47.054 | 8.801 | 21.396 | 4.229 | | 0.045 | 97.270 |
| **1939** | 16.002 | 47.806 | 8.373 | 21.821 | 4.919 | | 0.052 | 98.972 |
| **1940** | 16.263 | 48.569 | 8.356 | 22.412 | 6.441 | | 0.061 | 102.102 |
| **1941** | 16.528 | 49.326 | 8.514 | 23.643 | 6.547 | | 0.066 | 104.623 |
| **1942** | 16.798 | 50.095 | 8.675 | 25.531 | 7.657 | | 0.068 | 108.823 |
| **1943** | 17.072 | 50.876 | 8.967 | 25.891 | 7.022 | | 0.053 | 109.882 |
| **1944** | 17.350 | 51.669 | 8.791 | 28.486 | 6.988 | | 0.066 | 113.349 |
| **1945** | 17.642 | 52.500 | 11.282 | 28.758 | 7.732 | | 0.084 | 117.998 |
| **1946** | 17.939 | 53.344 | 7.848 | 28.879 | 8.563 | 0.120 | 0.019 | 116.712 |
| **1947** | 18.240 | 54.202 | 8.009 | 29.009 | 9.494 | 0.120 | 0.020 | 119.095 |
| **1948** | 18.547 | 55.074 | 12.292 | 29.465 | 10.535 | 0.124 | 0.017 | 126.054 |
| **1949** | 18.859 | 55.960 | 9.897 | 31.185 | 11.703 | 0.126 | 0.024 | 127.753 |
| **1950** | 19.176 | 56.860 | 12.957 | 32.900 | 13.252 | 0.131 | 0.153 | 135.430 |
| **1951** | 19.613 | 57.780 | 8.519 | 33.179 | 13.926 | 0.140 | 0.171 | 133.328 |
| **1952** | 20.053 | 58.750 | 8.546 | 34.978 | 14.681 | 0.142 | 0.186 | 137.335 |
| **1953** | 20.511 | 59.766 | 8.570 | 35.681 | 15.541 | 0.154 | 0.246 | 140.468 |
| **1954** | 21.011 | 60.830 | 9.830 | 36.778 | 17.229 | 0.170 | 0.284 | 146.131 |
| **1955** | 21.503 | 61.941 | 8.697 | 40.509 | 18.909 | 0.174 | 0.320 | 152.053 |
| **1956** | 22.029 | 63.099 | 12.356 | 42.475 | 18.757 | 0.191 | 0.371 | 159.278 |
| **1957** | 22.567 | 64.304 | 18.077 | 48.035 | 18.610 | 0.192 | 0.492 | 172.276 |
| **1958** | 23.094 | 65.555 | 13.868 | 50.353 | 20.138 | 0.205 | 0.536 | 173.748 |
| **1959** | 23.716 | 66.853 | 12.883 | 49.498 | 21.831 | 0.237 | 0.641 | 175.659 |
| **1960** | 24.337 | 68.204 | 14.949 | 51.670 | 23.710 | 0.253 | 0.862 | 183.985 |
| **1961** | 24.926 | 69.531 | 14.637 | 51.820 | 24.492 | 0.409 | 1.167 | 186.982 |
| **1962** | 25.582 | 70.902 | 14.051 | 52.722 | 26.049 | 0.657 | 1.390 | 191.354 |
| **1963** | 26.339 | 72.319 | 12.247 | 54.234 | 27.295 | 0.885 | 1.479 | 194.798 |
| **1964** | 27.077 | 73.781 | 13.189 | 58.231 | 32.915 | 1.644 | 1.666 | 208.504 |
| **1965** | 27.844 | 75.287 | 14.877 | 63.264 | 36.346 | 1.353 | 1.784 | 220.755 |
| **1966** | 28.563 | 76.841 | 14.884 | 62.239 | 39.620 | 1.535 | 2.098 | 225.780 |
| **1967** | 29.281 | 78.441 | 14.913 | 63.236 | 38.986 | 1.494 | 2.071 | 228.423 |
| **1968** | 30.113 | 80.088 | 15.407 | 65.928 | 41.711 | 1.563 | 2.421 | 237.231 |
| **1969** | 31.054 | 81.778 | 13.072 | 66.719 | 41.465 | 1.805 | 2.749 | 238.642 |
| **1970** | 32.043 | 83.521 | 15.990 | 68.988 | 46.730 | 1.827 | 3.061 | 252.160 |
| **1971** | 32.945 | 85.082 | 16.354 | 73.155 | 50.314 | 3.695 | 3.345 | 264.891 |
| **1972** | 33.847 | 86.681 | 16.365 | 73.559 | 55.196 | 4.285 | 3.519 | 273.451 |
| **1973** | 34.778 | 88.327 | 16.527 | 78.522 | 58.538 | 4.998 | 3.692 | 285.382 |
| **1974** | 35.783 | 90.031 | 16.826 | 81.987 | 61.627 | 5.829 | 3.961 | 296.043 |
| **1975** | 36.707 | 91.802 | 17.001 | 87.464 | 66.522 | 7.271 | 4.263 | 311.029 |
| **1976** | 37.869 | 93.643 | 16.617 | 91.908 | 72.407 | 8.573 | 4.750 | 325.767 |
| **1977** | 38.980 | 95.549 | 16.631 | 94.598 | 76.890 | 9.360 | 4.824 | 336.831 |
| **1978** | 40.063 | 97.519 | 16.822 | 92.063 | 81.438 | 13.382 | 5.121 | 346.407 |
| **1979** | 41.274 | 99.550 | 17.176 | 98.038 | 86.844 | 18.646 | 5.107 | 366.635 |
| **1980** | 42.520 | 101.664 | 16.626 | 91.821 | 93.965 | 26.819 | 5.516 | 378.931 |
| **1981** | 43.647 | 103.471 | 15.975 | 101.227 | 104.080 | 34.339 | 5.678 | 408.419 |
| **1982** | 44.902 | 105.318 | 16.736 | 107.539 | 110.857 | 35.328 | 5.544 | 426.223 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1983** | 46.076 | 107.198 | 17.508 | 110.355 | 115.696 | 40.881 | 5.315 | | 443.028 |
| **1984** | 47.360 | 109.107 | 17.182 | 113.470 | 121.933 | 40.683 | 5.403 | 2.053 | 457.191 |
| **1985** | 48.726 | 111.039 | 18.131 | 117.026 | 124.412 | 43.693 | 5.410 | 2.786 | 471.224 |
| **1986** | 50.081 | 112.991 | 18.645 | 120.046 | 122.889 | 48.099 | 5.780 | 4.622 | 483.154 |
| **1987** | 51.435 | 114.959 | 18.170 | 123.762 | 127.143 | 50.630 | 5.395 | 3.241 | 494.734 |
| **1988** | 52.951 | 116.936 | 18.108 | 132.909 | 134.179 | 54.400 | 5.779 | 5.514 | 520.776 |
| **1989** | 54.441 | 118.914 | 18.631 | 125.142 | 139.540 | 55.775 | 5.883 | 5.829 | 524.156 |
| **1990** | 55.858 | 120.955 | 19.328 | 128.787 | 144.013 | 57.289 | 5.869 | 4.425 | 536.523 |
| **1991** | 57.274 | 123.844 | 19.611 | 126.991 | 145.471 | 59.341 | 6.239 | 4.776 | 543.547 |
| **1992** | 58.595 | 126.764 | 19.772 | 127.191 | 146.541 | 62.771 | 6.068 | 4.846 | 552.549 |
| **1993** | 58.720 | 129.709 | 19.007 | 127.119 | 147.629 | 62.255 | 5.652 | 3.789 | 553.879 |
| **1994** | 60.610 | 132.673 | 18.198 | 130.679 | 147.422 | 65.185 | 5.885 | 5.080 | 565.733 |
| **1995** | 62.695 | 135.655 | 18.358 | 135.472 | 155.925 | 69.637 | 6.025 | 5.932 | 589.698 |
| **1996** | 64.660 | 138.654 | 18.407 | 138.287 | 160.133 | 72.489 | 6.401 | 6.193 | 605.224 |
| **1997** | 66.638 | 141.676 | 18.818 | 140.055 | 164.272 | 72.370 | 6.636 | 6.664 | 617.128 |
| **1998** | 68.858 | 144.735 | 19.240 | 137.484 | 166.404 | 74.715 | 6.789 | 7.186 | 625.412 |
| **1999** | 70.851 | 147.848 | 19.535 | 143.892 | 168.807 | 78.534 | 7.064 | 6.799 | 643.331 |
| **2000** | 72.604 | 151.038 | 19.756 | 144.183 | 171.635 | 83.562 | 7.223 | 6.917 | 656.916 |
| **2001** | 75.136 | 154.176 | 20.581 | 146.002 | 171.987 | 91.446 | 7.575 | 5.716 | 672.619 |
| **2002** | 77.503 | 157.386 | 21.869 | 139.989 | 177.010 | 94.634 | 8.161 | 6.412 | 682.964 |
| **2003** | 79.659 | 160.678 | 21.843 | 153.825 | 181.184 | 104.944 | 8.199 | 6.448 | 716.780 |
| **2004** | 82.081 | 164.057 | 21.958 | 168.219 | 187.295 | 113.184 | 8.712 | 6.824 | 752.330 |
| **2005** | 85.228 | 167.531 | 22.262 | 157.114 | 198.726 | 118.266 | 8.791 | 5.781 | 763.699 |
| **2006** | 88.111 | 171.099 | 21.976 | 160.130 | 196.110 | 129.145 | 9.249 | 6.049 | 781.870 |
| **2007** | 90.494 | 174.764 | 23.067 | 163.510 | 200.917 | 133.531 | 9.541 | 5.828 | 801.653 |
| **2008** | 93.428 | 178.536 | 23.536 | 181.262 | 211.970 | 143.309 | 9.471 | 6.717 | 848.229 |
| **2009** | 96.136 | 182.425 | 23.953 | 180.378 | 215.234 | 144.467 | 9.624 | 6.632 | 858.850 |
| **2010** | 99.363 | 186.450 | 24.220 | 180.133 | 233.300 | 143.167 | 11.024 | 6.282 | 883.938 |
| **2011** | 102.751 | 189.356 | 24.283 | 176.659 | 218.999 | 152.523 | 10.973 | 7.026 | 882.569 |
| **2012** | 105.618 | 192.332 | 24.355 | 173.703 | 232.499 | 177.363 | 11.046 | 6.233 | 923.148 |
| **2013** | 108.648 | 195.357 | 24.426 | 173.731 | 248.326 | 180.498 | 11.271 | 7.369 | 949.626 |
| **2014** | 112.660 | 198.405 | 24.501 | 176.805 | 257.653 | 180.720 | 13.041 | 7.219 | 971.003 |
| **2015** | 116.236 | 201.508 | 24.583 | 171.069 | 261.715 | 186.391 | 15.956 | 6.417 | 983.876 |
| **2016** | 118.186 | 207.383 | 24.686 | 174.812 | 264.086 | 194.421 | 17.355 | 8.365 | 1 009.293 |
| **2017** | 121.194 | 212.661 | 25.315 | 170.344 | 264.277 | 205.568 | 22.150 | 8.300 | 1 029.809 |
| **2018** | 124.247 | 218.018 | 25.952 | 177.517 | 260.162 | 221.794 | 25.139 | 8.316 | 1 061.145 |

## II. Per country

**Table B 1.** Population per country and total population of 72 countries 1820-2018 (000 000)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| | Austria | Belgium | Denmark | Finland | France | Germany | Greece | Ireland | Italy |
| **1820** | 3.369 | 3.434 | 1.155 | 1.169 | 30.250 | 26.101 | 2.312 | 7.101 | 19.448 |
| **1830** | 3.538 | 3.750 | 1.273 | 1.364 | 32.370 | 29.393 | 2.534 | 7.827 | 21.607 |
| **1840** | 3.716 | 4.080 | 1.357 | 1.441 | 34.080 | 32.621 | 2.777 | 8.349 | 23.273 |
| **1850** | 3.950 | 4.449 | 1.499 | 1.628 | 35.630 | 35.312 | 3.044 | 6.878 | 24.771 |
| **1860** | 4.235 | 4.740 | 1.696 | 1.738 | 36.510 | 37.611 | 3.336 | 5.821 | 25.634 |
| **1870** | 4.520 | 5.096 | 1.888 | 1.754 | 36.870 | 40.805 | 3.657 | 5.419 | 27.203 |
| **1880** | 4.941 | 5.541 | 2.081 | 2.047 | 37.450 | 45.095 | 4.049 | 5.203 | 29.103 |
| **1890** | 5.394 | 6.096 | 2.294 | 2.364 | 38.380 | 49.241 | 4.482 | 4.718 | 30.967 |
| **1900** | 5.973 | 6.719 | 2.561 | 2.646 | 38.900 | 56.046 | 4.962 | 4.469 | 33.135 |
| **1910** | 6.614 | 7.498 | 2.882 | 2.929 | 39.540 | 64.568 | 5.320 | 4.385 | 35.443 |
| **1920** | 6.455 | 7.552 | 3.242 | 3.133 | 39.023 | 63.028 | 5.700 | 4.361 | 37.219 |
| **1930** | 6.684 | 8.076 | 3.542 | 3.449 | 41.610 | 65.084 | 6.351 | 2.927 | 40.085 |
| **1940** | 6.705 | 8.346 | 3.832 | 3.698 | 41.000 | 69.835 | 7.280 | 2.958 | 43.528 |
| **1950** | 6.935 | 8.639 | 4.271 | 4.009 | 41.836 | 68.375 | 7.566 | 2.913 | 46.792 |
| **1960** | 7.047 | 9.119 | 4.581 | 4.430 | 45.684 | 72.481 | 8.327 | 2.822 | 49.600 |
| **1970** | 7.467 | 9.638 | 4.929 | 4.606 | 50.772 | 77.783 | 8.793 | 2.950 | 53.316 |
| **1980** | 7.549 | 9.847 | 5.123 | 4.780 | 53.880 | 78.298 | 9.643 | 3.435 | 56.063 |
| **1990** | 7.723 | 9.969 | 5.141 | 4.986 | 56.735 | 79.380 | 10.130 | 3.569 | 56.719 |
| **2000** | 8.113 | 10.264 | 5.337 | 5.169 | 59.382 | 82.188 | 10.559 | 3.849 | 56.348 |
| **2010** | 8.410 | 10.753 | 5.555 | 5.366 | 63.027 | 82.302 | 11.446 | 4.627 | 59.190 |
| **2018** | 8.752 | 11.499 | 5.754 | 5.543 | 65.233 | 82.293 | 11.142 | 4.804 | 60.484 |

| | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|
| | Netherlands | Norway | Portugal | Spain | Sweden | Switzerland | UK | Bulgaria | Czecho-slovakia |
| **1820** | 2.333 | 970 | 3.297 | 12.203 | 2.585 | 1.986 | 21.239 | 2.187 | 7.657 |
| **1830** | 2.633 | 1.124 | 3.491 | 13.041 | 2.888 | 2.100 | 24.139 | 2.287 | 8.155 |
| **1840** | 2.886 | 1.241 | 3.704 | 13.937 | 3.139 | 2.220 | 26.745 | 2.391 | 8.685 |
| **1850** | 3.098 | 1.392 | 3.816 | 14.894 | 3.483 | 2.379 | 27.181 | 2.500 | 9.250 |
| **1860** | 3.318 | 1.596 | 4.073 | 15.645 | 3.860 | 2.510 | 28.888 | 2.543 | 9.692 |
| **1870** | 3.610 | 1.735 | 4.340 | 16.060 | 4.169 | 2.655 | 31.400 | 2.586 | 10.155 |
| **1880** | 4.034 | 1.919 | 4.630 | 16.713 | 4.566 | 2.839 | 34.623 | 2.985 | 10.690 |
| **1890** | 4.535 | 1.997 | 5.050 | 17.796 | 4.785 | 2.951 | 37.485 | 3.445 | 11.253 |
| **1900** | 5.133 | 2.230 | 5.423 | 18.594 | 5.136 | 3.300 | 41.155 | 4.000 | 12.142 |
| **1910** | 5.905 | 2.384 | 5.909 | 19.927 | 5.522 | 3.735 | 44.916 | 4.520 | 12.984 |
| **1920** | 6.810 | 2.635 | 6.033 | 21.303 | 5.904 | 3.877 | 46.821 | 5.072 | 12.979 |
| **1930** | 7.881 | 2.807 | 6.826 | 23.564 | 6.142 | 4.051 | 45.866 | 6.027 | 13.964 |
| **1940** | 8.879 | 2.973 | 7.722 | 25.888 | 6.371 | 4.226 | 48.226 | 6.666 | 14.713 |
| **1950** | 10.114 | 3.265 | 8.441 | 27.976 | 7.042 | 4.694 | 50.127 | 7.251 | 12.389 |
| **1960** | 11.487 | 3.581 | 8.851 | 30.431 | 7.498 | 5.362 | 52.372 | 7.867 | 13.654 |
| **1970** | 13.038 | 3.877 | 8.569 | 33.824 | 8.081 | 6.267 | 55.632 | 8.490 | 14.319 |
| **1980** | 14.150 | 4.086 | 9.853 | 37.272 | 8.318 | 6.385 | 56.314 | 8.879 | 15.255 |
| **1990** | 14.952 | 4.242 | 9.863 | 39.102 | 8.591 | 6.837 | 57.493 | 8.841 | 15.572 |
| **2000** | 15.926 | 4.492 | 10.150 | 40.288 | 8.883 | 7.267 | 59.522 | 7.998 | 15.670 |
| **2010** | 16.683 | 4.886 | 10.573 | 46.077 | 9.378 | 7.832 | 63.307 | 7.405 | 15.941 |
| **2018** | 17.084 | 5.353 | 10.291 | 46.397 | 9.983 | 8.544 | 66.574 | 7.037 | 16.075 |

| | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|---|---|
| | Hungary | Poland | Romania | Yugoslavia | F. USSR | Canada | USA | Argentina | Bolivia |
| **1820** | 4.146 | 10.426 | 6.389 | 5.215 | 54.765 | 446 | 9.981 | 534 | 1.100 |
| **1830** | 4.460 | 11.222 | 6.886 | 5.465 | 60.477 | 788 | 13.240 | 679 | 1.185 |
| **1840** | 4.798 | 12.078 | 7.422 | 5.726 | 66.784 | 1.133 | 17.444 | 865 | 1.276 |
| **1850** | 5.161 | 13.000 | 8.000 | 6.000 | 73.750 | 2.086 | 23.580 | 1.100 | 1.374 |
| **1860** | 5.526 | 14.839 | 8.569 | 7.036 | 80.867 | 3.089 | 31.839 | 1.406 | 1.433 |
| **1870** | 5.917 | 16.865 | 9.179 | 8.252 | 88.672 | 3.625 | 40.241 | 1.796 | 1.495 |
| **1880** | 6.260 | 19.632 | 9.758 | 8.942 | 99.059 | 4.255 | 50.458 | 2.463 | 1.528 |
| **1890** | 6.622 | 22.854 | 10.373 | 9.690 | 110.664 | 4.779 | 63.302 | 3.378 | 1.562 |
| **1900** | 7.127 | 24.750 | 11.000 | 11.174 | 124.500 | 5.301 | 76.391 | 4.632 | 1.596 |
| **1910** | 7.644 | 26.644 | 11.866 | 13.052 | 148.227 | 6.988 | 92.767 | 6.832 | 1.758 |
| **1920** | 7.950 | 23.968 | 12.340 | 12.422 | 154.607 | 8.556 | 106.881 | 9.012 | 1.930 |
| **1930** | 8.649 | 28.204 | 14.141 | 14.407 | 174.212 | 10.208 | 123.668 | 12.106 | 2.164 |
| **1940** | 9.287 | 30.021 | 15.907 | 16.300 | 195.970 | 11.381 | 132.637 | 14.236 | 2.434 |
| **1950** | 9.338 | 24.824 | 16.311 | 16.298 | 179.571 | 13.712 | 152.271 | 17.150 | 2.714 |
| **1960** | 9.984 | 29.590 | 18.403 | 18.133 | 213.780 | 17.870 | 180.671 | 20.616 | 3.351 |
| **1970** | 10.337 | 32.526 | 20.253 | 19.840 | 242.478 | 21.297 | 205.052 | 23.962 | 4.212 |
| **1980** | 10.711 | 35.578 | 22.612 | 21.615 | 265.936 | 24.516 | 227.726 | 28.094 | 5.355 |
| **1990** | 10.378 | 38.119 | 23.489 | 22.720 | 288.545 | 27.698 | 252.530 | 32.581 | 6.669 |
| **2000** | 10.221 | 38.550 | 22.128 | 22.319 | 289.113 | 30.689 | 281.983 | 36.896 | 8.317 |
| **2010** | 9.928 | 38.323 | 20.440 | 21.820 | 287.330 | 33.913 | 308.641 | 40.738 | 10.031 |
| **2018** | 9.689 | 38.105 | 19.581 | 21.226 | 289.349 | 36.954 | 326.767 | 44.689 | 11.216 |

| | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
|---|---|---|---|---|---|---|---|---|---|
| | Brazil | Chile | Colombia | Costa Rica | Cuba | Dominican Rep. | Ecuador | El Salvador | Guatemala |
| **1820** | 4.507 | 771 | 1.206 | 63 | 605 | 89 | 500 | 248 | 595 |
| **1830** | 5.277 | 965 | 1.443 | 74 | 757 | 105 | 589 | 282 | 670 |
| **1840** | 6.178 | 1.181 | 1.726 | 86 | 948 | 124 | 693 | 321 | 755 |
| **1850** | 7.234 | 1.410 | 2.065 | 101 | 1.186 | 146 | 816 | 366 | 850 |
| **1860** | 8.418 | 1.661 | 2.222 | 118 | 1.256 | 188 | 909 | 424 | 958 |
| **1870** | 9.797 | 1.943 | 2.392 | 137 | 1.331 | 242 | 1.013 | 492 | 1.080 |
| **1880** | 12.131 | 2.274 | 2.867 | 191 | 1.449 | 333 | 1.122 | 612 | 1.051 |
| **1890** | 15.021 | 2.631 | 3.437 | 268 | 1.578 | 459 | 1.242 | 761 | 1.023 |
| **1900** | 18.599 | 2.959 | 4.120 | 374 | 1.719 | 633 | 1.376 | 946 | 996 |
| **1910** | 22.984 | 3.336 | 5.094 | 435 | 2.385 | 781 | 1.503 | 1.171 | 1.232 |
| **1920** | 28.343 | 3.785 | 6.450 | 507 | 3.223 | 929 | 1.630 | 1.384 | 1.422 |
| **1930** | 34.725 | 4.365 | 7.869 | 604 | 3.922 | 1.330 | 2.053 | 1.703 | 1.970 |
| **1940** | 42.524 | 5.063 | 9.638 | 749 | 4.609 | 1.858 | 2.614 | 1.928 | 2.463 |
| **1950** | 53.975 | 6.082 | 12.000 | 966 | 5.920 | 2.365 | 3.387 | 2.200 | 3.146 |
| **1960** | 72.744 | 7.643 | 16.005 | 1.334 | 7.141 | 3.294 | 4.439 | 2.773 | 4.140 |
| **1970** | 95.991 | 9.570 | 21.327 | 1.821 | 8.710 | 4.502 | 5.970 | 3.740 | 5.419 |
| **1980** | 121.618 | 11.174 | 26.881 | 2.347 | 9.823 | 5.808 | 7.961 | 4.660 | 7.014 |
| **1990** | 149.527 | 13.179 | 33.186 | 3.076 | 10.564 | 7.179 | 10.272 | 5.326 | 8.908 |
| **2000** | 174.167 | 15.398 | 39.763 | 3.929 | 11.075 | 8.560 | 12.305 | 5.942 | 11.229 |
| **2010** | 195.498 | 17.094 | 46.299 | 4.590 | 11.203 | 9.899 | 14.700 | 6.192 | 14.376 |
| **2018** | 210.868 | 18.197 | 49.465 | 4.953 | 11.489 | 10.883 | 16.863 | 6.412 | 17.245 |

| | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
|---|---|---|---|---|---|---|---|---|---|
| | Haïti | Honduras | Mexico | Nicaragua | Panama | Paraguay | Peru | Uruguay | Venezuela |
| **1820** | 723 | 135 | 6.587 | 186 | 1 | 143 | 1.317 | 55 | 718 |
| **1830** | 789 | 185 | 6.927 | 218 | 5 | 193 | 1.514 | 74 | 880 |
| **1840** | 860 | 255 | 7.285 | 256 | 26 | 260 | 1.741 | 99 | 1.080 |
| **1850** | 938 | 350 | 7.662 | 300 | 135 | 350 | 2.001 | 132 | 1.324 |
| **1860** | 1.039 | 376 | 8.404 | 318 | 154 | 367 | 2.284 | 213 | 1.479 |
| **1870** | 1.150 | 404 | 9.219 | 337 | 176 | 384 | 2.606 | 343 | 1.653 |
| **1880** | 1.163 | 415 | 10.756 | 388 | 205 | 424 | 2.692 | 486 | 1.900 |
| **1890** | 1.175 | 426 | 12.548 | 446 | 240 | 468 | 2.781 | 689 | 2.184 |
| **1900** | 1.188 | 437 | 14.640 | 513 | 280 | 516 | 2.873 | 977 | 2.511 |
| **1910** | 1.606 | 572 | 16.307 | 660 | 355 | 652 | 3.830 | 1.150 | 2.665 |
| **1920** | 2.014 | 749 | 15.220 | 782 | 484 | 737 | 4.625 | 1.506 | 2.890 |
| **1930** | 2.299 | 988 | 17.802 | 831 | 505 | 926 | 5.410 | 1.761 | 3.198 |
| **1940** | 2.689 | 1.196 | 21.137 | 1.014 | 667 | 1.168 | 6.397 | 2.005 | 3.803 |
| **1950** | 3.221 | 1.487 | 27.741 | 1.295 | 860 | 1.473 | 7.632 | 2.239 | 5.094 |
| **1960** | 3.869 | 2.003 | 37.877 | 1.774 | 1.126 | 1.907 | 9.931 | 2.538 | 7.579 |
| **1970** | 4.713 | 2.691 | 52.030 | 2.399 | 1.506 | 2.484 | 13.193 | 2.808 | 10.721 |
| **1980** | 5.691 | 3.634 | 69.361 | 3.250 | 1.949 | 3.198 | 17.324 | 2.914 | 15.091 |
| **1990** | 7.109 | 4.901 | 85.358 | 4.137 | 2.411 | 4.248 | 21.765 | 3.106 | 19.731 |
| **2000** | 8.578 | 6.234 | 101.720 | 5.100 | 2.950 | 5.303 | 25.997 | 3.318 | 24.402 |
| **2010** | 10.089 | 7.600 | 117.319 | 5.822 | 3.643 | 6.210 | 29.495 | 3.372 | 29.043 |
| **2018** | 11.113 | 9.417 | 130.759 | 6.285 | 4.163 | 6.897 | 32.552 | 3.470 | 32.381 |

| | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 |
|---|---|---|---|---|---|---|---|---|---|
| | Australia | N, Zealand | China | India | Indonesia | Japan | Malaysia | Philippines | Thailand |
| **1820** | 334 | 100 | 381.000 | 209.000 | 17.927 | 31.000 | 287 | 2.176 | 4.665 |
| **1830** | 330 | 100 | 409.000 | 217.577 | 19.473 | 31.330 | 352 | 2.576 | 4.846 |
| **1840** | 420 | 70 | 412.000 | 226.505 | 21.153 | 31.663 | 432 | 3.051 | 5.034 |
| **1850** | 605 | 105 | 412.000 | 235.800 | 22.977 | 32.000 | 530 | 3.612 | 5.230 |
| **1860** | 1.326 | 132 | 377.000 | 244.249 | 25.779 | 33.196 | 651 | 4.276 | 5.496 |
| **1870** | 1.775 | 291 | 358.000 | 253.000 | 28.922 | 34.437 | 800 | 5.063 | 5.775 |
| **1880** | 2.197 | 520 | 368.000 | 257.200 | 32.876 | 36.807 | 1.126 | 5.726 | 6.206 |
| **1890** | 3.107 | 665 | 380.000 | 279.626 | 37.579 | 40.077 | 1.585 | 6.476 | 6.670 |
| **1900** | 3.741 | 807 | 400.000 | 284.500 | 42.746 | 44.103 | 2.232 | 7.324 | 7.320 |
| **1910** | 4.375 | 1.045 | 423.000 | 302.100 | 48.206 | 49.518 | 2.893 | 8.861 | 8.305 |
| **1920** | 5.358 | 1.241 | 472.000 | 305.600 | 53.723 | 55.818 | 3.545 | 10.725 | 9.802 |
| **1930** | 6.469 | 1.493 | 489.000 | 336.400 | 60.596 | 64.203 | 4.413 | 13.194 | 12.392 |
| **1940** | 7.042 | 1.636 | 518.770 | 386.800 | 70.175 | 72.967 | 5.434 | 16.585 | 15.513 |
| **1950** | 8.267 | 1.908 | 546.815 | 376.325 | 79.043 | 83.805 | 6.434 | 21.131 | 20.042 |
| **1960** | 10.361 | 2.372 | 667.070 | 449.481 | 95.254 | 94.092 | 8.428 | 28.529 | 27.513 |
| **1970** | 12.660 | 2.828 | 818.315 | 553.579 | 116.044 | 104.345 | 10.910 | 38.604 | 37.091 |
| **1980** | 14.616 | 3.170 | 981.235 | 696.784 | 147.490 | 116.807 | 13.764 | 50.940 | 47.026 |
| **1990** | 17.096 | 3.360 | 1.135.185 | 870.133 | 181.437 | 124.516 | 18.038 | 64.318 | 56.583 |
| **2000** | 19.164 | 3.859 | 1.262.645 | 1.053.051 | 211.540 | 127.534 | 23.186 | 77.992 | 62.958 |
| **2010** | 22.268 | 4.370 | 1.341.996 | 1.230.981 | 242.524 | 128.552 | 28.112 | 93.727 | 67.209 |
| **2018** | 24.772 | 4.750 | 1.391.832 | 1.354.052 | 266.795 | 127.185 | 32.042 | 106.512 | 69.183 |

| | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
|---|---|---|---|---|---|---|---|---|---|
| | Iran | Iraq | Israel | S. Arabia | Syria | Turkey | Algeria | Congo R.D. | Egypt |
| **1820** | 6.560 | 1.093 | | 2.091 | 1.337 | 10.074 | 2.689 | 5.000 | 4.194 |
| **1830** | 6.895 | 1.177 | | 2.201 | 1.383 | 10.396 | 2.878 | 5.220 | 4.653 |
| **1840** | 7.247 | 1.267 | | 2.317 | 1.430 | 10.729 | 3.080 | 5.449 | 5.162 |
| **1850** | 7.617 | 1.363 | | 2.439 | 1.479 | 11.073 | 3.296 | 5.688 | 5.727 |
| **1860** | 8.006 | 1.468 | | 2.567 | 1.530 | 11.427 | 3.528 | 6.115 | 6.354 |
| **1870** | 8.415 | 1.580 | | 2.338 | 1.582 | 11.793 | 3.776 | 6.574 | 7.049 |
| **1880** | 8.955 | 1.776 | | 2.620 | 1.669 | 12.471 | 4.121 | 7.067 | 8.000 |
| **1890** | 9.529 | 1.997 | | 2.936 | 1.762 | 13.189 | 4.497 | 7.598 | 9.078 |
| **1900** | 10.140 | 2.244 | | 3.290 | 1.859 | 13.948 | 4.907 | 8.102 | 10.302 |
| **1910** | 10.791 | 2.523 | | 3.687 | 1.962 | 14.750 | 5.355 | 8.791 | 11.692 |
| **1920** | 11.852 | 2.972 | | 2.872 | 2.217 | 14.205 | 6.021 | 9.538 | 13.494 |
| **1930** | 13.196 | 3.573 | | 3.176 | 2.580 | 14.928 | 6.857 | 10.349 | 15.686 |
| **1940** | 14.691 | 4.295 | | 3.513 | 3.003 | 17.821 | 7.809 | 11.229 | 18.235 |
| **1950** | 16.357 | 5.163 | 1.286 | 3.860 | 3.495 | 21.408 | 8.893 | 12.184 | 21.198 |
| **1960** | 21.577 | 6.822 | 2.141 | 4.718 | 4.533 | 27.472 | 10.909 | 15.248 | 26.847 |
| **1970** | 28.933 | 9.414 | 2.903 | 6.109 | 6.258 | 34.876 | 13.932 | 20.010 | 33.574 |
| **1980** | 39.583 | 13.233 | 3.737 | 9.999 | 8.774 | 43.976 | 18.806 | 26.357 | 42.634 |
| **1990** | 57.036 | 18.135 | 4.512 | 16.327 | 12.436 | 53.922 | 25.912 | 34.615 | 56.694 |
| **2000** | 66.132 | 22.676 | 6.014 | 20.764 | 16.411 | 63.240 | 31.184 | 47.076 | 69.906 |
| **2010** | 74.568 | 30.763 | 7.426 | 27.426 | 21.019 | 72.327 | 36.118 | 64.523 | 84.108 |
| **2018** | 82.012 | 39.340 | 8.453 | 33.554 | 18.284 | 81.917 | 42.008 | 84.005 | 99.376 |

| | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Eritrea & Ethiopia | Libya | Malawi | Morocco | Nigeria | South Africa | Tunisia | Zambia | Zimbabwe | TOTAL |
| **1820** | 3.154 | 538 | 820 | 2.689 | 16.356 | 1.550 | 875 | 800 | 744 | 967.300 |
| **1830** | 3.657 | 563 | 915 | 2.878 | 16.582 | 1.712 | 928 | 820 | 754 | 1.038.058 |
| **1840** | 4.240 | 588 | 1.021 | 3.080 | 17.771 | 1.891 | 985 | 841 | 780 | 1.086.245 |
| **1850** | 4.916 | 615 | 1.140 | 3.296 | 17.278 | 2.088 | 1.045 | 862 | 782 | 1.130.134 |
| **1860** | 5.699 | 643 | 1.161 | 3.528 | 17.624 | 2.306 | 1.108 | 924 | 807 | 1.145.738 |
| **1870** | 6.608 | 673 | 1.183 | 3.776 | 17.977 | 2.547 | 1.176 | 989 | 899 | 1.181.661 |
| **1880** | 7.661 | 703 | 1.205 | 4.051 | 18.338 | 3.127 | 1.310 | 1.060 | 945 | 1.257.061 |
| **1890** | 8.882 | 735 | 1.468 | 4.347 | 18.705 | 3.839 | 1.459 | 1.157 | 1.015 | 1.361.813 |
| **1900** | 10.298 | 769 | 1.789 | 4.664 | 19.080 | 4.713 | 1.625 | 1.264 | 1.065 | 1.467.487 |
| **1910** | 11.940 | 804 | 2.180 | 5.004 | 19.941 | 5.786 | 1.810 | 1.380 | 1.434 | 1.615.610 |
| **1920** | 13.844 | 841 | 2.324 | 5.729 | 23.407 | 7.149 | 2.107 | 1.609 | 1.703 | 1.735.190 |
| **1930** | 16.051 | 879 | 2.478 | 6.743 | 27.476 | 8.857 | 2.500 | 1.877 | 2.023 | 1.902.344 |
| **1940** | 18.609 | 919 | 2.642 | 7.938 | 32.253 | 10.973 | 2.965 | 2.189 | 2.402 | 2.108.950 |
| **1950** | 21.577 | 961 | 2.817 | 9.343 | 37.860 | 13.596 | 3.517 | 2.553 | 2.853 | 2.228.598 |
| **1960** | 25.783 | 1.338 | 3.450 | 12.423 | 45.138 | 17.417 | 4.149 | 3.254 | 4.011 | 2.666.040 |
| **1970** | 31.629 | 1.999 | 4.489 | 15.909 | 55.981 | 22.740 | 5.099 | 4.252 | 5.515 | 3.199.900 |
| **1980** | 38.605 | 3.065 | 6.129 | 19.487 | 73.461 | 29.252 | 6.443 | 5.700 | 7.170 | 3.819.214 |
| **1990** | 51.194 | 4.140 | 9.287 | 24.686 | 95.270 | 37.561 | 8.233 | 7.942 | 10.153 | 4.495.274 |
| **2000** | 69.930 | 5.115 | 11.376 | 28.850 | 122.352 | 45.728 | 9.699 | 10.531 | 12.222 | 5.118.727 |
| **2010** | 92.094 | 6.169 | 15.167 | 32.410 | 158.578 | 51.585 | 10.640 | 13.850 | 14.086 | 5.708.959 |
| **2018** | 112.723 | 6.471 | 19.165 | 36.192 | 195.875 | 57.398 | 11.659 | 17.609 | 16.913 | 6.163.906 |

**Table B 2**. Energy consumption per country 1820-2018 (Mtoe)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| | Austria | Belgium | Denmark | Finland | France | Germany | Greece | Ireland | Italy |
| **1820** | 1.338 | 2.384 | 0.656 | 1.130 | 12.485 | 9.834 | 0.903 | 4.680 | 8.342 |
| **1830** | 1.369 | 2.679 | 0.712 | 1.216 | 13.310 | 10.811 | 0.953 | 5.180 | 9.269 |
| **1840** | 1.493 | 3.776 | 0.809 | 1.221 | 15.650 | 13.034 | 1.061 | 5.959 | 10.135 |
| **1850** | 1.605 | 4.336 | 0.918 | 1.288 | 18.144 | 14.939 | 1.130 | 5.143 | 10.396 |
| **1860** | 1.966 | 6.103 | 1.097 | 1.360 | 22.875 | 21.850 | 1.210 | 4.982 | 11.172 |
| **1870** | 2.549 | 8.864 | 1.343 | 1.367 | 25.921 | 32.365 | 1.289 | 4.943 | 10.793 |
| **1880** | 3.317 | 10.500 | 1.450 | 1.537 | 32.108 | 46.248 | 1.340 | 4.843 | 12.230 |
| **1890** | 4.364 | 13.243 | 1.748 | 1.727 | 38.355 | 67.113 | 1.436 | 4.707 | 14.377 |
| **1900** | 5.708 | 16.062 | 2.091 | 2.025 | 46.137 | 99.376 | 1.536 | 4.709 | 14.879 |
| **1910** | 7.056 | 20.367 | 2.818 | 2.461 | 51.899 | 132.866 | 1.635 | 4.799 | 18.862 |
| **1920** | 7.253 | 17.640 | 2.959 | 2.429 | 52.386 | 124.267 | 1.858 | 5.061 | 17.107 |
| **1930** | 7.200 | 27.494 | 4.951 | 3.002 | 77.943 | 156.505 | 2.394 | 4.106 | 23.818 |
| **1940** | 6.332 | 21.820 | 4.113 | 4.230 | 49.736 | 180.318 | 2.289 | 3.969 | 27.280 |
| **1950** | 8.392 | 23.541 | 8.294 | 4.432 | 67.546 | 145.318 | 3.110 | 3.863 | 28.412 |
| **1960** | 12.692 | 28.915 | 12.691 | 7.679 | 92.050 | 205.702 | 6.156 | 4.584 | 53.427 |
| **1970** | 20.201 | 48.031 | 21.702 | 16.326 | 164.927 | 299.332 | 11.429 | 6.970 | 127.128 |
| **1980** | 24.730 | 50.761 | 20.822 | 23.804 | 205.343 | 348.562 | 18.751 | 9.157 | 156.149 |
| **1990** | 25.872 | 57.231 | 18.378 | 31.110 | 251.247 | 347.010 | 25.328 | 10.617 | 154.415 |
| **2000** | 29.409 | 68.953 | 21.983 | 35.993 | 292.957 | 336.739 | 32.917 | 15.451 | 171.482 |
| **2010** | 34.068 | 72.416 | 22.742 | 39.714 | 298.926 | 347.899 | 34.476 | 16.987 | 182.770 |
| **2018** | 34.849 | 67.441 | 21.086 | 38.232 | 290.199 | 354.605 | 32.003 | 19.142 | 168.030 |

| | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|---|---|---|---|
| | Netherlands | Norway | Portugal | Spain | Sweden | Switzerland | UK | Bulgaria | Czecho-slovakia |
| **1820** | 1.015 | 0.939 | 1.423 | 5.668 | 2.672 | 0.783 | 21.368 | 0.939 | 3.289 |
| **1830** | 1.198 | 1.006 | 1.516 | 6.063 | 2.750 | 0.796 | 25.414 | 0.982 | 3.601 |
| **1840** | 1.507 | 1.065 | 1.619 | 6.500 | 2.827 | 0.854 | 33.349 | 1.027 | 3.961 |
| **1850** | 1.627 | 1.139 | 1.683 | 7.031 | 2.947 | 0.888 | 45.917 | 1.073 | 4.337 |
| **1860** | 2.038 | 1.329 | 1.744 | 6.993 | 3.321 | 0.996 | 61.249 | 1.066 | 4.912 |
| **1870** | 2.856 | 1.498 | 1.910 | 7.152 | 3.654 | 1.147 | 77.413 | 1.090 | 6.324 |
| **1880** | 3.636 | 1.750 | 2.100 | 7.284 | 4.256 | 1.357 | 96.853 | 1.244 | 7.792 |
| **1890** | 4.146 | 1.964 | 2.433 | 7.936 | 4.777 | 1.633 | 114.814 | 1.408 | 9.169 |
| **1900** | 5.322 | 2.678 | 2.622 | 9.254 | 6.208 | 2.468 | 136.011 | 1.638 | 10.056 |
| **1910** | 6.798 | 3.349 | 3.074 | 10.744 | 7.679 | 3.095 | 152.480 | 1.873 | 11.299 |
| **1920** | 7.428 | 3.413 | 3.006 | 11.173 | 7.464 | 2.988 | 155.300 | 2.020 | 15.187 |
| **1930** | 12.211 | 4.148 | 3.652 | 13.898 | 9.413 | 3.959 | 149.168 | 2.690 | 17.327 |
| **1940** | 10.851 | 5.402 | 3.969 | 15.644 | 11.575 | 3.913 | 163.803 | 3.280 | 14.635 |
| **1950** | 14.977 | 6.429 | 4.734 | 17.842 | 13.900 | 5.079 | 169.329 | 4.330 | 20.526 |
| **1960** | 21.205 | 9.443 | 5.739 | 25.342 | 20.452 | 9.057 | 192.236 | 8.075 | 33.032 |
| **1970** | 43.465 | 16.644 | 8.092 | 45.554 | 34.719 | 18.042 | 230.822 | 19.625 | 47.429 |
| **1980** | 65.585 | 21.369 | 11.791 | 73.471 | 40.749 | 22.479 | 233.054 | 30.453 | 68.384 |
| **1990** | 69.394 | 27.193 | 17.457 | 92.028 | 49.968 | 25.865 | 221.878 | 29.987 | 65.843 |
| **2000** | 79.630 | 32.699 | 25.128 | 124.739 | 49.485 | 27.757 | 239.313 | 20.431 | 58.486 |
| **2010** | 84.839 | 33.016 | 26.576 | 139.811 | 56.256 | 28.497 | 231.150 | 19.763 | 60.784 |
| **2018** | 78.701 | 36.605 | 28.607 | 144.424 | 61.281 | 27.749 | 219.371 | 20.451 | 60.549 |

| | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|---|---|
| | **Hungary** | **Poland** | **Romania** | **Yugoslavia** | **F. USSR** | **Canada** | **USA** | **Argentina** | **Bolivia** |
| **1820** | 1.781 | 4.722 | 2.744 | 2.240 | 23.524 | 1.791 | 25.563 | 0.201 | 0.413 |
| **1830** | 1.916 | 5.143 | 2.958 | 2.347 | 25.985 | 3.153 | 34.893 | 0.256 | 0.445 |
| **1840** | 2.060 | 5.827 | 3.187 | 2.459 | 28.686 | 4.060 | 47.883 | 0.328 | 0.484 |
| **1850** | 2.215 | 6.623 | 3.434 | 2.575 | 31.691 | 6.664 | 66.432 | 0.428 | 0.535 |
| **1860** | 2.526 | 8.659 | 3.592 | 2.949 | 34.111 | 9.052 | 92.007 | 0.585 | 0.585 |
| **1870** | 3.055 | 12.538 | 3.870 | 3.479 | 38.492 | 10.557 | 111.767 | 0.672 | 0.523 |
| **1880** | 3.518 | 16.765 | 4.066 | 3.726 | 45.449 | 12.205 | 144.807 | 0.852 | 0.505 |
| **1890** | 4.186 | 22.893 | 4.357 | 3.924 | 53.208 | 14.020 | 201.618 | 1.505 | 0.512 |
| **1900** | 5.573 | 30.371 | 4.711 | 4.662 | 73.381 | 15.047 | 268.749 | 2.182 | 0.561 |
| **1910** | 6.485 | 40.840 | 5.414 | 5.087 | 85.459 | 24.004 | 448.455 | 4.808 | 0.750 |
| **1920** | 5.029 | 32.819 | 5.796 | 5.133 | 63.261 | 32.937 | 570.363 | 5.673 | 0.857 |
| **1930** | 6.460 | 28.057 | 8.682 | 6.547 | 104.441 | 38.191 | 624.795 | 9.643 | 1.023 |
| **1940** | 7.604 | 64.285 | 13.615 | 7.025 | 202.198 | 41.201 | 660.297 | 10.357 | 1.119 |
| **1950** | 9.400 | 41.902 | 12.515 | 9.264 | 251.411 | 59.401 | 894.228 | 13.731 | 1.245 |
| **1960** | 17.133 | 70.927 | 24.814 | 13.427 | 525.884 | 77.505 | 1.157.560 | 24.604 | 1.619 |
| **1970** | 24.062 | 109.832 | 43.899 | 23.040 | 789.786 | 125.054 | 1.734.944 | 35.641 | 1.939 |
| **1980** | 32.558 | 161.402 | 69.627 | 38.317 | 1.178.536 | 194.696 | 1.991.925 | 44.604 | 2.935 |
| **1990** | 32.753 | 131.285 | 66.145 | 49.742 | 1.394.003 | 226.776 | 2.159.545 | 49.414 | 3.778 |
| **2000** | 27.902 | 108.546 | 37.962 | 39.979 | 931.026 | 257.421 | 2.524.429 | 63.107 | 5.580 |
| **2010** | 28.071 | 121.501 | 35.817 | 45.321 | 1.005.241 | 275.206 | 2.496.878 | 81.397 | 7.998 |
| **2018** | 27.641 | 124.357 | 36.203 | 45.737 | 1.053.241 | 310.060 | 2.465.889 | 89.741 | 11.362 |

| | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
|---|---|---|---|---|---|---|---|---|---|
| | **Brazil** | **Chile** | **Colombia** | **Costa Rica** | **Cuba** | **Dominican Rep.** | **Ecuador** | **El Salva-dor** | **Guatemala** |
| **1820** | 1.693 | 0.290 | 0.453 | 0.024 | 0.227 | 0.033 | 0.188 | 0.093 | 0.224 |
| **1830** | 1.984 | 0.363 | 0.543 | 0.028 | 0.285 | 0.039 | 0.221 | 0.106 | 0.252 |
| **1840** | 2.346 | 0.448 | 0.655 | 0.033 | 0.360 | 0.047 | 0.263 | 0.122 | 0.287 |
| **1850** | 2.814 | 0.549 | 0.803 | 0.039 | 0.504 | 0.057 | 0.317 | 0.142 | 0.331 |
| **1860** | 3.552 | 0.792 | 0.909 | 0.048 | 0.594 | 0.077 | 0.371 | 0.173 | 0.391 |
| **1870** | 3.617 | 0.859 | 0.851 | 0.048 | 0.636 | 0.088 | 0.354 | 0.172 | 0.378 |
| **1880** | 4.186 | 1.214 | 0.950 | 0.062 | 0.631 | 0.110 | 0.364 | 0.198 | 0.341 |
| **1890** | 5.397 | 1.430 | 1.158 | 0.092 | 0.729 | 0.153 | 0.408 | 0.250 | 0.336 |
| **1900** | 7.165 | 1.861 | 1.475 | 0.140 | 0.862 | 0.227 | 0.484 | 0.333 | 0.352 |
| **1910** | 11.180 | 2.805 | 2.176 | 0.213 | 1.669 | 0.343 | 0.656 | 0.499 | 0.535 |
| **1920** | 13.662 | 2.440 | 2.800 | 0.228 | 2.375 | 0.412 | 0.715 | 0.597 | 0.612 |
| **1930** | 17.689 | 3.873 | 3.627 | 0.289 | 2.478 | 0.588 | 0.969 | 0.772 | 0.899 |
| **1940** | 20.749 | 4.393 | 5.237 | 0.346 | 2.914 | 0.835 | 1.264 | 0.842 | 1.199 |
| **1950** | 27.924 | 5.728 | 6.359 | 0.493 | 4.962 | 1.039 | 1.736 | 0.962 | 1.516 |
| **1960** | 43.673 | 7.626 | 10.379 | 0.717 | 6.802 | 1.600 | 2.382 | 1.222 | 1.819 |
| **1970** | 61.222 | 10.598 | 16.014 | 0.999 | 9.115 | 2.267 | 3.039 | 1.564 | 2.343 |
| **1980** | 108.108 | 10.973 | 21.295 | 1.445 | 13.418 | 3.576 | 5.405 | 2.233 | 3.434 |
| **1990** | 136.575 | 15.385 | 25.488 | 1.755 | 14.423 | 5.069 | 7.568 | 2.425 | 3.814 |
| **2000** | 190.253 | 26.613 | 31.370 | 3.629 | 13.297 | 7.735 | 10.478 | 3.704 | 6.152 |
| **2010** | 257.205 | 32.575 | 38.757 | 4.651 | 11.769 | 8.797 | 15.241 | 4.303 | 7.816 |
| **2018** | 305.087 | 42.778 | 50.336 | 5.631 | 12.140 | 11.993 | 18.579 | 4.918 | 10.253 |

| | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
|---|---|---|---|---|---|---|---|---|---|
| | Haïti | Honduras | Mexico | Nicaragua | Panama | Paraguay | Peru | Uruguay | Venezuela |
| **1820** | 0.272 | 0.051 | 2.475 | 0.070 | 0.000 | 0.054 | 0.495 | 0.021 | 0.270 |
| **1830** | 0.297 | 0.070 | 2.605 | 0.082 | 0.002 | 0.072 | 0.569 | 0.028 | 0.331 |
| **1840** | 0.327 | 0.097 | 2.766 | 0.097 | 0.010 | 0.099 | 0.661 | 0.037 | 0.410 |
| **1850** | 0.365 | 0.136 | 2.981 | 0.117 | 0.053 | 0.136 | 0.778 | 0.051 | 0.515 |
| **1860** | 0.424 | 0.153 | 3.429 | 0.130 | 0.063 | 0.150 | 0.947 | 0.105 | 0.603 |
| **1870** | 0.402 | 0.141 | 3.227 | 0.118 | 0.062 | 0.134 | 0.978 | 0.207 | 0.578 |
| **1880** | 0.377 | 0.134 | 3.512 | 0.126 | 0.067 | 0.137 | 0.907 | 0.255 | 0.617 |
| **1890** | 0.389 | 0.140 | 4.243 | 0.151 | 0.079 | 0.153 | 0.975 | 0.423 | 0.742 |
| **1900** | 0.420 | 0.155 | 6.107 | 0.182 | 0.099 | 0.182 | 1.095 | 0.685 | 0.895 |
| **1910** | 0.689 | 0.247 | 9.101 | 0.283 | 0.155 | 0.278 | 1.980 | 1.219 | 1.147 |
| **1920** | 0.865 | 0.332 | 9.205 | 0.337 | 0.209 | 0.321 | 2.490 | 1.026 | 1.284 |
| **1930** | 1.007 | 0.434 | 10.496 | 0.363 | 0.223 | 0.404 | 3.052 | 1.369 | 1.815 |
| **1940** | 1.139 | 0.602 | 15.129 | 0.465 | 0.300 | 0.501 | 3.640 | 1.493 | 3.096 |
| **1950** | 1.306 | 0.732 | 21.987 | 0.578 | 0.510 | 0.604 | 4.741 | 1.752 | 7.783 |
| **1960** | 1.464 | 0.949 | 32.928 | 0.804 | 0.909 | 0.793 | 6.042 | 2.239 | 17.161 |
| **1970** | 1.586 | 1.210 | 47.876 | 1.091 | 1.969 | 1.019 | 8.325 | 2.801 | 21.995 |
| **1980** | 1.883 | 1.668 | 93.649 | 1.604 | 4.575 | 1.444 | 12.701 | 2.923 | 40.514 |
| **1990** | 2.034 | 2.281 | 124.135 | 1.899 | 4.365 | 2.086 | 13.056 | 2.492 | 50.456 |
| **2000** | 2.510 | 3.160 | 158.975 | 2.520 | 4.913 | 2.956 | 16.285 | 3.608 | 62.370 |
| **2010** | 2.848 | 4.184 | 195.478 | 3.059 | 7.425 | 3.762 | 22.484 | 4.417 | 75.815 |
| **2018** | 3.517 | 5.427 | 213.876 | 4.339 | 9.663 | 5.434 | 30.261 | 5.702 | 62.118 |

| | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 |
|---|---|---|---|---|---|---|---|---|---|
| | Australia | N. Zealand | China | India | Indonesia | Japan | Malaysia | Philippines | Thailand |
| **1820** | 0.235 | 0.070 | 112.006 | 60.374 | 5.179 | 8.955 | 0.083 | 0.629 | 1.348 |
| **1830** | 0.255 | 0.072 | 120.212 | 62.837 | 5.624 | 9.048 | 0.102 | 0.744 | 1.400 |
| **1840** | 0.370 | 0.055 | 121.067 | 65.402 | 6.108 | 9.142 | 0.125 | 0.881 | 1.454 |
| **1850** | 0.646 | 0.094 | 121.041 | 68.070 | 6.633 | 9.238 | 0.153 | 1.043 | 1.510 |
| **1860** | 1.787 | 0.169 | 110.496 | 70.583 | 7.424 | 9.560 | 0.188 | 1.232 | 1.583 |
| **1870** | 2.747 | 0.418 | 104.503 | 72.971 | 8.295 | 9.881 | 0.229 | 1.452 | 1.656 |
| **1880** | 4.360 | 1.083 | 108.012 | 74.905 | 9.482 | 11.251 | 0.325 | 1.651 | 1.790 |
| **1890** | 6.490 | 1.594 | 112.093 | 82.390 | 10.897 | 13.458 | 0.462 | 1.877 | 1.933 |
| **1900** | 8.720 | 2.132 | 120.906 | 88.178 | 13.155 | 18.490 | 0.681 | 2.176 | 2.175 |
| **1910** | 11.504 | 3.267 | 131.910 | 99.014 | 15.699 | 26.641 | 0.947 | 2.887 | 2.516 |
| **1920** | 12.237 | 2.642 | 161.402 | 106.339 | 18.096 | 39.181 | 1.361 | 3.754 | 3.053 |
| **1930** | 11.437 | 3.133 | 169.715 | 118.361 | 21.123 | 48.467 | 2.117 | 5.219 | 3.982 |
| **1940** | 14.681 | 3.535 | 188.565 | 133.241 | 24.957 | 67.670 | 2.323 | 5.936 | 4.871 |
| **1950** | 20.645 | 4.013 | 198.892 | 137.663 | 27.012 | 59.808 | 3.095 | 7.991 | 6.524 |
| **1960** | 31.809 | 5.560 | 321.744 | 179.254 | 34.312 | 111.449 | 4.411 | 12.113 | 10.012 |
| **1970** | 52.347 | 8.007 | 441.420 | 225.260 | 42.566 | 301.724 | 6.556 | 19.024 | 16.534 |
| **1980** | 75.752 | 9.661 | 673.222 | 283.153 | 65.239 | 381.385 | 14.476 | 25.892 | 25.042 |
| **1990** | 95.305 | 14.213 | 959.038 | 411.636 | 98.035 | 468.195 | 26.196 | 31.985 | 44.880 |
| **2000** | 116.134 | 17.805 | 1.295.606 | 568.011 | 151.444 | 563.178 | 56.249 | 44.924 | 78.587 |
| **2010** | 138.740 | 19.091 | 2.727.531 | 814.441 | 205.873 | 543.279 | 85.906 | 51.046 | 119.998 |
| **2018** | 153.979 | 21.093 | 3.505.266 | 1.109.010 | 244.519 | 488.025 | 103.445 | 71.158 | 149.474 |

| | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 |
|---|---|---|---|---|---|---|---|---|---|
| | Iran | Iraq | Israel | S. Arabia | Syria | Turkey | Algeria | Congo R.D. | Egypt |
| **1820** | 1.886 | 0.314 | | 0.601 | 0.384 | 2.896 | 1.142 | 2.123 | 1.781 |
| **1830** | 1.982 | 0.338 | | 0.633 | 0.398 | 2.989 | 1.223 | 2.219 | 1.978 |
| **1840** | 2.084 | 0.364 | | 0.666 | 0.411 | 3.085 | 1.311 | 2.319 | 2.197 |
| **1850** | 2.191 | 0.392 | | 0.701 | 0.425 | 3.184 | 1.404 | 2.423 | 2.440 |
| **1860** | 2.298 | 0.421 | | 0.737 | 0.439 | 3.280 | 1.551 | 2.688 | 2.793 |
| **1870** | 2.409 | 0.452 | | 0.669 | 0.453 | 3.416 | 1.494 | 2.601 | 2.789 |
| **1880** | 2.572 | 0.510 | | 0.752 | 0.479 | 3.617 | 1.715 | 2.942 | 3.330 |
| **1890** | 2.756 | 0.577 | | 0.849 | 0.510 | 3.909 | 1.890 | 3.193 | 3.815 |
| **1900** | 2.933 | 0.649 | | 0.952 | 0.538 | 4.205 | 2.001 | 3.305 | 4.202 |
| **1910** | 3.138 | 0.734 | | 1.072 | 0.571 | 4.732 | 2.208 | 3.625 | 4.822 |
| **1920** | 3.935 | 0.849 | | 0.820 | 0.633 | 4.391 | 2.661 | 3.846 | 5.699 |
| **1930** | 4.421 | 1.148 | | 0.913 | 0.741 | 5.120 | 3.527 | 4.423 | 7.799 |
| **1940** | 6.403 | 3.860 | | 1.801 | 0.943 | 7.309 | 3.711 | 4.453 | 8.786 |
| **1950** | 5.223 | 2.037 | 1.129 | 7.548 | 1.323 | 9.484 | 4.595 | 5.221 | 12.588 |
| **1960** | 14.072 | 4.979 | 2.635 | 12.740 | 2.510 | 13.378 | 6.812 | 6.636 | 15.948 |
| **1970** | 22.670 | 6.458 | 5.767 | 23.187 | 3.574 | 22.280 | 8.009 | 8.290 | 19.083 |
| **1980** | 46.049 | 12.140 | 9.215 | 38.981 | 7.382 | 36.550 | 21.633 | 10.373 | 30.760 |
| **1990** | 86.893 | 23.898 | 12.506 | 84.273 | 15.007 | 59.353 | 34.740 | 12.417 | 49.801 |
| **2000** | 138.946 | 31.019 | 21.294 | 119.972 | 20.173 | 85.297 | 35.085 | 15.453 | 67.426 |
| **2010** | 228.608 | 41.098 | 24.265 | 219.068 | 27.257 | 117.460 | 48.296 | 20.964 | 102.334 |
| **2018** | 302.344 | 61.761 | 27.684 | 266.393 | 14.620 | 167.751 | 68.813 | 26.430 | 121.667 |

| | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Eritrea & Ethiopia | Libya | Malawi | Morocco | Nigeria | South Africa | Tunisia | Zambia | Zimbabwe | TOTAL |
| **1820** | 1.339 | 0.228 | 0.348 | 1.142 | 6.945 | 0.658 | 0.372 | 0.340 | 0.316 | 361.454 |
| **1830** | 1.555 | 0.239 | 0.389 | 1.223 | 7.049 | 0.728 | 0.395 | 0.349 | 0.321 | 398.099 |
| **1840** | 1.804 | 0.250 | 0.435 | 1.311 | 7.563 | 0.805 | 0.419 | 0.358 | 0.332 | 440.203 |
| **1850** | 2.094 | 0.262 | 0.486 | 1.404 | 7.361 | 0.890 | 0.445 | 0.367 | 0.333 | 491.059 |
| **1860** | 2.505 | 0.283 | 0.510 | 1.551 | 7.747 | 1.014 | 0.487 | 0.406 | 0.355 | 555.328 |
| **1870** | 2.614 | 0.266 | 0.468 | 1.494 | 7.112 | 1.008 | 0.465 | 0.391 | 0.356 | 620.891 |
| **1880** | 3.189 | 0.293 | 0.502 | 1.686 | 7.633 | 1.302 | 0.545 | 0.441 | 0.393 | 730.686 |
| **1890** | 3.732 | 0.309 | 0.617 | 1.827 | 7.860 | 1.635 | 0.613 | 0.486 | 0.427 | 885.020 |
| **1900** | 4.200 | 0.314 | 0.730 | 1.902 | 7.782 | 2.394 | 0.663 | 0.515 | 0.434 | 1.091.067 |
| **1910** | 4.924 | 0.332 | 0.899 | 2.064 | 8.224 | 5.819 | 0.747 | 0.569 | 0.683 | 1.439.179 |
| **1920** | 5.574 | 0.339 | 0.936 | 2.307 | 9.546 | 8.690 | 0.879 | 0.648 | 0.979 | 1.601.516 |
| **1930** | 6.435 | 0.369 | 0.997 | 2.941 | 11.281 | 10.364 | 1.262 | 0.862 | 1.337 | 1.849.556 |
| **1940** | 7.027 | 0.387 | 1.006 | 3.346 | 12.442 | 16.915 | 1.404 | 1.142 | 1.630 | 2.133.348 |
| **1950** | 8.397 | 0.420 | 1.130 | 4.364 | 15.303 | 23.659 | 1.715 | 1.508 | 2.446 | 2.507.597 |
| **1960** | 9.719 | 0.525 | 1.393 | 5.775 | 18.023 | 36.059 | 2.067 | 2.241 | 4.471 | 3.672.109 |
| **1970** | 11.354 | 4.478 | 1.739 | 7.763 | 22.864 | 53.731 | 2.982 | 2.891 | 4.845 | 5.609.071 |
| **1980** | 13.587 | 8.735 | 2.286 | 11.142 | 34.596 | 71.607 | 4.923 | 3.975 | 5.139 | 7.393.754 |
| **1990** | 16.928 | 13.730 | 3.128 | 14.219 | 46.082 | 99.014 | 6.853 | 4.092 | 8.182 | 8.790.168 |
| **2000** | 22.340 | 16.530 | 3.791 | 18.558 | 55.693 | 116.165 | 9.258 | 4.502 | 8.001 | 9.891.474 |
| **2010** | 30.085 | 24.653 | 4.988 | 25.639 | 63.571 | 141.951 | 12.176 | 5.833 | 7.472 | 12.380.333 |
| **2018** | 37.482 | 20.443 | 6.046 | 31.745 | 91.568 | 141.308 | 14.865 | 7.580 | 8.299 | 13.932.376 |