**How much fossil fuel CO2 can the world still burn?**

To stay under an increase of 2 degrees C since the industrial age, Carbon tracker estimated in 2011 that we could only burn 565 gigatons (billion tons) of CO2 based on accepting a 20% chance of exceeding 2C. However in the last 5 years since then, we have burned about a quarter of this, leaving 450 gigatons left.

The IPCC based on a voluntary commitment signed off last year by almost every government in the world estimated a carbon budget of 1,000 GT of CO2 with 2011 as a base to give a 66% chance of staying under 2C. Subtract the roughly 150 GT we’ve already burned since then and that leaves about 850 GT for all sources of CO2.

We currently have about 7 billion people in the world. Using 850 GT as a base, that works out to be 120 tons per person lifetime. In 2011 the average age of all the world’s population is 32 years with 68 years life expectancy. That would be an average of 36 years of usage of fossil fuels. Then each person’s use of fossil fuel each year would be 3.3 tons (120 divided by 36) for the 36 years.

However this assumes no new births occur. The U.N. estimate is that we will have 9 billion people by 2050, assuming a decrease in average [fertility rate](https://en.wikipedia.org/wiki/Fertility_rate) from 2.5 down to 2.0. If the births are spread over the 35 years, there would be an average 17.5 years of usage at 3.3 tons each year by 2 billion people. This amounts to 115 gigatons additional fossil fuel use. This would reduce the 850 gigatons by 115 leaving 735 gigatons for the current population or 2.8 tons per person per year in their lifetime.

Thus, to keep the total rise in global temperature to 2 degrees centigrade, the world must average 2.8 tons per person for the next 35 years, and then can no longer use fossil fuels thereafter (or until the atmospheric CO2 dissipates in a few hundred years).

This assumes we start immediately to cut back to 2.8 tons per person (which is unlikely). If the current world average is 5.5 per person (based on the Nature Conservancy estimate), and we assume that people reduce their usage on an even reduction for the next 35 years, they would average 4.2 tons over the next 35 years. So 8 billion people (current 7 billion plus an additional 1 billion - average increase over next 35 years) x 1.4 (the over usage of 4.2 minus 2.8) for 35 years = 392 gigatons over usage. This means we really only have 343 gigatons (735 GT minus 392 GT) to share with 8 billion people or 43 tons each person over 35 years or 1.25 tons per year.

Note: According to the Nature Conservancy carbon footprint figures, the average current usage per U.S. person is 27 tons. Under the [UNFCCC](https://en.wikipedia.org/wiki/UNFCCC) accounting of emissions, the emission reduction commitments do not include emissions attributable to imports. Wang and Watson (2007) suggested that nearly a quarter of China's CO2 emissions might be a result of its production of goods for export, primarily to the USA but also to Europe. Based on this, they suggested that international negotiations based on within country emissions (i.e., emissions measured by production) may be "missing the point."