



The Current Consensus on Climate Science

The first volume of the latest IPCC report is now public. It's a very lengthy document, and since it's written by physical scientists rather than journalists, it's not an easy read. One important concept that seems to be a lot more important in this version of the IPCC is the carbon budget. The key facts: First, the total temperature change is roughly proportional to the total amount of carbon in the atmosphere. Second, the precise sequence of the emissions doesn't matter much.

This allows us to think about climate policy as involving three steps: deciding what temperature change we want, translating that into a carbon budget, and the figuring out how to allocate the budget over time and between various emitters.

For instance, suppose we want to two-thirds probability that temperature change will stay under two degrees. Then we would need to have total cumulative emissions of about 1000 gigatons (less if we count non-CO2 greenhouses gases.) Humanity has already added about 500 gigatons, so we've used up half of our total budget. Current emissions are about 34 gigatons per year, so that means we could stay at the current level for 15 years assuming all emissions end in 2027. But that's actually optimistic — if we take non-CO2 gases into consideration, we'd need to stop emitting completely in about 12 years. It would take a fairly heroic effort to make this happen. But higher levels of stabilization, like 2.5 degrees, may be more realistic.