

The End of Cheap Fossil Fuels

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An essential assumption underlying the Representative Concentration Pathways used by the Intergovernmental Panel on Climate Change (IPCC) for projections of climate forcing is that future emissions of CO₂ are constrained only by socio economic processes, not by Earth's resources. The assumption is that continuing technological progress will always be able to keep costs down. This view is shared by most economists. It may not hold up. The "easy" resources have already been exploited or are in decline, so that it takes a progressively larger up-front input of both energy and capital resources to develop new deposits that tend to be deeper, in more difficult environments, and smaller. Thus the larger investments may not last as long. Furthermore, not only the magnitude of deposits matters, but also the rate at which they can be extracted. Our current rate of extraction will likely be difficult to maintain at low cost with lower quality resources, and without causing serious environmental damage. Therefore we might expect cumulative CO₂ emissions to be limited by resource limitations regardless of the climate change issue. Unfortunately, even with low emissions scenarios the longevity of CO₂ in the atmosphere and oceans guarantees that climate change will add in a major way to the problems that our society faces.

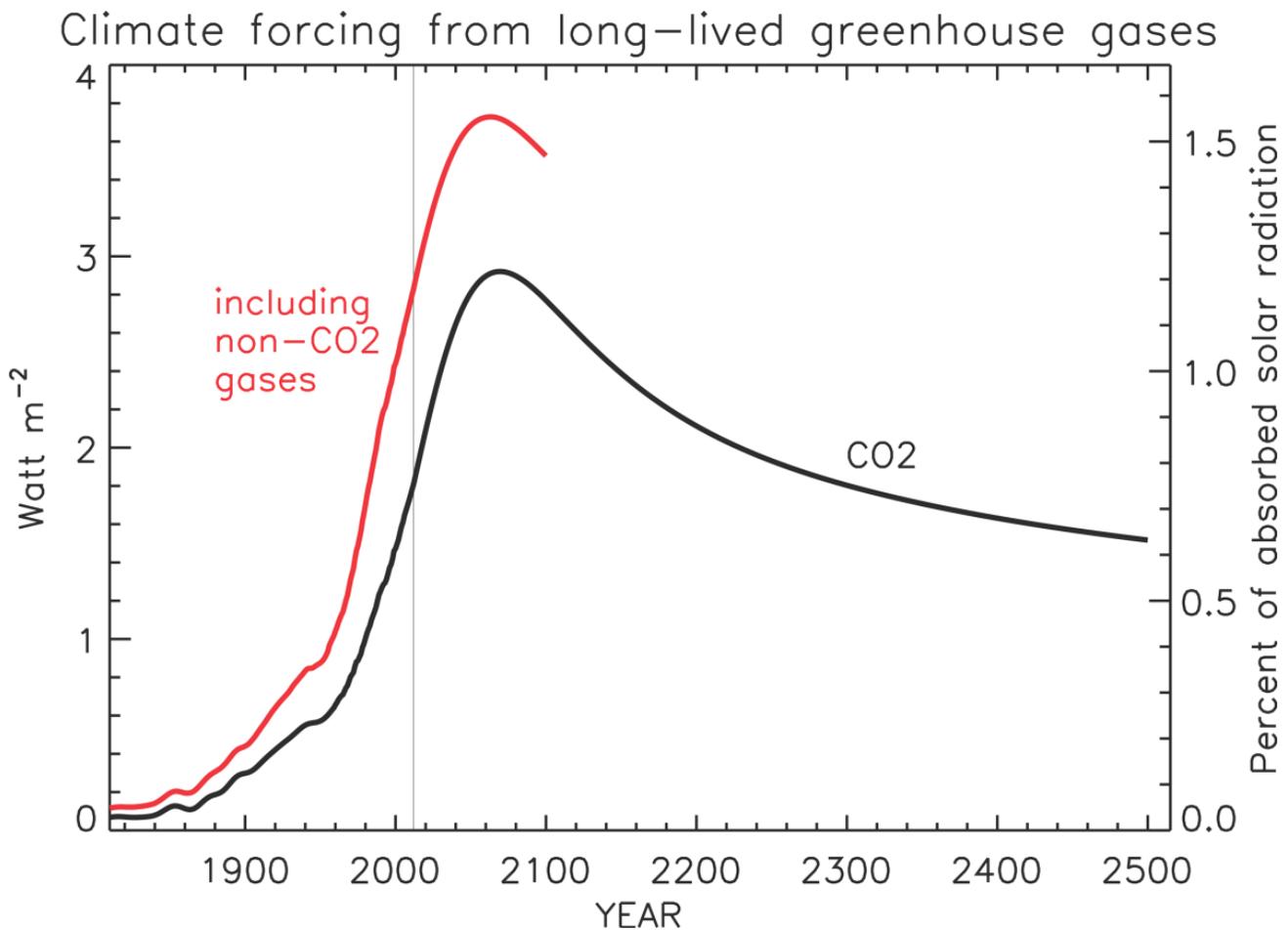


Figure 1. Projected likely climate forcing by CO₂ alone (black) in a resource-constrained world, and by all long-lived greenhouse gases until 2100 (red) assuming the lowest Representative Concentration Pathway used by the IPCC for the non-CO₂ gases.