



I would prefer not to aggravate global warming

The world population is growing, as are greenhouse gas emissions (figure, A). 85% of the energy that feeds this extraordinary development is carbon based (figure, B). Consumption of these resources causes global warming (figure, C), which has disastrous consequences. It is therefore imperative that we reduce resource consumption quickly (appendix).^{5,6}

Reductions can be made voluntarily to protect the planet, or forcibly, by natural exhaustion. Carbon-based energies cannot be fully replaced by renewable energies in the short

term because renewables involve the production of electricity that is difficult to store and scaling up storage facilities takes time.⁷ Thus, we cannot limit the consumption of carbon-based energy without also limiting our overall energy consumption.

We, scientists, are doing useful research, examining the health of the planet, and proposing solutions to make things better. Why should we ration ourselves at the risk of becoming less efficient, when we account for a drop in the ocean of world energy consumption?

The answer is that because in a world increasingly exposed to political extremes and disinformation, science will become more and more essential in highlighting difficult choices. Those who

represent the world of science must be coherent if they want to be considered credible. What measure of credibility can be given when 15 000 researchers warn humanity about the state of the planet⁸ and the rest continue to scurry from congress to congress, releasing CO₂, and displaying a business-as-usual attitude that belies the notion of emergency?⁹

The dominant global model invites competition, multiple trips (figure, D), rapid turnover of goods, and accumulation of new activities that push humans and machines to the limits of their capacity. It is difficult, even for the most well informed of us, not to end up being convinced once more that it is necessary to attend a world congress, participate in a new initiative (with which it would be unthinkable not

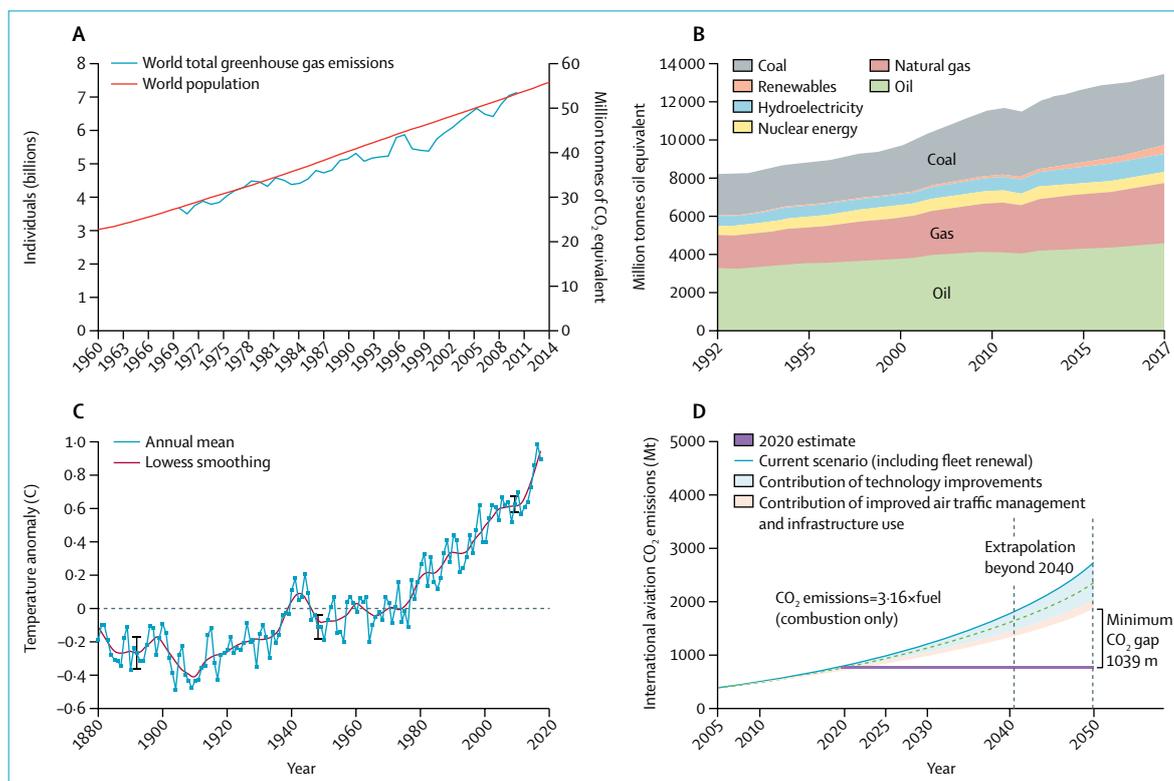


Figure: Greenhouse gas emissions, energy consumption, and global warming: the unstoppable trend

(A) World population and greenhouse gas emissions. Data from World Bank database.¹ (B) World primary energy consumption. In 2017, 85% of worldwide energy was still generated by fossil fuels; the remaining energy was hydroelectricity (7%), nuclear (4.4%) and renewable (3.6%). Reproduced from the BP Statistical Review of World Energy 2018.² (C) Land-ocean temperature index, 1880 to present, with base period 1951–80. The solid blue line is the global annual mean and the solid red line is the 5-year lowess smooth. The blue uncertainty bars (95% confidence limit) account only for incomplete spatial sampling. Reproduced from NASA Goddard Institute for Space Studies.³ (D) CO₂ emission trends from international aviation. This figure considers the CO₂ emissions associated with the combustion of jet fuel, assuming that 1 kg of jet fuel burned generates 3.16 kg of CO₂, and taking into account operational improvements. In further analyses (not presented here), the International Civil Aviation Organization (ICAO) estimates that the use of biofuel, instead of jet fuel, could ensure that emissions do not exceed 2020 levels, thus filling the 1039 Mt CO₂ gap. Reproduced from ICAO environmental report 2016.⁴

to be associated) involving multiple face-to-face intercontinental meetings, circulate supposedly very important emails at every hour of every day, give in to another apparently urgent request to review a manuscript, respond to a new call for applications when the team's agenda is already full, or spend an increasing amount of time using energy consuming robots.¹⁰

The challenge has turned into a paradoxical injunction: carry on the campaign against global warming at night (in the private sphere), but remain hyperactive during the day (in the professional sphere), thus aggravating global warming. This inconsistency must stop, if not for the sake of our mental health, then at least for the sake of the planet. In a short story by Herman Melville (Bartelby, the Scrivener), a law clerk refuses increasingly over time to do the tasks entrusted to him, using the recurring phrase "I would prefer not to". I wish an increasing number of scientists would prefer not to aggravate global warming.

I declare no competing interests.

Xavier Anglaret

xavier.anglaret@u-bordeaux.fr

Inserm U1219, University of Bordeaux, 33076 Bordeaux Cedex, France

Copyright © 2018 The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY 4.0 license.

- 1 The World Bank. Indicators. <https://data.worldbank.org/indicator> (accessed Jan 20, 2018).
- 2 BP plc Statistical Review of World Energy 2018 (67th ed). <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html> (accessed July 31, 2018).
- 3 NASA Goddard Institute for Space Studies. GISS surface temperature analysis. <https://data.giss.nasa.gov/gistemp/graphs/> (accessed July 31, 2018).
- 4 International Civil Aviation Organization. On board: a sustainable future. 2016 environmental report. <https://www.icao.int/environmental-protection/Documents/ICAO%20Environmental%20Report%202016.pdf> (accessed July 31, 2018).
- 5 Intergovernmental Panel on Climate Change (IPCC). Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. RK Pachauri and LA Meyer, eds. Geneva: IPCC, 2014. <http://www.ipcc.ch/report/ar5/syr> (accessed July 31, 2018).
- 6 Hausfather Z, Andrew R. Analysis: global CO₂ emissions set to rise 2% in 2017 after three-year "plateau". Carbon Brief and Global Carbon Project, Nov 13, 2017. <https://www.carbonbrief.org/analysis-global-co2emissions-set-to-rise-2-percent-in-2017-following-three-year-plateau> (accessed July 31, 2018).
- 7 Mathiesen K. What is holding back the growth of solar power? *The Guardian*, Jan 31, 2016. <https://www.theguardian.com/sustainable-business/2016/jan/31/solar-power-what-is-holding-back-growth-clean-energy> (accessed July 31, 2018).
- 8 Ripple W, Wolf C, Newsome TM, et al. World scientists' warning to humanity: a second notice. *BioScience* 2017; **67**: 1026–28.
- 9 Macintosh A, Wallace L. International aviation emissions to 2025: can emissions be stabilised without restricting demand? *Energy Policy* 2009; **37**: 264–73.
- 10 Vidal J. Tsunami of data could consume one fifth of global electricity by 2025. *Climate Home News*, Dec 11, 2017. <http://www.climatechangenews.com/2017/12/11/tsunami-data-consume-one-fifth-global-electricity-2025> (accessed July 31, 2018).