

Between the Implausible and Impossible

The Misused Scenario Driving Climate Emergency Policies

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BETWEEN THE IMPLAUSIBLE AND IMPOSSIBLE

EXECUTIVE SUMMARY

Over the period since the 1870's, global average temperatures have risen about 1.1 degree Celsius. That is one degree over a century and a half, so slight that the average person would rarely notice the change. Consequently, to show that the world is facing catastrophe, climate activists have based their claims on the climate models used by the Intergovernmental Panel on Climate Change (IPCC) to project the future.

When projecting the future, climate modelers use different sets of assumptions about how the world population and energy economy will change over the period to 2100 and beyond. During the preparation of its Fifth Assessment Report in 2014, the Intergovernmental Panel on Climate Change (IPCC) decided to use four "Representative Concentration Pathways" (RCPs), meaning scenarios developed by modelers regarding carbon dioxide-equivalent concentrations in the earth's atmosphere. The pathways were labelled RCP2.6, RCP 4.5, RCP6 and RCP8.5. They were initially developed with the understanding that the scenarios, and the models that used them, were simply scientific tools aimed at exploring a variety of conditions as a way to test hypotheses and researchers' understanding of the climate system.

The IPCC, however, associated the RCP scenarios with likelihoods of happening when it labeled the scenario leading to the largest amount of climate change, RCP8.5, as the single "business-as-usual" scenario of the set. As Roger Pielke has observed, *"In so doing, the IPCC identified RCP8.5 as the most likely future in the absence of further policy intervention, which gave it special status among not only the RCPs but among the hundreds of baseline scenarios of the broader IPCC scenario database."*

The RCP 8.5 scenario was very different from the others. It was perceived as depicting the situation that might prevail "without climate policy"; in other words, if the countries of the world took no measures to reduce GHG emissions beyond those in place in 2014. RCP8.5 has annual carbon dioxide emissions more than tripling by century's end, the concentration of carbon dioxide in the atmosphere soaring to more than 900 parts per million, and the radiative forcing (i.e. a scientific concept used to quantify and compare the external drivers of change to Earth's energy balance) more than triple what it is today.

Some of the most prestigious experts, such as Dr. Judith Curry, have characterized RCP8.5 as clearly "implausible" implying that it has less than a 2% chance of occurring. It was undoubtedly intended by the modelers to be a "worst case".

A group of American billionaires and prominent climate activists including Tom Steyer and Michael Bloomberg launched a series of reports and a sophisticated publicity campaign (the “Risky Business” project) characterizing RCP8.5 as “business as usual” and the RCP scenarios as presenting different policy outcomes, suggesting that countries could move from one scenario to another. The campaign has been phenomenally successful. The methodology promoted by the Risky Business project has been adopted by the US federal government and several US states and municipalities, as well as the National Academy of Sciences. Canadian government reports concerning the potential adverse effects of climate change probably also rely on this scenario, although they are usually less transparent about the assumptions on which they rely.

According to Google Scholar, from the beginning of 2020 until mid-June 2021 alone, authors published more than 8,500 papers using the implausible baseline scenarios. The worst mis-users of the worst-case scenarios, of course, are the journalists who seek only the sensationalist headline, regardless of how much it misleads the public.

Without the attention and credibility given to RCP8.5, it is doubtful that a persuasive case could be made for high carbon dioxide taxes or “net-zero by 2050” policies.

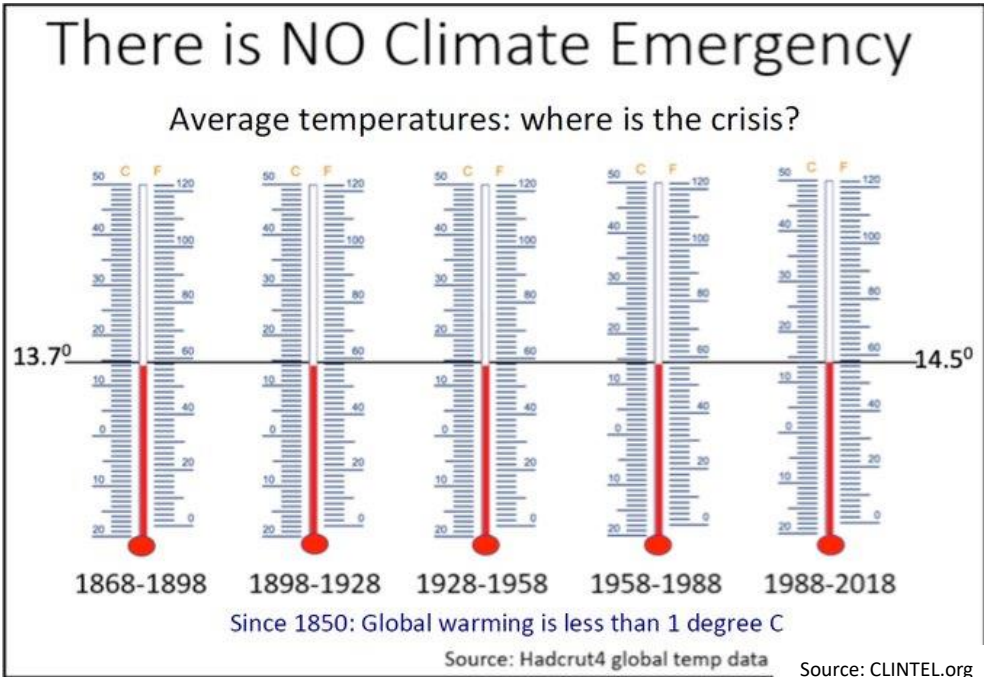
RCP8.5 is a perverse corruption of climate science and an extraordinarily damaging propaganda tool used by climate campaigners. It does not even remotely provide a credible basis for projecting the future; its probability ranges between the implausible and the impossible. However, by the magic of misrepresentation and skillful public relations, the worst case became in the public’s mind the “most likely” case.

BETWEEN THE IMPLAUSIBLE AND IMPOSSIBLE

The Misused Scenario Driving Climate Emergency Policies

Over the period since the 1870's, global average temperatures have risen about 1.1 degree Celsius. That is one degree over a century and a half, so slight that the average person would rarely notice the change.

Actual temperature changes, consequently, are not enough to support the claims by climate activists that the world faces an impending climate catastrophe. So, they have based most of their case for radical greenhouse gas (GHG) emissions reductions on the climate models used by the Intergovernmental Panel on Climate Change (IPCC) to project the future. Using the outcomes of the models, the activists claim that humanity faces an impending apocalypse, the only solution for which is a draconian reduction in the use of hydrocarbons (oil, natural gas and coal), achieved as soon as possible. In other words, what has happened over the past century and a half has not been enough to frighten people into taking costly action, so climate activists have relied on mathematical models to do the job. Sadly, this has worked much of the time.



Given the magnitude of the transformation in people's lives promoted by the activists, it is surprising how few people take the time to understand how the mathematical models

work, what their “parameters” (i.e. design features) are and which assumptions the modelers feed into the models. It is all too complex, and people prefer things to be simple. The mainstream media certainly does not attempt to investigate whether or not the fear campaign is justified.

I will not attempt here to explain how climate models work or what kinds of results they produce. For those willing to reading a long but clearly-explained article by a renowned climate expert, Dr. Judith Curry, I would recommend her “paper on climate models for lawyers”, which can be found here:

<https://judithcurry.com/2016/11/12/climate-models-for-lawyers/>

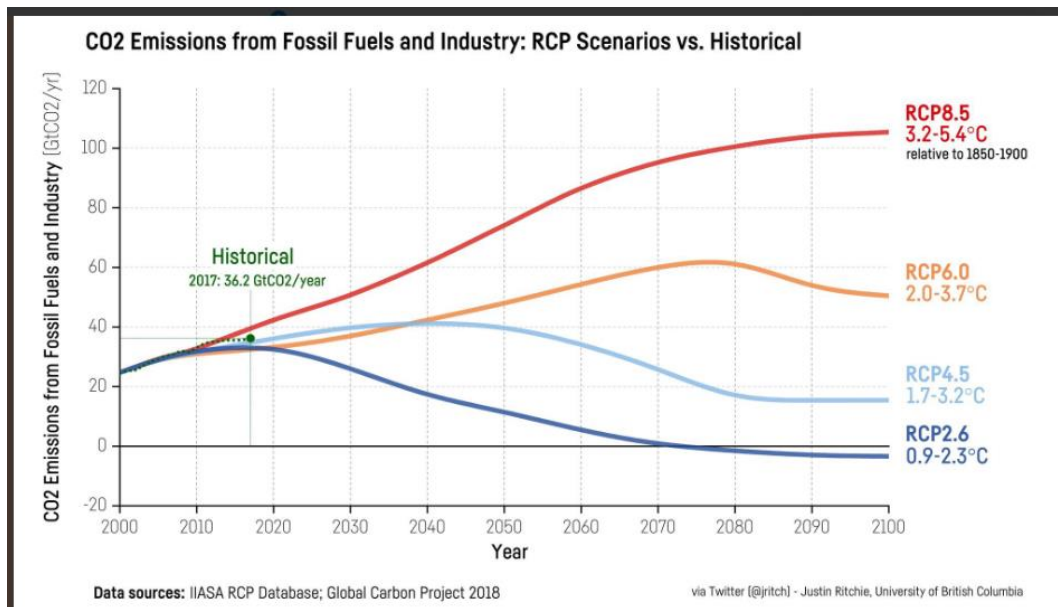
Representative Concentration Pathways

What you should understand is that, when attempting to predict the future, climate modelers use different sets of assumptions about how the world energy economy will change over the period to 2100 and beyond. The key factors to take into account in the assumptions are the global trends in population, economic activity, technological innovation, energy supply development and use, and government policies. In effect, the modelers “package” assumptions about these and other subjects into potential “pathways” leading to different GHG concentration levels in the atmosphere. The analysis then seeks to project the effects of the resulting different GHG concentration levels on the global temperatures, weather, environment and economy.

One of the most important decision points in the IPCC’s work occurred during the preparation of the its Fifth Assessment Report in 2014. Then, four “Representative Concentration Pathways” (RCPs) meaning scenarios regarding carbon dioxide-equivalent concentrations in the earth’s atmosphere were used by modelers for the IPCC. The pathways were labelled RCP2.6, RCP 4.5, RCP6 and RCP8.5. The socio-economic assumptions underlying each of these pathways were developed separately, so there is no consistent design, and they are not like different points on a continuous spectrum. However, the first three pathways were all roughly based upon United Nations population projections and upon the majority (i.e. 90%) of GDP and emissions growth scenarios developed in the then-existing academic studies. They were initially developed with the understanding that the scenarios, and the models that used them, were simply scientific tools aimed at exploring a variety of conditions as a way to test hypotheses and researchers’ understanding of the climate system.

Although the IPCC selected the four radiative forcing pathways to provide a range of projected futures to 2100, it did not consider the plausibility of the socioeconomic assumptions that were used to generate them. In its guidance documents, it warned that *“The differences between the RCPs can therefore not directly be interpreted as a result of*

climate policy or particular socioeconomic developments”.¹ Yet the IPCC ignored this guidance and associated the RCP scenarios with likelihoods when it labeled the scenario leading to the largest amount of climate change, RCP8.5, as the single business-as-usual scenario of the set. As Roger Pielke has observed, “In so doing, the IPCC identified RCP8.5 as the most likely future in the absence of further policy intervention, which gave it special status among not only the RCPs but among the hundreds of baseline scenarios of the broader IPCC scenario database.”



Worse, the scenarios and models were now perceived as far more than tools for scientific analysis of alternative conditions and hypotheses. Again quoting Pielke, “Scientists, policymakers, the media, environmentalists and the public now widely justify and interpret climate models as providing predictive information about plausible futures.”

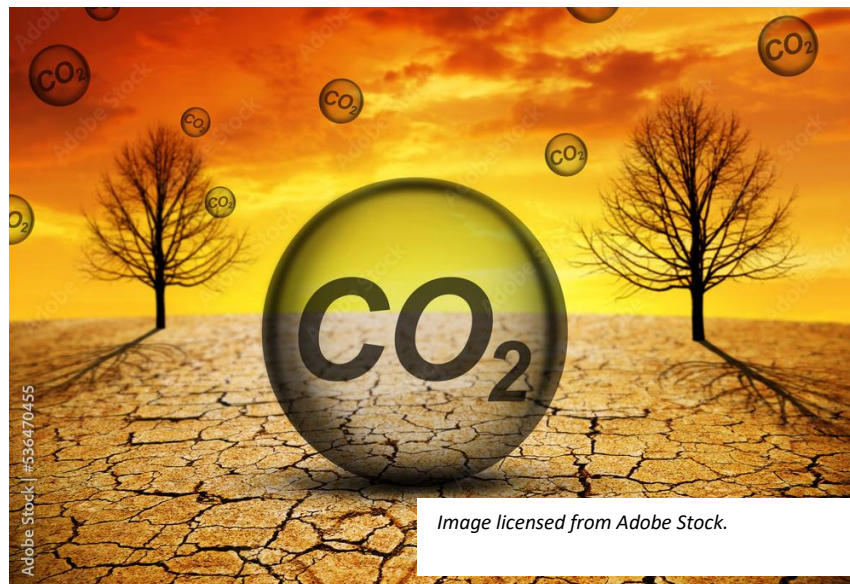
The Problems with RCP8.5

The RCP 8.5 scenario was different from the others. It was perceived as depicting the situation that might prevail “without climate policy”; in other words, if the countries of the world took no measures to reduce GHG emissions beyond those in place in 2014.² The scenario “storyline” emphasized high population growth and lower incomes in developing countries. Whereas the United Nations projects world population to be about nine billion by 2100, the RCP 8.5 scenario assumed that it could be between twelve and fifteen billion. The population projections of the other RCPs are within the 90 percentile of the UN projections, while RCP8.5 is well outside it. The other three RCPs project primary

¹ <https://issues.org/wp-content/uploads/2021/07/74-83-Pielke-Ritchie-How-Climatescenarios-Lost-Touch-With-Reality-Summer-2021-ISSUES.pdf>

² <https://link.springer.com/article/10.1007/s10584-011-0149-y>

energy use of 750 to 900 exajoules in 2100, about twice the level of today. RCP8.5 projects that it will reach 1,700 exajoules, an energy-intensive scenario and a lower rate of technology development. As a result, **RCP8.5 has annual carbon dioxide emissions more than tripling by century's end, the concentration of carbon dioxide in the atmosphere soaring to more than 900 parts per million, and the radiative forcing (i.e. a scientific concept used to quantify and compare the external drivers of change to Earth's energy balance) more than triple what it is today.**



Carbon dioxide – CO₂ – is depicted as the 'Satanic gas' that will burn up the earth when it is the gas of life! Plants and people die without CO₂.

RCP8.5 stood out especially because of its assumptions concerning global fossil fuel use in 2100. Actual coal use was less than 200 exajoules in 2020. Almost all authorities project it to be stable or decline by 2100, due to the combined effects of lower costs for competing energy sources, such as natural gas and renewables, and government regulation. **RCP8.5, in contrast, assumed that global coal use would increase to over 800 exajoules. With respect to oil, under RCP8.5 world crude oil production in 2100 would have to be about four times that of 2015 to meet the assumed demand.** That means that oil companies would have to find and produce roughly four trillion barrels of crude oil between now and 2100. As that is about twice the level of proven crude oil reserves now plus the current estimate of technically recoverable resource potential, it would represent a herculean task.³

Several academic papers have explored whether there are enough coal resources in the world to satisfy the demands assumed in RCP8.5. Some question why climate scenarios make these assumptions at all.⁴ One of the most comprehensive analyses of the potential

³ David Middleton. *RCP 8.5 The Mother of All Junk Science*. Watsupwiththat, April 15, 2016

⁴ <https://www.sciencedirect.com/science/article/abs/pii/S0360544217314597>

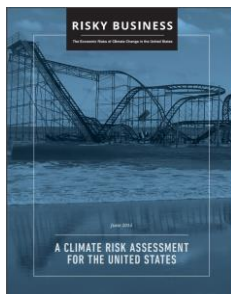
constraints on the likely production of all fossil fuels is provided by Wang et.al. in 2017⁵ **In effect, the constraints on recoverable fossil fuel supply make the RCP8.5 scenario likely impossible.**

What do the experts say? Carbon Brief, an organization that promotes climate activism, estimated that based on an energy expert elicitation”, RCP8.5 had only a 5% chance of occurring.⁶ Some of the most prestigious experts, such as **Judith Curry, have characterized RCP8.5 as clearly “implausible” implying that it has less than a 2% chance of occurring. It was undoubtedly intended by the modelers to be a “worst case”.**

How RCP8.5 has been Used

According to the IPCC, the creators of RCP8.5 did not intend it to represent the most likely “business as usual” outcome, and emphasized that “no likelihood or preference is attached” to any of the RCP scenarios.

The climate activists, including most of academia, and the mainstream media did not get the memo. In fact, as reported in the New York Times RCP8.5 is implausible and in Forbes⁷, a group of American billionaires and prominent climate activists including Tom Steyer, Michael Bloomberg, Hank Paulson, Bill McKibben and John Podesta, launched a series of reports and a sophisticated publicity campaign (the “Risky Business” project) characterizing RCP8.5 as “business as usual” and the RCP scenarios as presenting different policy outcomes, suggesting that countries could move from one scenario to another.



The campaign has been phenomenally successful.

The United States Fourth National Climate Assessment, published in 2018, was full of alarm about the adverse economic effects of climate change based partly upon its use of RCP8.5. The methodology promoted by the Risky Business project has been adopted by several US states and municipalities, as well as the National Academy of Sciences. Canadian government reports



⁵ Jianliang Wang et. al., *The implications of fossil fuel supply constraints on climate change projections: A supply-side analysis*. University of Bedfordshire Business School, 2017

⁶ <https://www.carbonbrief.org/explainer-the-high-emissions-rcp8-5-global-warming-scenario/#:~:text=A%20sizeable%20portion%20of%20recent,to%20cut%20greenhouse%20gas%20emissions.>

⁷ <https://www.forbes.com/sites/rogerpielke/2020/01/02/how-billionaires-tom-steyer-and-michael-bloomberg-corrupted-climate-science/?sh=3a75645702c6>

concerning the potential adverse effects of climate change probably also rely on this scenario, although they are usually less transparent about the assumptions on which they rely.

The New SSP Scenarios

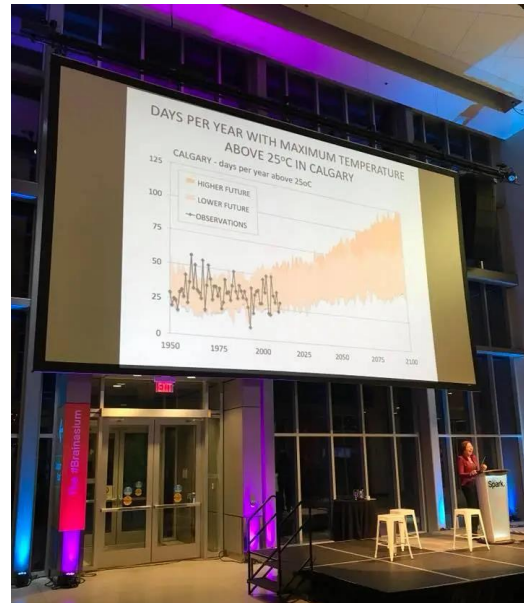
In 2017, the IPCC departed from its use of Representative Concentration Pathways and introduced new versions called the Shared Socioeconomic Pathways (SSPs). The SSPs integrate different sets of population, economic growth and other socioeconomic assumptions into future emissions scenarios. They include two “no-policy” baseline emission scenarios, SSP7.0 and SSP-8.5, the latter being the clear successor to RCP8.5.

Some UN bodies have quietly dropped RCP8.5, and its successor SSP-8.5, from their considerations, focusing on the “intermediate” scenarios. While this happened before COP26, the conference of the parties held in Glasgow in 2021, the senior officials of the IPCC instructed modelers in preparing for the most recent (AR-6) report to continue to focus on SSP-8.5, and climate researchers continue to focus on this scenario in their publications describing the impacts of climate change.⁸

According to Google Scholar, from the beginning of 2020 until mid-June 2021 alone, authors published more than 8,500 papers using the implausible baseline scenarios, of which almost 7,200 use RCP8.5 and nearly 1,500 use SSP-8.5. The worst mis-users of the worst-case scenarios, of course, are the journalists who seek only the sensationalist headline, regardless of how much it misleads the public.

Conclusion

The most favourable thing one can say about RCP8.5 is that it is a highly unrealistic scenario intended to illustrate a worst-case scenario and “inadvertently” mis-labelled a “business as usual” case. More accurately, it is a perverse corruption of climate science and an extraordinarily damaging propaganda tool used by climate campaigners. In fact, it does not



Dr. Katharine Hayhoe is fond of using RCP8.5 as the ‘business as usual’ case. Image from the [2018 Calgary Climate Symposium](#) at TELUS Spark. See her misuse RCP8.5 in [this video](#).

⁸ <https://judithcurry.com/2022/11/02/the-climate-crisis-isnt-what-it-used-to-be/>.

even remotely provide a credible basis for projecting the future; its probability ranges between the implausible and the impossible. **The worst case, by the magic of misrepresentation and skillful public relations, became in the public's mind the "most likely" case.**



Covering Climate Now is a project of Columbia Journalism Review, apparently dedicated to proliferating climate alarm via 400 media outlets, reaching 2 billion people. In the above edition, they interviewed the director of the dystopian film "Mad Max" to learn how to make 'climate fear compelling.'

Without the attention and credibility given to RCP8.5, it is doubtful that a persuasive case could be made for high carbon dioxide taxes or "net-zero by 2050" policies.

RCP8.5 and its successor SSP-8.5 offer a prime example of exceedingly damaging junk science fiction that continues to spread fear and corrupt the public's understanding of climate issues.

And because of this, tens of thousands of people lose their jobs.



About the Author

Robert Lyman is an economist with 27 years' experience as an analyst, policy advisor and manager in the Canadian federal government, primarily in the areas of energy, transportation, and environmental policy. He was also a diplomat for 10 years. Subsequently he has worked as a private consultant conducting policy research and analysis on energy and transportation issues as a principal for Entrans Policy Research Group. He is a frequent contributor of articles and reports for Friends of Science, a Calgary-based independent organization concerned about climate change-related issues. He resides in Ottawa, Canada. [Full bio.](#)

About Friends of Science Society

Friends of Science Society is an independent group of earth, atmospheric and solar scientists, engineers, and citizens that is celebrating its 20th year of offering climate science insights. After a thorough review of a broad spectrum of literature on climate change, Friends of Science Society has concluded that the sun is the main driver of climate change, not carbon dioxide (CO₂).

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