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The rocky road to truthfulness in climate politics

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"There is growing agreement between economists and scientists that the tail risks are material and the risk of catastrophic and irreversible disaster is rising, implying potentially infinite costs of unmitigated climate change, including, in the extreme, human extinction." ¹

With these words William Oman and Signe Krogstrub describe the threat situation in a working paper of the International Monetary Fund (IMF). Thus, Hans-Josef Fell and Thure Traber urge to keep in mind climate policy necessities when evaluating climate scenarios for the year 2050, and to consider the risk of a global climate disaster ending in a *Hothouse Earth* pathway.

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¹ IWF (2019), Macroeconomic and Financial Policies for Climate Change Mitigation: A Review of the Literature.

Key messages

It is widely scientifically recognised that a global temperature increase by more than 2°C threatens to lead to a so called Hothouse Earth scenario in which human civilisation as we know it can no longer exist.

While point of no return is near, this possibly extinctive threat is not perceived as such by the political world, the media and to some extent not even by science itself. Political goals and scientific scenarios which still involve the use of fossil resources and therefore include greenhouse gas emissions after 2030, meaning after exceeding 1.5°C, inevitably lead to a Hothouse Earth.

For this reason, scientists designing scenarios based on climate neutrality by 2050 must clearly articulate that such a path cannot be a contribution to averting a global climate catastrophe. In most cases, however, such scenarios do not contain any warnings of that kind. In doing so, some climate scientists also contribute to the fact that humanity is not taking the necessary measures to combat the climate crisis.

The central Paris target of 1.5°C will be exceeded by 2030 at the latest, and even compliance with 2.0°C will only be achievable through an **immediate and profound change of course**. Anyone who claims that the Paris agreement could be met with the target of climate neutrality by 2050, like the European Commission, is simply deceiving the public.

At the same time, it is technically and economically possible, albeit with the greatest efforts, to implement a global zero emissions economy in conjunction with large carbon sinks by 2030. This requires political will with a clear agenda, which is supported by climate-sensitive media, and backed up by sustainable economic structures and the efforts of each and every one of us.

Anyone who considers such rapid change unrealistic should at least admit that they cannot propose an alternative way of combating the climate crisis and safeguarding human livelihood.

The scientific evidence that climate neutrality by 2050 will not suffice is overwhelming

Aiming to comply with the Paris agreement, many countries are adopting resolutions to reach climate neutrality or "net-zero" by 2050. This is the case for the United Kingdom, South Korea, Japan, the European Green Deal of the European Commission, the German government and, in the foreseeable future, the USA. China aims at climate neutrality by 2060. These goals are accompanied by a number of scenarios, such as the scenario for Germany in the recently published study "Towards a Climate-Neutral Germany" by the Climate Neutrality Foundation and the thinktanks Agora Energiewende and Agora Verkehrswende². Generally speaking, the term climate neutrality is defined and applied differently by different actors. It is important to distinguish between two definitions of climate neutrality:

- *Carbon neutrality*
Refers to emissions of carbon dioxide only, excluding all other greenhouse gases (e.g. methane).
- *Greenhouse gas neutrality*
Refers to all greenhouse gases that contribute to global warming.

However, neutrality never means zero emissions, but only that existing emissions are offset by carbon sinks, i.e. net zero emissions or simply "net-zero". This gives rise to two main problems. (1) In the political debate, climate neutrality is assumed to be a clearly defined term without actually having a common definition. (2) In addition, climate neutrality cannot be seen as a sufficient indicator for climate protection, since the goal must be to achieve zero emissions and create additional (not compensating) carbon sinks to reduce atmospheric greenhouse gas concentration and prevent the unchecked progression of global warming.

The calculations of the Intergovernmental Panel on Climate Change (IPCC) also show³ that a global warming of 1.5°C can be expected as early as 2030, even though this development is not reflected in its published summary for policymakers⁴. Instead, the IPCC suggests to policymakers that only 1.3°C would be reached in 2030. This contradicts the model calculations of the IPCC's own experts, as already shown in a scientific publication in 2018⁵ (Figure 1).

² SK (2020), Towards a Climate-Neutral Germany.

³ IPCC (2014), Fifth Assessment Report.

⁴ IPCC (2018), IPCC Special Report on Global Warming of 1.5°C, Chapter 1, 81.

⁵ Xu (2018), Global warming will happen faster than we think.

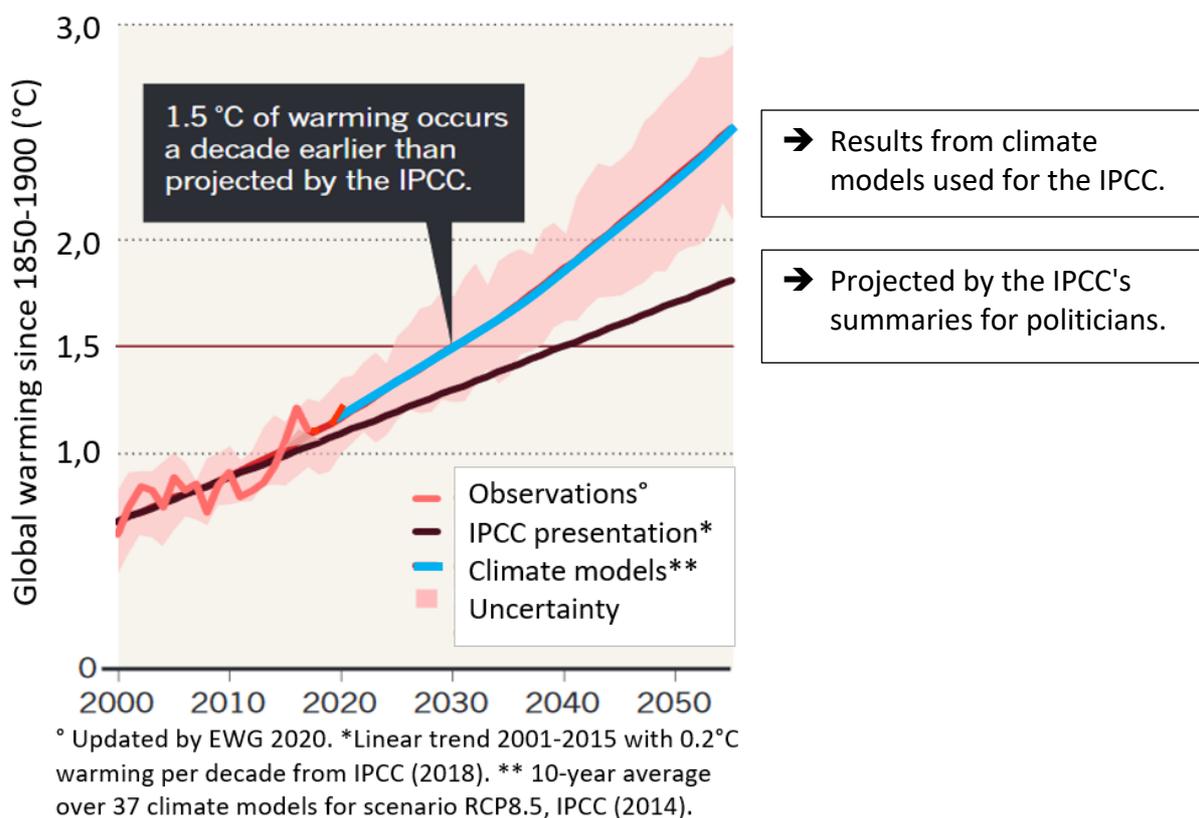


Figure 1: Global warming observed, projected and simulated by climate models compared to the period 1850-1900. Source: Xu (2018); own depiction and update.

Recent publications confirm this rapid rise in temperature. NASA⁶, for example, has already observed in its January 2020 climate report that the temperature increase throughout the last decade (2010–2019) was almost 0.2°C. The EU's Earth observation programme Copernicus has also recently found that the atmospheric temperature reached almost 1.3°C above pre-industrial levels in the 12 months from September 2019 to September 2020⁷. It must therefore be concluded that with the same temperature increase as from 2010 to 2019, the 1.5°C mark will be reached as early as 2030 – as calculated in the IPCC climate models. No evidence can be found to suggest that the temperature rise in the current decade could be lower than in the previous decade. On the contrary, the growing concentration of greenhouse gases in the atmosphere and the current exceeding of tipping points suggest it will be substantially higher.

The Paris target to make efforts to comply with 1.5°C is already missed today, as the 1.5°C mark is predicted to be reached by 2030. And even keeping the temperature well below 2°C can only be achieved by an immediate and comprehensive shift towards a global zero emissions economy including large scale carbon sinks. This is particularly important because triggering tipping points in the climate system threatens to lead to a self-accelerating warming, which would call into question the controllability of climate change as a whole. Several of these tipping points, such as the thawing of permafrost soils or the reduction of the albedo of ice sheets, have already been triggered. Meaning, there is already no reliable remaining emissions budget to meet the Paris targets.

⁶ NASA (2020), NASA, NOAA Analyses Reveal 2019 Second Warmest Year on Record.

⁷ COPERNICUS (2020), Surface air temperature for September 2020.

Any proposed reduction path for achieving climate neutrality in 2050 is thus based on two fatal errors⁸. First, a net zero emissions target by 2050 is completely insufficient to rule out uncontrollable climate change, let alone the possibility of exceeding 2°C. Second, paths aiming at climate neutrality by 2050 are linked to the continued use of fossil resources, which in turn are inevitably linked to further emissions. For example, the above-mentioned study for Germany plans to increase the conversion of natural gas into electricity by almost half (91 TWh in 2019 to 134 TWh). This would tie up large amounts of capital over decades, which would be deprived from the expansion of emission-free renewable energy. At the same time, the intended replacement of coal-fired power generation by increased use of natural gas even risks increased greenhouse effects, in particular those associated with natural gas leaks which frequently more than offset the assumed CO₂ savings⁹.

A simple calculation shows that even if current emissions in Germany were actually to be reduced continuously to zero from 2021 until 2050, almost another 10 gigatons of CO₂ emissions alone would be generated during this period (Figure 2). This corresponds to approximately three times (factor 2.84) the amount specified by the German Advisory Council on the Environment (SRU) using IPCC data as upper limit for achieving the 1.5°C target¹⁰.

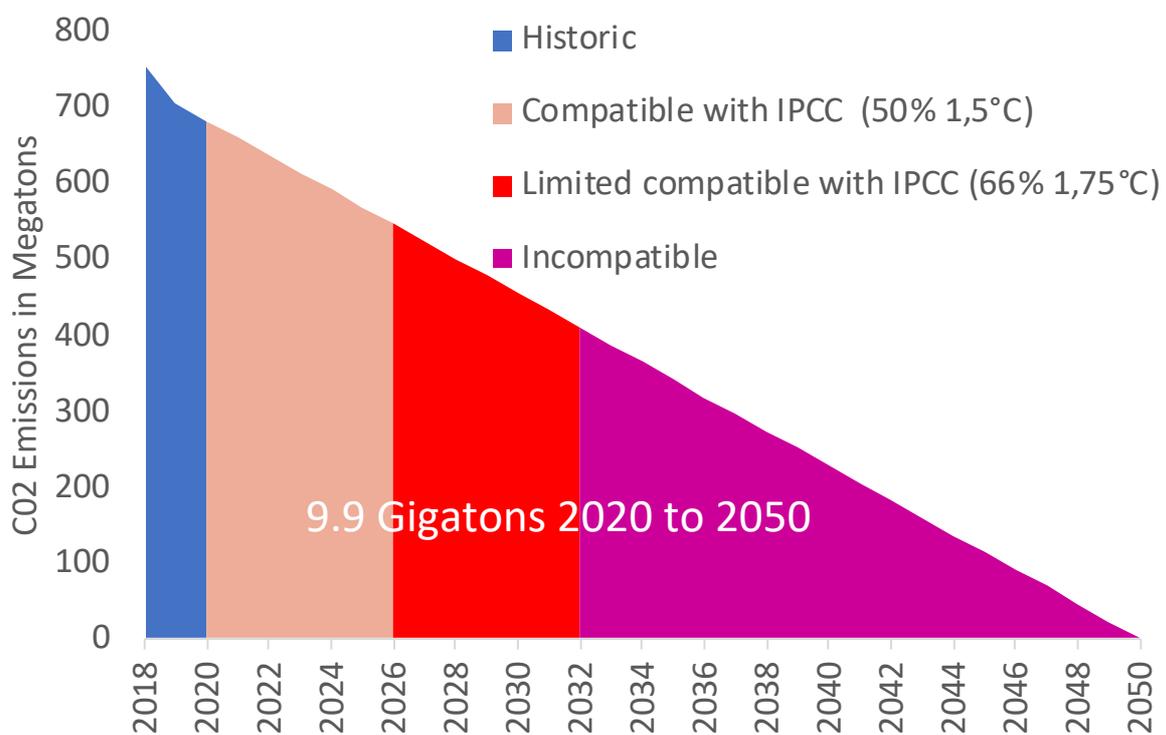


Figure 2: Even if a remaining German budget would be adopted according to IPCC (2018), a linear path to CO₂ zero emissions in 2050 would miss the Paris climate target of 1.5°C already in 2026 with a probability of 50% (50% 1.5°C) and in 2032 even 1.75°C would no longer be reliably achievable (66% 1.75°C). Source: Own calculations based on SRU (2020).

⁸ Breakthrough (2020), Fatal Calculations – How Economics Underestimated Climate Damage and Encouraged Inaction.

⁹ EWG (2019), Erdgas leistet keinen Beitrag zum Klimaschutz.

¹⁰ SRU (2020), Für eine entschlossene Umweltpolitik in Deutschland und Europa. The calculations of the SRU are based on an even distribution of the remaining per capita emission budgets of the world population as stated by the IPCC. It is further assumed here that the German emissions target for 2020 can be met in part due to the corona pandemic.

Even the emission reductions with zero emissions targeted by the SRU over the next decade are derived from the simplifying cost-benefit logic that forms the basis of the official IPCC recommendations. The risk of disastrous climate developments, which has started to become reality through the already visible triggering of tipping points in the climate system, is only insufficiently taken into account.

The triggering of tipping points means that the catastrophic damage indicated above is becoming increasingly probable ¹¹ and must therefore urgently be incorporated into the urgently needed policies. In other words, adequate risk management must finally be put in place. The Australian thinktank Breakthrough ¹² got to the heart of the problem: "Because climate change is now an existential threat to human society, risk management and the calculation of potential future damages must pay disproportionate attention to the high-end, extreme possibilities, rather than focus on middle-of-the-spectrum probabilities." Similar to the measures put in place to combat the corona pandemic, the limits of a system's resilience to possible adverse developments must be taken into account, since orientation to what can be expected on average leads to collapse with a certainty of fifty percent. Consequently, global emissions must be reduced to zero as soon as possible, preferably before 2030. Mankind's behaviour is like that of a passenger on a plane who feels safe when boarding, even though he has been told that his aircraft will crash with a 50% certainty.

IPCC's policy recommendations have failed to properly advise the global community

The IPCC's continued orientation towards the midpoint of the range of scientific climate analyses, its conservative conclusions and its disregard for non-linear effects (tipping points) are the basis for the fact that none of the official reports of the Intergovernmental Panel on Climate Change (IPCC) has portrayed the rapid increase in temperature to 1.3°C in 2020 as probable. Thus, the IPCC has not sufficiently warned humanity about the real temperature increases and their climate consequences.

Reaching climate neutrality by 2050 is therefore regularly associated with with reaching the Paris climate goals. For example, the European Commission's announcement of its 2050 climate neutrality target in the press release of 4 March 2020 states ¹³ : "The Commission first set out its vision of a climate-neutral EU by 2050 in November 2018, in line with the Paris Agreement objective to keep the global temperature increase to well below 2°C and pursue efforts to keep it to 1.5°C."

¹¹ Lenton (2019), Too risky to bet against.

¹² Breakthrough (2020), Fatal Calculations – How Economics Underestimated Climate Damage and Encouraged Inaction.

¹³ European Commission (2020), Committing to climate-neutrality by 2050: Commission proposes European Climate Law and consults on the European Climate Pact.

Up to the very latest, this misleading presentation is also supported by the IPCC report from 2018¹⁴, claiming that "limiting global warming to 1.5 degrees [...] requires net zero emissions (i.e. "climate neutrality") to be achieved around the year 2050" and which has not revised these statements since. For Germany, this aberration is now being redrawn in the form of the study "Towards a Climate-Neutral Germany"¹⁵.

Even if the studies and targets for achieving climate neutrality by 2050 were now put into political practice, limiting warming to 2°C compared to pre-industrial times would soon be out of reach. A Hothouse Earth beyond 3°C could no longer be ruled out, with the probable consequence that today's human civilisation would hardly be imaginable. This political goal, together with the studies behind it, confirming that effective climate protection can be achieved with the goal of climate neutrality by 2050, are therefore misleading and amount to a deception of the public.

If we are to have any chance at all of complying with the Paris agreement, i.e. limiting global warming to well below 2°C, it is necessary to create a human way of life that no longer causes greenhouse gas emissions and at the same time removes large quantities of carbon dioxide from the atmosphere.

Politically responsible actors, such as the European Union, must revise their statements that the Paris agreement can be complied with by achieving climate neutrality in 2050. Scientists who present studies with the goal of achieving climate neutrality in 2050 must make it clear that implementing the agenda they have presented is not a path to a controllable climatic development but leads into a Hothouse Earth and is simply not a sufficient contribution to climate protection.

Conversely, those who present climate neutrality in 2050 as sufficient climate protection expose themselves to the accusation of deceiving the public, as the latest research results of NASA, WMO, Copernicus and also the IPCC are freely accessible.

Climate policy must be consistent if it is to be credible, reliable and communicable, which is only possible if it clearly shows the negative consequences of inaction in regard to the associated disaster risk. Simply stating that the necessary shift to zero emissions by 2035, as cited in a recent report by the Wuppertal Institute commissioned by Fridays For Future Germany¹⁶, or at best even sooner, is unrealistic for an industrialized economy, is tantamount to a surrender to the realities of the climate crisis.

Climate policy is credible if it submits with and recognises the necessity to achieve zero emissions with carbon sinks as soon as possible. Only a climate policy that builds on this scientific basis is sustainable in the long term and does not risk becoming obsolete at the very beginning of its implementation due to continuously worsening climate developments.

¹⁴ IPCC (2018), IPCC Special Report on Global Warming of 1.5°C, Summary for Policymakers.

¹⁵ SK (2020), Towards a Climate-Neutral Germany.

¹⁶ WI (2020), CO2-neutral bis 2035: Eckpunkte eines deutschen Beitrags zur Einhaltung der 1,5-°C-Grenze.

The necessary disruptive transformation of the global economy until 2030 is conceivable and feasible, if there is a will

Especially now, it is imperative to show that ambitious climate policy can be implemented in the shortest conceivable time. And the chances are good, as the key technologies of electrification and renewable energies are not only becoming ever more cost-effective, but are also increasingly enabling small-scale, decentralized development that is less dependent on the time-consuming development of large-scale infrastructures. To achieve this, all public subsidies for fossil energies must be phased out immediately and any public support must be withdrawn from investments in fossil resources. Instead, the expansion of renewable energies and the establishment of sustainable economic models must be actively promoted starting at the regional level and, if necessary, strengthened with government incentives for research and development of zero-emission technologies, particularly in the private sector. In parallel, all private and public funds must be used to facilitate a carbon-reducing agriculture and forestry by 2030.

First approaches already exist to describe what a rapid disruptive change towards zero emissions could look like. For example, the Wuppertal Institute's study commissioned by Fridays For Future Germany ¹⁷, mentioned above, has already carried out an assessment of the requirements for carbon neutrality by 2035 and shows which expansion rates would have to be achieved for a 100% renewable electricity system by 2035.

Although there is still a lack of detailed studies showing a path to a zero-emission world with large-scale carbon sinks by 2030, experience has shown that the necessary disruptive transformations can be achieved in short periods of time – through exponential growth of the technologies and agricultural methods required. For example, in the decade starting around 1900, horse-drawn carriages that dominated traffic at the time were replaced by cars. The success of information technologies such as private computers, mobile phones and smartphones are other examples, taking only about ten years to spread around the world.

Since renewable energies, combined with electrified engines and the associated storage technologies, have already become economically viable, and organic farming is well developed, the necessary groundwork has been laid to enable a disruptive economic transformation. The only thing missing so far is the political and social consensus to rigorously implement this.

Instead of studies that describe the way to achieve inadequate climate targets and check their feasibility, we need studies that are geared of climate science findings. This means, on the one hand, rejecting political targets such as achieving climate neutrality by 2050 as insufficient and, on the other hand, developing scenarios that show how zero emissions combined with large-scale carbon sinks can best be achieved by 2030 or earlier. The eminent threat of our planet becoming an uncontrollable hothouse leaves us humans with no other choice.

¹⁷ WI (2020), CO₂-neutral bis 2035: Eckpunkte eines deutschen Beitrags zur Einhaltung der 1,5-°C-Grenze.

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