

CLUSTER OF EXCELLENCE CLIMATE, CLIMATIC CHANGE, AND SOCIETY (CLICCS)





NEWS FROM CLIMATE RESEARCH



IT'S ALL UP TO SOCIETY

The Hamburg Climate Futures Outlook 2023 analyzed ten key social drivers, from climate policy and the media to consumption patterns, together with six physical processes. According to its findings, achieving the 1.5-degree goal is no longer plausible. What to do now? We spoke with Dr. Anna Pagnone and Dr. Andrés López Rivera, who co-edited the study.

The 1.5-degree goal is nowhere in sight, or as you put it, is "no longer plausible." What's the difference between possible and plausible?

Anna Pagnone: Various climate futures are possible, but not all of them are plausible. We systematically assess plausibility on the basis of the past and present worldwide development of certain key social factors.

How exactly did you do that?

Andrés López Rivera: We developed a theoretical model with which we analyze social drivers such as social movements or climate litigation. We then use these models to systematize the currently available empirical evidence. In this way, we assess the plausibility of societal change toward deep decarbonization by 2050 – the prerequisite for the 1.5-degree goal. At present, however, none of the drivers is strong enough.

According to the study, the timely exit from fossil fuels is being blocked by consumption patterns and corporate responses, while other drivers like protest movements and climate litigation are still too weak. Should we now focus on the 2-degree goal instead?

López Rivera: No! We shouldn't throw out the 1.5-degree goal; we need to make it plausible again. Every bit of global warming that can be avoided, counts.

What needs to happen?

Pagnone: In part, the changes have to take place bottom-up, which is up to each of us. But they definitely have to happen top-down, too. Responsibility can't be transferred to the individual. Policymakers need to take the helm, companies need effective guidelines. López Rivera: Generally speaking, we identified three gaps: knowledge, ambition, and implementation. Knowledge gaps need to be addressed, targets need to be far more ambitious, and policies need to be implemented more consistently.

You also analyzed a number of muchdiscussed physical processes in terms of whether they endanger achieving the Paris climate goals. What did you find? Pagnone: All of the processes analyzed can have devastating effects. Yet, if we consider the global temperature alone, three of them will have no impact on it: polar ice-sheet melt, Arctic sea-ice decline, and regional climate change. Dieback of the Amazon Forest and thawing permafrost will have a minimal impact. For comparison: the emissions from the two processes between now and 2050 would be roughly equivalent to what the human race currently generates in two years. As such, the answers will have to come from society.

And what about global inequalities, especially climate justice?

López Rivera: It is the result of the current deadlock on UN climate policy. Industrialized countries are responsible for the lion's share of emissions but can also much more readily cope with climate change than emerging economies. The funds currently approved by the donor countries don't even come close to financially compensating for the impacts.

WE NEED SPEED!

Climate change, our linear throw-away-society and pollution are all elements of the current polycrisis. The required change can seem too big and too complex to be done quickly – after all, all established models state that it takes at least 30 to 50 years for a paradigm change to take place, often longer. But according to the IPCC reports, we don't have much time left. We need big changes now.

A team led by Professor Fenna Blomsma wants to contribute to taking action towards such positive systemic change – which they call disruptive change – by changing the way we think about how change comes about. As Einstein already put it, current problems cannot be solved with current thinking. In other words: if we accept slow change as the norm, we will get slow change – and this is unhelpful in our current situation.

The team explains under which circumstances disruptive change develops, how to recognize it and how the changeover can be accelerated. It also sets out ways to assess the current status of a system, and prioritize and quickly take action accordingly.



In their study, the researchers take a closer look at circular economy within the fashion and textile sector. That is: how resource preservation, efficiency and productivity can be brought to the heart of this sector through the use of such strategies as prevention, reuse, remanufacturing, recycling and composting. The team shows that the textile industry is already on the right track towards a "circular disruption" – an encouraging example.

https://onlinelibrary.wiley.com/doi/epdf/10.1002/bse.3106

Coastal regions are highly diverse and should therefore be approached individually in Earth system models.



FOCUS ON THE COASTAL OCEAN

Where does the carbon come from? And where does it go? To date, Earth system models haven't adequately investigated the processes at work in coastal waters: they either consider the whole world, at low resolution – or a given region in detail, but without global context. A new model from Dr. Moritz Mathis and colleagues now offers detailed insights without neglecting global processes. Dubbed "ICON-Coast," it combines the best of both worlds. "One strength of our global model is its ability to account for coupled interactions between the coast and the open ocean," says Mathis. As a result, the absorption and distribution of carbon are easier to track, even beyond the borders of coastal regions. In contrast, in regional models the values at the open boundaries have to be estimated – which is imprecise. With the new model, researchers can simulate dynamics around the globe and, for the first time, simultaneously explore selected regions in high resolution. "And it doesn't have to be the coasts; for example, we can also look at the meltwater discharge from the Greenland Ice

Sheet," Mathis adds. Moreover, ICON-Coast isn't limited to carbon; it could potentially be used to investigate other processes, such as the dynamics of storm surges. <u>https://uhh.de/cliccs-coastal-ocean</u>

THE PATH TOWARD CLIMATE GOALS



NEWS IN BRIEF

PROGRAMMING FOR MORE SUSTAINABILITY

How can scientific programming with the computer language Python be used for sustainable issues? That was the focus of a hybrid Summer-Winter school for 24 students from Hamburg and São Paulo.

.....

https://uhh.de/cliccs-covidgi-uni-hh

TAXING THE MEAT

Based on a survey, Prof. Grischa Perino and Henrike Schwickert found that 62 percent of Germans would agree to a low-level meat tax. Support for a tax based on animal welfare (68 percent) was significantly higher than that for one based on climate protection (56 percent).

https://www.nature.com/articles/s43016-023-00696-y

HAMBURG CLIMATE RESEARCH AT THE EGU

From April 23 to 28, CLICCS researchers will show their current results in Vienna at the annual conference of the European Geosciences Union (EGU). The Cluster and the Center for Earth System Research and Sustainability (CEN) will present themselves at an information booth together with the German Climate Computing Center (DKRZ). <u>https://uhh.de/cliccs-egu-2023-en</u>

PUBLISHED BY

Climate, Climatic Change, and Society (CLICCS) Cluster of Excellence at Universität Hamburg

<2°C

Center for Earth System Research and Sustainability (CEN) CEN Office, Bundesstraße 53, 20146 Hamburg

Editorial staff: Stephanie Janssen, Franziska Neigenfind, Niklas Keller; Graphic design: Franziska Neigenfind <u>cliccs@uni-hamburg.de</u> <u>www.cliccs.uni-hamburg.de</u> <u>www.twitter.com/CENunihh</u>

Image credits

Title: Adam/Pixabay, Franziska Neigenfind; p.2: CLICCS/ Universität Hamburg; p.3 above: laris968/Pixabay; p.3 below: Hereon/Data from ESA (MERIS); p.4: CLICCS/ Universität Hamburg