



Universität Hamburg

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

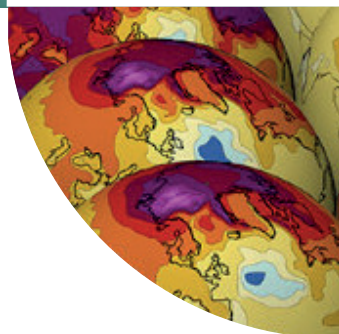
# DOING NOTHING WILL COST US MORE LATER

THE CHALLENGE NOW IS TO OVERCOME INACTION  
AND ACHIEVE SUSTAINABLE ADAPTATION



**01**

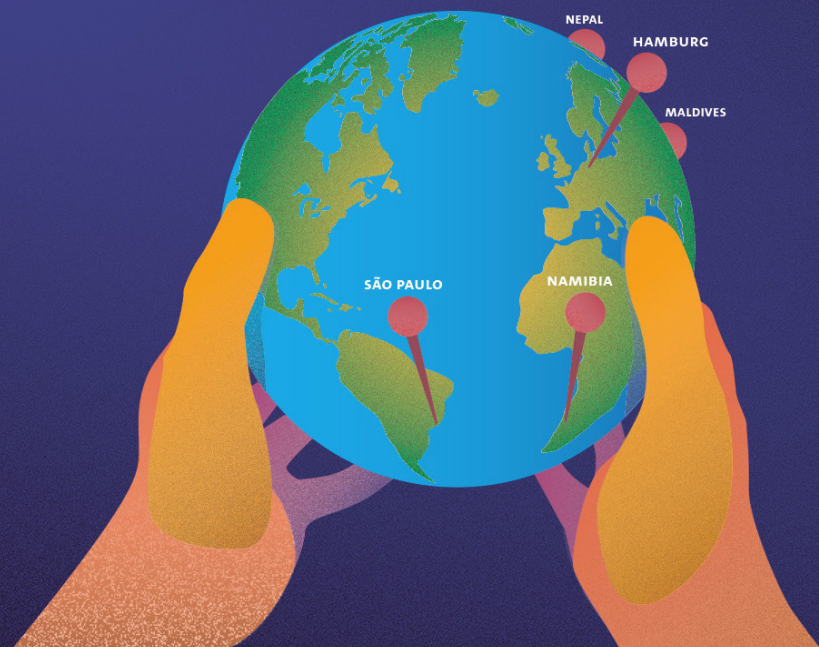
FEB 2025



# CLICCS QUARTERLY

NEWS FROM CLIMATE RESEARCH





## DOING NOTHING NOW WILL COST US MORE LATER

The *Hamburg Climate Futures Outlook 2024* shows how climate change adaptation can ultimately succeed: through meticulously thought-through measures that are simultaneously climate-friendly and socially just, and which are jointly developed with the public. Beate Ratter is a Professor of Geography and one of the study's lead authors.

**With regard to climate change adaptation, you were once quoted as saying: “By adapting, we can buy ourselves some time; by adapting sustainably, we can buy ourselves a future.” What did you mean by that?**

**Beate Ratter:** My research focuses on how climate change affects small islands. There, sea-level rise is one problem, but a greater one is coastal erosion. I could buy myself some time by, say, erecting a wall on the beach. But over time, it would be undercut by the tide and washed away soon after. In contrast, nature-based measures could be used to gradually make the wave system less dynamic. So, when I protect coral reefs, for instance, lastingly reducing erosion, I've bought myself a future.

**Getting the public on board, considering all potential impacts of a given measure, developing a strategy and precisely matching it to local conditions – sustainable adaptation takes quite a bit of time. Wouldn't it be smarter if I quickly erected a floodwall as a preventive measure?**

Sustainability has social, economic and ecological aspects. Erecting a wall costs money. You have to invest, need a degree of technical know-how, and have to ensure that you don't ultimately do more harm than good to the ecosystem.

**Your study draws on nine case studies from around the globe to evaluate the success of local climate change adaptation efforts. None of the regions truly achieved sustainable adaptation. Does that mean the policymakers failed?**

Yes, because the state is responsible for regulation. Our economic systems are based on erroneous assumptions. For example, over the past 100 years, we haven't succeeded in making those who are responsible for the true environmental costs, say, of traffic, actually pay for them. Apparently, there isn't enough public interest in demanding it.

**Could economic development and sustainable adaptation be irreconcilable?**  
We need to use different arguments. Economic choices need to include the

future costs of climate impacts – because if we do nothing now, it will cost us much more in the long run.

**How can we overcome this inaction?**

The challenge is to be proactive. How many more flooding catastrophes do we need before it sinks in that climate change is a bad thing? Last year we had flooding in Saxony and Lower Saxony, Saarland, Baden-Württemberg and Bavaria, not to mention Austria and the Czech Republic. I'm shocked to see that climate change is barely an issue in the upcoming elections. We can either be painfully reminded of the need for action. Or we can focus on boosting our resilience so that, when the next floods or torrential rains come, we can handle them.

**Is there anything the average citizen can do?**

Absolutely. Everyone can consider what they want to protect – their home, their neighborhood. Regulars' tables, clubs, associations and NGOs are a great way to exchange notes and get active – plus, it's more fun when you work together.

## TIDES REDUCE MARINE CO<sub>2</sub> UPTAKE

The ocean absorbs massive amounts of CO<sub>2</sub> from the atmosphere, helping to slow climate change. Tides have a major impact on the mixing, distribution and storage of CO<sub>2</sub> in water, as they influence water currents and stratification alike. A team led by Dr. Jan Kossack recently calculated the tides' influence on carbon dioxide transfer between the atmosphere and ocean for the Northwest European Shelf, a group of coastal seas that encompasses the North Sea and parts of the Atlantic near Great Britain and Ireland.

The researchers combined specific computer models capable of simulating the ecosystem and the physical and biogeochemical conditions within it, including the tides. Drawing on this modelling system, they then compared simulations with and without the tides and found striking differences: the tides reduced CO<sub>2</sub> absorption by ca. 13 percent. However, this effect also varied: in the North Sea, the tides particularly intensify the mixing



of the water, which reduces CO<sub>2</sub> uptake, whereas in the Celtic Sea, the reduction is due to the tides' influence on currents.

In the future, climate change could produce changed tides – say, due to rising sea levels. This would also affect the ocean's ability to absorb CO<sub>2</sub>. As the study clearly shows: tides and their various interactions with the carbon cycle are important factors that need to be considered in the future. [uhh.de/cliccs-tidal-impacts](http://uhh.de/cliccs-tidal-impacts)



## THE TRUE COST OF CO<sub>2</sub>

Emitting greenhouse gases produces much higher costs to society than previously assumed: according to a study conducted by economist Prof. Moritz Drupp and colleagues in the US and United Kingdom, the true costs are at least 270 euros per metric ton of CO<sub>2</sub>. This number represents the harm done to society and the economy by one ton of emissions. Previous assumptions and policies do not accurately reflect the impacts of climate change. "For example, in this view, burning a liter of gasoline produces more than 60 euro-cents' worth of climate damage," says Drupp. Recent estimates only placed the damage and costs at ca. 125 euros per metric ton of CO<sub>2</sub> – far too low. Only recently did the German Environment Agency (UBA) estimate the costs to society at 300 euros per ton, making it the world's only institution to put out an estimate that matches the current state of research.

The analysis by Moritz Drupp and colleagues covers 1,800 scientific calculations from the past 20 years – the most comprehensive to date. As Drupp explains: "In many cases, the impacts on economic growth and the environment aren't sufficiently reflected. As a result, the costs of CO<sub>2</sub> emissions are systematically underestimated."

[uhh.de/cliccs-climate-costs](http://uhh.de/cliccs-climate-costs)



# „WAY OF NO RETURN“: ART MEETS CLIMATE RESEARCH

We see an expansive painting, and bit by bit the details are revealed – a mathematical formula in one spot, a pair of open hands in the corner. Mathematics professor Jörn Behrens works with formulas, while Dr. Cleovi Mosuela is investigating how local communities can shape their own adaptation to climate change.

Artist Dit Coesebrink presents fragments of their three-way conversations using the media of print, silkscreen and cyanotype. These fragments symbolize a permanent repetition of what was researched and said. At the same time, they hint at something more: that despite all the repetitions, societies and governments aren't yet doing enough.

“Way of no Return” is part of the exhibition “Portraits of Climate.” In five mixed teams, two or three members from the art world and CLICCS worked closely together to create shared works. The exhibition will continue through 30 April 2025 at the University Museum.

[uhh.de/cliccs-portraitsclimate-en](http://uhh.de/cliccs-portraitsclimate-en)



## NEWS IN BRIEF

### CLIMATE RESEARCH IN GHANA

Dr. Kerstin Jantke returned from a delegation trip to Ghana with some vivid impressions. She reports on how aware many locals are of climate change, the consequences of a downpour, and the value of mutual research exchanges.

[uhh.de/cliccs-ghana-delegation-en](http://uhh.de/cliccs-ghana-delegation-en)

### STAKEHOLDER EXCHANGE

As flash floods or extreme precipitation, water can pose a risk for Hamburg. Recognizing the interfaces and interactions within the “city system” was the goal of a CLICCS Workshop with 60 participants from research, administration, and government offices.

[uhh.de/cliccs-stakeholder-exchange](http://uhh.de/cliccs-stakeholder-exchange)

### WHAT'S THE STATUS QUO OF CLIMATE PROTECTION?

Prof. Tatiana Ilyina is a major contributor to the Global Carbon Budget, an annual report on global CO<sub>2</sub> levels. “This year, we hoped in vain that the emissions would flatten out,” she says in our interview. “But we continue to burn tremendous amounts of oil, gas and coal.”

[uhh.de/cliccs-global-carbon-budget-en](http://uhh.de/cliccs-global-carbon-budget-en)

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