

New light shed on the challenge of climate negotiations

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After over two decades of climate negotiation meetings, it is clear that agreeing on reduction of emissions poses a great challenge. Researchers are attempting to gain better theoretical understanding of the

mechanisms that can impact the results of the negotiations. New research from Chalmers indicates that it might be more difficult to reach agreement than previous theoretical models have shown, but it also shows that there are ways to move forward. The research was published in the journal *Nature Climate Change*.

"Simpler types of negotiations with a lower degree of strategic reasoning have been described in previous models of [climate negotiations](#). However, new findings in [social science](#) show that negotiators often come to the negotiating table with a high degree of strategic thinking. This can impact how negotiators behave in terms of reaching both their objectives – first, trying to find a solution to a problem, and second, without overly negatively affecting the results for the negotiator's own country. Because of this, negotiations to reach an agreement become more complicated," says Vilhelm Verendel, who works as a doctoral student at the Division of Physical Resource Theory at Chalmers.

When negotiators gather in Paris at the end of November this year, they will do so with the aim of agreeing on how the world's [greenhouse gas emissions](#) are to be reduced. However, they will also have their own agendas in terms of returning home with as good a solution as possible for their own country. New social science theories have shown that experienced negotiators utilise a higher degree of strategic reasoning than people on average do, which means they are better at predicting other people's actions. Vilhelm and his colleagues have combined these results with previous research on how climate negotiations can be modelled.

"The combination of different areas of science is important in terms of understanding the big picture. My colleagues, Kristian Lindgren and Daniel Johansson, and I have worked based on the previous models of climate negotiations, with particular focus on strategic reasoning."

Researchers at the division have for a long time focused on cooperation based on models and simulations as well as on the challenge of [climate change](#) and possible solutions, but have not previously integrated the two fields of research. The step towards integration has now been taken and climate negotiations have been modelled.

Identified an obstacle along the way

Research in previous studies and experiments has shown that it is easier to reach an agreement if there is a well-known threshold that cannot be passed without resulting in an environmental disaster.

"The research field is large and real climate negotiations are very complicated. The scientific models used today give a simplified picture. We have shown how strategic reasoning can be modelled, and applied the model to the special case where an environmental disaster will result if a known level of total emissions is exceeded. Our research shows that it is more difficult to agree in these cases when higher levels of strategic reasoning are introduced into the earlier models."

A possible way forward

In his research, Vilhelm investigated the possibility of making it easier to reach agreement if certain basic conditions are met before negotiations begin.

"In our models, it is easier to cooperate if the most extreme bargaining positions are eliminated before negotiations begin – for example, not being willing to do anything at all about emissions or starting out from very low emissions levels. Eliminating these extreme positions increases the possibility of reaching an agreement."

More information: Vilhelm Verendel et al. Strategic reasoning and bargaining in catastrophic climate change games, *Nature Climate Change* (2015). [DOI: 10.1038/nclimate2849](https://doi.org/10.1038/nclimate2849)

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