

## SOCIAL IMPACT

# Climate change cost could be six times more than expected

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The economic effects of climate change may be worse than previously thought. That is according to a new economic modelling analysis by a team of researchers from European and US universities, published on Monday in the Environmental Research Letters journal.

It suggests that the economic damage from climate change may be six times higher by the end of this century than previously estimated.

The study focuses on the "social cost of carbon dioxide", an indicator that represents the loss of total welfare across the world from an additional tonne of emitted carbon dioxide, typically expressed in dollars per tonne of carbon emissions.

The study tries to ascertain how global GDP may be affected by the year 2100 should the economic damage from climate change be allowed to persist over time. Previous modelling estimates only considered the short-term effect and not the continuous effect on GDP.

The study shows that if a key climate change model used by scientists, known as PAGE (policy analysis of the greenhouse effect), takes into account the long-lasting economic effects of climate change on economic growth, global GDP is likely to be 37% smaller by 2100 than it would have been without

climate change. That is more than six times the economic effect suggested by previous iterations of the model, which showed global GDP would only be about 6% lower by 2100.

However, such is the uncertainty around how climate damage continues to affect long-term economic growth and how well societies can adapt to it that the analysts suggest the economic costs of global warming and climate change may be so severe that global GDP could be as much as 51% smaller by 2100. "We don't yet know how much effect climate change will have on long-term economic growth. But it's unlikely to be zero, as most economic models have assumed," Dr Chris Brierley of University College London said.

"Climate change makes detrimental events like the heat wave in North America and the floods in Europe much more likely. If we stop assuming that economies recover from such events within months, the costs of warming look much higher than usually stated. We still need a better understanding of how climate alters economic growth, but even in the presence of small long-term effects, cutting emissions becomes much more urgent," Brierley said.

The findings come at a time of increasing social and political awareness of climate change, a phenomenon which is pushing everyone from governments to asset managers to adopt strate-

gies to try to achieve net-zero carbon emissions by 2050.

A study released in August by the National Business Initiative, Business Unity SA and Boston Consulting Group found that SA can fully decarbonise its energy system by 2050, though it will cost R3-trillion in investment in wind and solar capacity over the next three decades.

Meanwhile, Wits University said on Monday that a new study led by one of its postdoctoral researchers, Claudia Tocco, has found that elevated carbon dioxide emissions directly affect the development and survival of tunnelling dung beetles. They were found to be 14% smaller in size when raised under the carbon dioxide levels predicted for 2070 when compared with pre-industrial carbon levels.

Wits said the study, which has been published in the international journal *Global Change Biology*, presents a possible explanation for the so-called insect apocalypse, a global decline in insect populations that has also affected bees.

"The more we know about the risks of climate change, the more urgent action becomes," said Dr James Rising of the University of Delaware and the London School of Economics and Political Science, who helped model the GDP affect of climate change.

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