

Cost of climate change: 2°C global warming target not economically reasonable unless we make major changes, says study

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Credit: IOP Publishing

Climate change goals set out in the Paris Agreement are only economically reasonable if non-market factors such as human health and loss of biodiversity are prioritized, according to a new study published by Dr. Taikan Oki, former Senior Vice-Rector of United Nations University headquartered in Japan, in *Environmental Research Letters*.

A multi-disciplinary, [collaborative effort](#) from researchers at 23 institutions including The University of Tokyo, National Institute for Environmental Studies, and Kyoto University, the new study provides a cost-benefit analysis of climate change including previously neglected non-market factors such as biodiversity loss and the impact on [human health](#). The team calculated the cost of climate change for varying priority systems, estimating the total cost including mitigation between 2010 and 2099 to be 46–230 trillion US dollars.

The results show that the financial benefits of reducing climate change are often similar to the cost of mitigation efforts. The research team estimate the cost of additional mitigation efforts to be 45 to 130 trillion US dollars, while the [financial benefits](#) of these reduction efforts range from 23 to 145 trillion US dollars. They found that for the 2°C temperature goal to be economically feasible there must be a greater emphasis placed on the future impact of biodiversity and health factors, arguing that these factors will become ever more pressing in the future.

The study shows that climate change would be best approached in an integrated manner with biodiversity and health issues considered side-by-side with economic factors. This is especially true when non-market values are taken into full account including health factors such as diarrheal diseases and malaria, and the decrease of species on Earth such as fish and insects.

Dr. Oki, who was formerly the Coordinating Lead Author for the Intergovernmental Panel on Climate Change, says, "The world's pursuit of climate goals is currently not on track. Our future will depend on how much importance we place on risks such as large-scale irreversible events, as well as how we accept and deal with them."

"One reason for this is that the costs of mitigation are often similar to, or in excess of, the economic benefits of reducing [climate change](#). We must

place a higher priority on non-monetary commodities such as human health and biodiversity and accelerate technological innovations to reduce the mitigation cost."

More information: Takahiro Oda et al, Total economic costs of climate change at different discount rates for market and non-market values, *Environmental Research Letters* (2023). DOI: 10.1088/1748-9326/accdee , [iopscience.iop.org/article/10. ... 088/1748-9326/accdee](https://iopscience.iop.org/article/10.1088/1748-9326/accdee)

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