BASQUE CENTRE
FOR CLIMATE CHANGE
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Globally, costs of the Paris Climate Agreement could be outweighed by health savings from reducing air pollution

Researchers from BC3 (Basque Center for Climate Change) have led this international study sponsored by the European Horizon 2020 program.

Globally, the costs of implementing the Paris Climate Agreement between 2020-2050 could be outweighed by health savings due to reduced air pollution-related disease and death, according to estimates from a modelling study published in ***The Lancet Planetary Health*** journal.

195 countries are currently signed up to the Paris Climate Agreement, which is due to commence in 2020. It aims to reduce the impacts of climate change by preventing the global average temperature from increasing to 2°C above pre-industrial levels, with a view to further limit this to less than 1.5°C. However, how these targets will be achieved and funded by all countries has not yet been agreed.

“We hope that the large health co-benefits we have estimated for different scenarios and countries might help policymakers move towards adopting more ambitious climate policies and measures to reduce air pollution, and to consider how to share the burden of reducing greenhouse gas emissions and air pollution-related disease,” says Professor Anil Markandya, Basque Centre for Climate Change, Spain. [1]

In the study, the authors combined a number of existing models to estimate emission levels, air pollution-related deaths (as a result of respiratory disease, heart disease, chronic obstructive pulmonary disease, stroke, lung cancer, and acute lower respiratory airway infections) and their costs, costs of climate change mitigation, and healthcare co-benefits [2] for the US, EU-27, China, India, and the rest of the world.

They modelled the impacts of doing nothing, continuing current country-level policies, and three different strategies for implementing and funding the Paris Agreement towards the 2°C and the 1.5°C limits. The scenarios vary depending on the relative share of the burden that high or lower income countries take on (the capability, constant emissions rate and equal per capita strategies [3]).

Current country-level strategies are estimated to cost US$7.5 trillion and could potentially lead to 5% fewer air pollution-related deaths globally between 2020-2050, compared to no mitigation strategies being in place (128 million deaths for no mitigation vs. 122 million deaths using country-by-country interventions).

Under this scenario, the US and EU would contribute the majority of the costs (US: 66.3%, $4.9 trillion. EU: 28.9%, $2.2 trillion), while under the Paris Climate Agreement costs would be spread more evenly across all countries – with cost increases likely to be smallest for the US and EU, and largest for the rest of the world, India, and China.

Overall, the costs of the implementing the Paris Climate Agreement ranged from 0.5-1% global GDP ($22.1 trillion-$41.6 trillion) for the 2°C target, and from 1-1.3% global GDP ($39.7 trillion-$56.1 trillion) for the 1.5°C target. The study estimates significantly fewer air pollution-related deaths between 2020-2050 globally under these options – reducing deaths by 21-27% if the 2°C target were met (between 101-93 million deaths) and by 28-32% if the 1.5°C target were met (between 92-87 million deaths).

Depending on the strategy used to mitigate climate change, estimates suggest that the health savings from reduced air pollution could be between 1.4-2.5 times greater than the costs of climate change mitigation, globally.

The constant emissions ratio strategy to reach the 2°C target was projected to have the highest benefit-to-cost ratio globally – where the global health savings were estimated to be double the global policy costs (global costs of $22.1 trillion, and $54.1 trillion saved).

Under all three of the scenarios proposed, the countries likely to see the biggest health savings from improved climate change mitigation were India and China – with India accounting for roughly 43% of the health savings in all scenarios, and China accounting for roughly 55%. This is because these countries have large populations, many of whom are exposed to higher than acceptable pollution levels.

In addition, the cost of setting any climate change mitigation policies in China and India would be fully compensated by just the health savings made in most scenarios, and the added costs of pursuing the 1.5°C target instead of the 2°C target could generate substantial benefits (India: $3.3-8.4 trillion. China: $0.3-2.3 trillion, respectively).

For the EU and US, while the estimated health savings could make a large contribution against the policy costs, health savings alone were not enough to fully compensate the cost. However, the authors note that these health savings are one of many of the benefits of reduced climate change. “Attaining the 2°C target comes with considerable benefits from reduced climate change globally, such as health benefits, employment opportunities, reduced loss of or damage to property, and reduced losses in agriculture. Furthermore, attaining a 1.5°C target has even greater climate benefits.” says Professor Markandya. [1]

The authors note some limitations, including that their health cost estimates only look at air pollution-related disease and death, and there could be further health savings from other pollution-related disease. The study also relies on the accuracy of the models it used.

The costs attributable to disease and death within the study were similar to those used in other studies, but when substantially lower costs were trialled in a sensitivity analysis, most health savings did not outweigh the policy costs in the Paris Agreement scenarios for the EU, US and rest of world, but did still cover a substantial amount of the policy costs.

Lastly, more research will be needed to handle to exact distribution of costs across countries when the mitigation strategy for the Paris Agreement is agreed.

Writing in a linked Comment, Professor Philip Landrigan, Icahn School of Medicine at Mount Sinai, USA, says: “The key contribution of this report is that it makes visible the very large, previously hidden health and economic benefits of climate mitigation and shows that these benefits are greater than the costs of climate change prevention. Political and economic arguments against climate mitigation and pollution control are typically based on short-sighted, one-sided, and self-serving calculations that consider only the tangible, concrete, and relatively easily counted costs of controlling emissions. This report’s carefully crafted conclusion that the health and economic benefits of climate mitigation significantly outweigh its costs provides a powerful rebuttal to those arguments.”

NOTES TO EDITORS

This study was funded by the European Union’s Horizon 2020 research and innovation programme It was conducted by researchers from Basque Centre for Climate Change (BC3), University of the Basque

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[1] Quote direct from author and cannot be found in the text of the Article.
[2] Health co-benefits are the estimated healthcare costs that could be saved under each policy scenario, including deaths and economic losses from not working. They are calculated by deducting the estimated health costs incurred within a policy scenario from the estimated costs incurred if there were no mitigation strategies in place.
[3] These strategies include richer countries reducing their emissions first, while other countries do so later (capability strategy), all countries reducing emissions at the same rate meaning current proportions of emissions are kept the same between countries (constant emissions rate strategy), and all countries working to have equal emission rates per person by 2040 (equal per capita strategy).

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For embargoed access to the Article and Comment, please see: www.thelancet-press.com/embargo/climatecosts.pdf
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