

Children are largely left out of discussions about appropriate responses to climate change. But they ought to be central to such debates because they—as well as future generations—have a much larger stake in the outcome than we do.

How will such things as rising temperatures, rising sea levels, and the increasing likelihood of extreme weather alter our children's lives and the lives of their own children? This issue of *Future of Children* outlines how climate change is likely to affect children's health and wellbeing, and it identifies policies that could mitigate the harm that climate change will cause.

Four interrelated themes emerge from the issue.

Climate change will fundamentally alter Earth's climate system in many ways that threaten children's physical and mental wellbeing, both directly and indirectly.

Compared with adults, children are physically more vulnerable to the direct effects of extreme heat, drought, and natural disasters, all of which will occur more frequently on a warmer planet. Climate change's indirect effects can also derail children's developmental trajectories—for example, through conflict, insect-borne diseases, economic dislocation, poor nutrition, or migration—making it harder for them to reach their full potential.

Today's children and future generations will bear a disproportionate share of the burden of climate change.

Because of inertia in the climate system, even if we stopped emitting greenhouse gases today, the planet would continue to grow warmer for decades to come. Overall, the effects of a warming climate on human wellbeing are predicted to be extremely negative. The long atmospheric life of most greenhouse gases that cause climate change—hundreds to thousands of years—combined with the lag between actions to reduce the extent of climate change and their effects suggests that our children and our children's children are already on track to suffer those effects.

Children in developing countries and countries with weak institutions face the greatest risks. Eighty-five percent of the world's youth live in developing countries, many of which are already seeing the effects of climate change. So, for a large share of the world's young population, climate change is here and now and not merely some future problem. Moreover, to the extent that children in developing countries are already more likely to face other threats to their health and welfare, they may have less resilience to confront the additional problems caused by climate change. Moreover, governments in developing countries are less likely to represent children's interests effectively, leaving children at even greater risk of harm.

The uncertainties associated with climate change and its mitigation—coupled with the fact that the costs of climate change mitigation policies need to be paid now, but the benefits will accrue in the future—make it difficult to enact appropriate policies.

Decision making surrounding climate change is greatly complicated by the high degree of uncertainty involved in virtually all of its aspects. Yet waiting for uncertainty to be resolved

before acting isn't a viable option, given the risk of allowing irreversible changes to the planet. Just as important is the uncertainty surrounding human responses to climate change. Technology can help us both mitigate climate change and adapt to it, but until we invest in, develop, and disseminate new technologies, it's impossible to know how well they would work or how much they would cost. When we consider that people today must pay the price of efforts to mitigate climate change but people in the future will reap the benefits, all of these uncertainties make it harder to decide how to balance future generations' wellbeing against our own.

The findings in this issue have clear implications for policy makers and researchers trying to tackle the many challenges that climate change poses:

- Establishing a large-scale international and coordinated policy response to climate change has proven difficult. Children and future generations lack a presence in the debate. The 2015 Paris Agreement, the positive outcome of more than 20 years of international climate negotiations, may prove to be a fundamental step in addressing the threat of climate change, but at best we won't know whether it's effective until two to three decades from now. This state of affairs highlights the fundamental uncertainty that characterizes the issue of climate change, as well as the need to find a way to act despite that uncertainty.
- Even as we increase our efforts to reduce emissions of greenhouse gases that cause climate change, the climate system will continue to grow warmer for a significant period of time. Thus policies must be developed to prepare and adapt in the face of inevitable climate change. States, cities, and communities all over the world must promote preparedness and resilience.
- Large-scale adaptive responses to climate change entail significant societal impacts. For example, countries and communities need to prepare for large-scale migration of poor and vulnerable populations. Forecasts suggest that by 2050 we could see 200 million environmental migrants, many of whom would be children.
- We need additional public health investments and interventions to educate people about the risks climate change poses to children and to protect individuals and communities from its effects. Advance warning of excessive heat, outreach, and air-conditioned cooling shelters and community centers have succeeded in mitigating the impact of extreme heat. Education and warnings are especially important because the populations most vulnerable to the health effects of climate change are young children and the elderly. Climate change may therefore place increased demands on already financially fragile public policies.
- We need more research across the entire spectrum of disciplines, from improving climate science and climate modeling to better measuring climate change impacts and identifying possible adaptation strategies to developing new methods for effective decision making in the face of long time horizons and deep uncertainty.



The Future of Children is a collaboration of the Woodrow Wilson School of Public and International Affairs at Princeton University and the Brookings Institution. For more information on *The Future of Children* please visit: www.futureofchildren.org.