



Distributional impacts of climate change

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The physical effects of climate change are already apparent across the world. They include more frequent disasters that are becoming increasingly destructive, more extreme weather events like floods and storms, and a higher number of days with extreme heat. The consequences of these physical effects are not borne equally across society, as the research presented in this Forum Digest shows. We thank Stéphane Hallegatte, Senior Climate Change Adviser at the World Bank, for curating this digest.

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On the links between natural disasters and poverty

Disasters affect poor people disproportionately and can throw people in poverty, especially in the Global South. They can even contribute to the intergenerational transmission of poverty.

In an seminal empirical study, "[Growth and shocks: Evidence from rural Ethiopia](#)," **Stefan Dercon** (2004) finds that the exceptional drought in 1983-85 that triggered the great famine in Ethiopia, had a persistent negative impact on the income growth of affected regions, and it took more than a decade for affected households to return to their pre-drought consumption levels. **Carter et al.** (2007), in "[Poverty Traps and Natural Disasters in Ethiopia and Honduras](#)," explain these long-term impacts on the poorest households by the negative coping strategies they have to rely upon and that have long-term impacts on well-being and can even create poverty traps.

Germán Caruso (2017), in "[The legacy of natural disasters: The intergenerational impact of 100 years of disasters in Latin America](#)," examines the long-term effects of exposure to disasters. He finds that young children suffer the longest-lasting negative effects. Children born to mothers experiencing disasters tend to have less education and are more likely to be victims of child labor, indicating that im-

pacts are transmitted between generations, and that disasters can magnify the inter-generational transmission of poverty.

On the exposure and vulnerability of poor people

Poor people are more affected by disaster, but not only because they are often more exposed to natural hazards. Also important is the fact the poorer households are losing more (in fraction of their wealth) when affected by a disaster, and the fact that they have less access to support and coping mechanisms, from savings and borrowing to social protection and insurance.

Jun Rentschler and Melda Salhab (2020), in their working paper “[People in Harm’s Way: Flood Exposure and Poverty in 189 Countries](#),” use household surveys and global flood hazard and population maps to understand the socioeconomics of flood exposure. They find that 132 million people live in both extreme poverty and in high flood risk areas. Another 587 million highly exposed people live on under \$5.5 a day. These groups represent almost half of all people in exposed areas.

Jisung Park et al. (2018), in “[Households and heat stress: Estimating the distributional consequences of climate change](#),” investigate the welfare impacts of heat stress exposure, using detailed survey data from 52 countries. They find that, in hot countries, poorer households tend to live in warmer places that are more exposed to heat waves (and as one would expect, the opposite is true in cold countries). Poorer households are also more likely to work in industries that are directly exposed to heat stress, such as agriculture or construction.

Erman et al. (2020), in “[The Road to Recovery the Role of Poverty in the Exposure, Vulnerability and Resilience to Floods in Accra](#),” find that poorer and richer households were equally likely to be affected by the 2015 floods in Accra, but poorer households lost a larger fraction of income. Also, the ability of households to recover is driven by the magnitude of their losses, but also their sources of income and access to coping mechanisms. They conclude that resilience is not only about income, but also about access to coping and recovery mechanisms.

On future impacts of climate change on poverty

Climate change impacts are very heterogenous: they are larger in poorer countries, and larger for poorer people within countries. The most important transmission channel over the short term is the effect on agricultural productivity and food prices, but the final impact on poverty is highly dependent on socioeconomic trends and development policies. Poverty reduction can be considered an adaptation intervention, and adaptation interventions are important for poverty reduction.

Thomas Hertel et al. (2010), in “[The poverty implications of climate-induced crop yield changes by 2030](#),” were the first to use scenarios of climate-induced changes in agricultural output to understand the potential effect on poverty. Under low productivity scenarios, prices could rise substantially, leading to large increase in poverty (up to 50%) for some non-agricultural households in Asia and Africa (and

a decline in poverty for agriculture-specialized households).

Charlotte Janssens et al. (2020), consider the potential food security benefits of trade in “[Global hunger and climate change adaptation through international trade.](#)” Their model projects that reducing institutional and monetary barriers to trade could lead to a 64% reduction in undernourished populations by 2050, showing how the welfare impacts of climate change will depend on institutional arrangements and how the world responds.

Stéphane Hallegatte and Julie Rozenberg (2017), in “[Climate change through a poverty lens,](#)” use a bottom-up approach to estimate the impacts of climate change on poverty. Exploring many scenarios for future socioeconomic and climate trends and five types of climate change impacts (food prices, agricultural income, disasters, health impact, and productivity effects), they show how rapid and inclusive growth (and universal access to social protection, health care, and infrastructure services) can dramatically reduce poverty impacts of climate change, at least to 2030. [Revised estimates](#) by **Bramka Jafino et al.** (2020) based on the same methodology nevertheless put the number of people falling into poverty due to climate change between 32 million and 132 million by 2030, and find that the impact on food prices is the main channel through which climate change affects poverty over the short run.



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