

# Policies Can Reduce the Impacts of Climate Change on Poverty—in Agriculture, Disaster Risk Management, and Health

Climate change and poverty are inextricably linked. Climate change threatens poverty eradication. But future impacts on poverty are determined by policy choices: rapid, inclusive, and climate-informed development can prevent most short-term impacts of climate change on poverty, while a failure to adopt good development policies could mean more than 100 million additional people are pushed into poverty by 2030. And only immediate emissions-reduction policies can prevent climate change from threatening longer-term poverty eradication. Well-designed policies and international support can ensure mitigation does not threaten progress on poverty reduction.

This is Policy Note 2 (of 3) drawn from *Shock Waves: Managing the Impacts of Climate Change on Poverty* (2016) by Stephane Hallegatte, Mook Bangalore, Laura Bonzanigo, Marianne Fay, Tamaro Kane, Ulf Narloch, Julie Rozenberg, David Treguer, and Adrien Vogt-Schilb. Climate Change and Development Series. Washington, DC: World Bank. It lays out sectoral policy recommendations. Policy Note 1 provides an overview of the report, and Policy Note 3 discusses the cross-cutting theme of social protection.

Rapid and inclusive development can prevent much of the impact of climate change on poor people if it is *climate informed*—meaning designed to perform well under changing climate conditions, so that development itself does not create new vulnerabilities.

But targeted actions aimed at lowering socioeconomic vulnerability to climate change impacts are also needed. Some of these policy actions are pure climate change adaptation measures—for example, changing land-use regulations to account for sea level rise. Others can be seen as generic “good development” and would make sense even in the absence of climate change—like increasing financial access for all people.

This policy note focuses on potential actions that can be taken in three sectors where climate-related impacts on poverty are especially important—agriculture and ecosystems, disaster risk management, and health. Each country can identify its own package of measures, based on its policy priorities and how it expects to be impacted by climate change. For instance, where urban planning is a policy priority, an obvious action would be to factor natural hazards and climate change into its design.

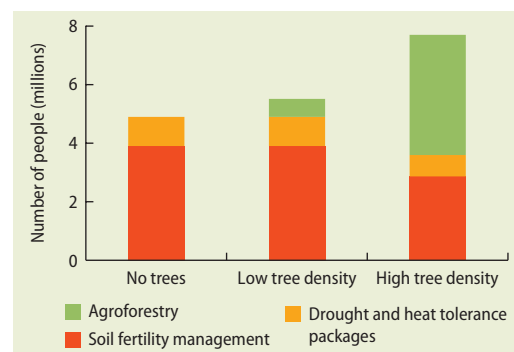
## Climate-smart agriculture and protected ecosystems

Climate change threatens ecosystems and the services they provide as well as the quantity and stability of food production from agriculture. Poor people depend heavily on ecosystems and agriculture and stand to be severely impacted. But many policy

options are available to promote climate-smart agriculture and protect ecosystems from climate change. Governments can:

- **Develop higher yielding and more climate-resistant practices, crop varieties, and livestock breeds, adapted to developing country contexts and climate conditions.** More productive and resilient practices will require a major shift in the way land, water, and soil nutrients are managed. Crop improvement, smarter use of inputs, approaches such as polyculture to strengthen crop resistance to pests and diseases, and a reduction of postharvest losses can all contribute

**FIGURE 1 Household vulnerability to droughts is reduced by agricultural techniques that integrate trees** (Reduction in average annual number of drought-affected people)



Source: See chapter 2 of the book.

to the sustainable intensification of agriculture—leading to increased food production. Importantly, the new techniques that result from innovation must be broadly adopted, including by poor farmers. One way to improve adoption is through agricultural extension—that is, the dissemination of good agricultural practices through farmer education. In Uganda, the combination of new crop varieties and extension visits increased household agricultural income by around 16 percent.

- **Invest in infrastructure and social protection to manage food price hikes.** Poor people are particularly vulnerable to agricultural price hikes because they spend a higher fraction of their income on food—food routinely represents more than half of the poorest household's expenses. To reduce the frequency and magnitude of food price hikes, governments can develop transport infrastructure facilitating domestic and international market access. But prevention actions cannot reduce the risk of food crises to zero. Governments can also offer protection to poor households by providing them with social safety nets such as cash transfers that are indexed to food prices.
- **Design land-based climate policies that benefit poor people and protect food security.** Countries will need to look into land-based mitigation policies to stabilize climate change. These policies need to be carefully designed, paying particular attention to their effect on food prices. In fact, ill-designed mitigation policies could have a larger impact on food prices than climate change. On the other hand, well-designed emissions-reduction options can strengthen the productivity of agriculture and ecosystems, boosting local incomes and reducing poverty. For instance, if targeted in a pro-poor way, payments for ecosystem services could benefit an estimated 25–50 million low-income households by 2030.
- **Reduce nonclimate stresses on ecosystems.** Healthy ecosystems are generally quite resilient, so protecting them and restoring degraded lands can increase their ability to withstand climate-related disturbances. Adding trees to agricultural land can also reduce household vulnerability to drought—and increase carbon storage (figure 1).

## Better infrastructure, land use regulations, and preparation for natural hazards

In many regions, natural hazards such as storms, floods, and droughts will become more intense and frequent because of

climate change. A number of policy options can reduce vulnerability to natural hazards:

- **Fund more pro-poor and robust infrastructure.** Many poor countries lack the type of protective infrastructure common in richer countries. For instance, poor households are often exposed to recurrent floods due to the lack, or poor maintenance, of protective infrastructure like dikes and drainage systems; even if these recurrent events do not attract media and policy-maker attention, they can represent a large burden on poor people. Around \$1 trillion per year would be needed in developing countries to close the infrastructure gap. Closing this gap would go a long way toward reducing the vulnerability of poor people, but only if new infrastructure serves them. If investment is designed only to maximize economic returns, it risks being concentrated in areas with the highest asset values—that is, toward richer groups. Explicit effort is needed to ensure poor people are not left out, for instance through project selection processes that account for distributional and poverty impacts.

And new infrastructure needs to be designed to remain efficient through changes in climate and environmental conditions. Innovative methods, collectively known as Decision Making Under Uncertainty, can help manage the uncertainty around when and how the climate will change locally, as well as multiple, sometimes conflicting, policy objectives that policy makers have to navigate. These methods have been deployed in a number of World Bank pilot projects to help policy makers design investments with climate change in mind—for instance on water supply in Lima and flood risk management in Ho Chi Minh City and Colombo, hydropower in Nepal, and adaptation of road networks in Peru and across Africa.

- **Invest in services and infrastructure to complement zoning regulations.** Today many poor people settle in locations vulnerable to floods or landslides. They do so because these locations offer opportunities such as access to jobs and services, better schools, and health care. When asked what it would take to consider relocating to a safer, less flood-prone area, 44 percent of flood-prone households in Mumbai reported transport infrastructure, along with the availability of health services, schools, and social networks. Governments should investigate and acknowledge the reasons why poor people settle in hazardous areas. With this information, policy makers can complement zoning regulations with the needed investments in transport, education, and health in safe places to allow people to resettle while maintaining access to the same or comparable jobs and services.

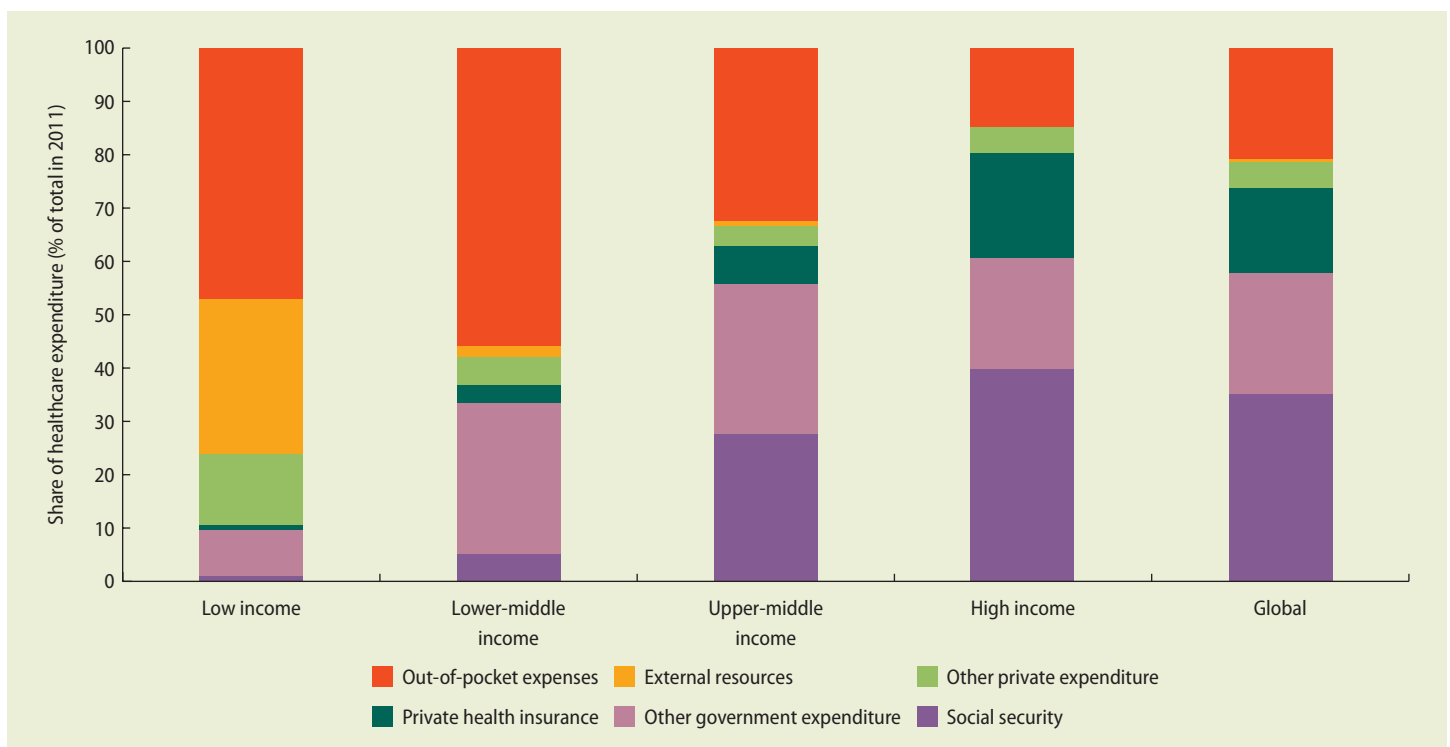
- Make risk information easily accessible, including early warnings.** Effective implementation of disaster risk management policies requires appropriate data on risk and hazard, which remains limited in low-income environments. To address this issue, the World Bank and the Global Facility for Disaster Reduction and Recovery (GFDRR) are investing in risk information. The GFDRR’s *Open Data for Resilience Initiative* supports the creation of GeoNode, a web-based open source platform for developing, sharing, managing, and publishing geospatial data. Such initiatives can make a difference locally, by making risk information available not only to professionals but also to the public at large.

Risk information also includes early warning systems—so the population can be warned of impending natural hazards. The combination of observation systems, early warning systems, and preparedness—for instance through contingency plans or regular drills that improve households’ and firms’ ability to act upon warnings—can save many lives at a low cost.

When Cyclone Phailin made landfall near Gopalpur, India, in 2013, it killed fewer than 100 people. This number is much smaller than the 10,000 deaths that a similar storm caused in 1999, before early warning systems and evacuation plans were created. Generally, early warning systems are very cost-effective investments, with each dollar invested yielding more than \$4 in avoided losses. However, over the past 15–20 years, the situation of many hydrometeorological services in developing countries has worsened, reducing their ability to detect, anticipate, and adapt to climate change.

In addition to the policies mentioned above, governments can promote financial inclusion to reduce the vulnerability of poor households’ assets, increase their capacity to invest in risk management, and improve their ability to smooth the effect of shocks on consumption. Governments can also enact risk-sensitive and enforceable building norms and grant property rights to poor people to incentivize investments in housing quality and resilience.

**FIGURE 2** People in poorer countries pay for most of their health care out of pocket, unlike in richer countries



Source: Watts et al. 2015. “Health and Climate Change: Policy Responses to Protect Public Health.” *The Lancet*.

## Better health infrastructure and universal health care

Climate change can reverse the progress made in containing vectorborne and waterborne diseases such as malaria and diarrhea. The good news is that a number of options can help reduce the vulnerability of poor people to climate change impacts through health, including:

- **Work toward universal health coverage.** People in low- and lower-middle income countries have limited access to health care, and can end up paying more than 50 percent in out-of-pocket expenses, much more than the roughly 15 percent paid in rich countries (figure 2). But better health coverage is possible in emerging and low-income economies. In Rwanda, the government invested in universal health coverage in 1994, and today nearly 80 percent of its population is insured. On the supply side, governments can invest in health infrastructure, train health workers, and work to increase the quality of care.
- **Invest in research and development for control and eradication of diseases that affect poor people and that will be worsened by climate change.** Several neglected tropical diseases—such as dengue, leishmaniasis, and chikungunya—thrive mainly among the world’s poorest populations and are sensitive to climate conditions. Private and public research is needed to develop proper solutions to these problems. Today, annual research and development spending on infectious diseases of particular concern to low-income and middle-income countries amounts to only \$3 billion—a small portion of the nearly \$250 billion spent annually on health-related research and development. In addition, countries need strong monitoring and surveillance systems to detect emerging health issues that may arise in response to changing climate conditions.