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The Effects of Climate-Related Disasters on Human Development

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The Human Development Report 2007/2008 demonstrates the potential consequences of unabated climate change on human development. The Report argues that it is the poorest people in the world the 2.6 billion people living under \$ 2 a day who will suffer first, and that the impacts of climate change can lock people into cycles of disadvantages.

Why is it important to assess the potential impacts of climate change on human development?

The Fourth Assessment of the IPCC asserts that the world's area affected by drought has likely increased in the past 37 years. Likewise, the frequency of heavy rainfall has increased over the last 50 years. In short, droughts, floods and other extreme weather events are becoming more common, and more importantly, are projected to increase both in frequency and intensity with negative effects for present and future levels of human development. To the extent that droughts and floods affect nutrition levels and education, progress towards the Millennium Development Goals is stalling and in the future could even reverse. In order to ensure that the design of appropriate policies effectively tackles climate change impacts, it is important to understand the various channels through which these impacts will interact with other markers of disadvantage.

How do climate change and climate-related shocks affect human development?

Climate change can create human development reversals changes in the climate system in the future could have severe negative implications for millions of people living in coastal areas, people depending on agriculture, and people exposed to extreme weather events. The mechanisms through which this could occur are explored in detail in the Human Development Report 2007/2008. They include a decline in agricultural productivity; increased water scarcity; an increase in the frequency and severity of weather shocks including droughts, floods, cyclones; the collapse of ecosystems providing livelihoods and increased health risks.

Droughts, floods and hurricanes can affect human development permanently, particularly for poor people; they can lock vulnerable households into cycles of deprivation or low-human development traps that can be transmitted across generations.

How do climate-related shocks create low-human development traps?

Natural disasters are part of life. Yet their consequences are much more severe for poor people since most often than not they live in areas more susceptible to these shocks and their livelihoods depend heavily on

weather conditions. Moreover, they often lack both access to insurance and credit markets to cope with the immediate impacts and the political representation to obtain better protection and recovery.

Droughts, floods and other calamities force people to make difficult decisions in the short term. The consequences of these decisions can endure for years. The sudden stress caused by the shock limits immediate opportunities which can also affect future prospects for human development: people are forced to lower their food intake, to take their children out of school and to sell their productive tools and other assets. Children and women are often the first the victims of these choices. Malnutrition in early childhood has been shown to have devastating impacts on future health and education outcomes girls who drop out of school will have lower employment opportunities and lack of education will have negative impacts on the education and health of their children.

In summary, short-term shocks can have long term consequences for human development and can contribute to the intergenerational persistence of poverty and low human development.

How do you measure the negative impacts of climate-related disasters and what is the existing evidence?

There are several ways of measuring the impacts of natural shocks on welfare indicators, but most of them require large amounts of data. For the Human Development Report 2007/2008 we used the Demographic and Health Surveys a set of household surveys that collect information on health and anthropometric measures and the International Disaster Database (EM-DAT) an international disaster database that collects information on the occurrence and severity of natural disasters.

With these two databases, we compared nutritional outcomes for children born in a region affected by the shock with those of children born during the same year in regions unaffected by the shock. We used an econometric tool called “difference-in-difference.” This tool allowed us to capture the effect on nutrition that could be attributed solely to the shock. The results show that droughts and floods can have strong impacts in children: in Ethiopia children affected by droughts are 36 % more likely to be malnourished, which represent an additional 2 million children suffering malnourishment. In Kenya, the affected children have a 50 % higher chance of being malnourished.

We also analyzed the long-term impacts of drought on Indian women born in the 1970’s. We identified women in India who were affected by droughts and floods in their early childhood and compared their education outcomes with those of women in similar conditions and of the same age but who were not affected by a shock. Women who were affected are 19% less likely to ever attend primary school. For further information on the econometric methods, see [technical note 2](#) in HDR 2007/2008.

Other researchers have used different methods and data sources, but the results are similar in nature, ranging from lower lifetime earnings in Zimbabwe (Alderman and others, 2006), increased risk of malnutrition and incidence of child labor in Central America (Baez and Santos, 2007) and increase in the incidence of income poverty in Ethiopia (Dercon, 2004).

Some general sources:

1. Alderman, H., J. Hoddinott, and B. Kinsey. 2006. “Long term consequences of early childhood malnutrition.” Oxford Economic Papers 58: 450-474.
[Click here](#)
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3. Dercon, Stefan. 2004. “Growth and shocks: evidence from rural Ethiopia,” Journal of Development Economics 74:309-329.
4. Dercon, Stefan and John Hoddinott. 2004. “Health, Shocks and Poverty Persistence,” Chapter 6 in S. Dercon (ed). Insurance against Poverty, Oxford University Press- UNU Wider. 124-136
5. Fuentes, Ricardo and Papa Seck. 2007. “The Short and Long-Term Human Development Effects of Climate-Related Shocks: Some Empirical Evidence” Occasional paper for the Human Development Report

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6. Hoddinott, John and Bill Kinsey. 2000. "Adult Health in the Time of Drought" International Food Policy Research Institute Discussion Paper.

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7. Maluccio, John, John Hoddinott, Jere Behrman, Reynaldo Martorell, Agnes Quisumbing and Aryeh Stein. 2006. "The Impact of Nutrition during Early Childhood on Education among Guatemalan Adults," Middlebury College Department of Economics, Working Paper Series.

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8. UNDP. 2007. "Human Development Report 2007/2008. Fighting climate change: Human solidarity in a divided world" Palgrave McMillan.

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