

# Will the Poor Be Flooded Out?

## The IPCC's Predicted Flood Disasters and Their Implications for Development Aid

David Wheeler\*

April 2007

CGD Notes

---

The international community must focus on the human consequences of the effects of climate change and help poor countries develop stronger protective institutions, greater resources for flood protection, and affordable insurance for those who suffer damage.

---

The second working group of the Intergovernmental Panel on Climate Change (IPCC) is charged with estimating the impact of global warming on specific regions of the world. Their final report, released in Brussels on April 5, predicts that "Drought-affected areas will likely increase in extent. Heavy precipitation events, which are very likely to increase in frequency, will augment flood risk." In other words, droughts and floods will get more severe in areas that are already prone to such disasters.

This CGD Note explores what this means for low-income countries. While there is no indication that floods are more common in poor countries, when it does flood, their citizens are much more likely to endure severe consequences: death, injury and homelessness. This problem will only get worse as the planet warms and the rains increase.

### **Policymakers and advocates concerned with the IPCC's startling findings should:**

- Focus on the human consequences:** The chance that people will suffer death, injury and homelessness from a flood increases dramatically as their incomes drop. This means that as floods get worse and occur more often, poor-country citizens will need more help from the international community.

- Promote development:** The best insurance against human risk is to develop stronger protective institutions in poor countries, with greater resources for flood protection, and affordable insurance for those who suffer damage.

- Remember that this problem is not new.** People in flood-prone poor countries already suffer much more than people in flood-prone rich countries. Flood protection assistance is important *now*, and its benefits will increase as the rains begin falling more heavily in a warmer world.

To understand this issue more clearly, let's consider the problem of "augmented flood risk." In *physical terms*, this simply means that floods will become more common and heavier in volume, and will cover more territory. In *human terms*, it means that people in flood-prone areas will bear greater risk of injury, homelessness and other damage. This human factor motivates most discussions of flood risk, although potential damage to ecosystems is also an important problem.

Since the IPCC predicts that future flood damage will be like past damage, only worse, analyzing the historical record can provide useful insights. Using a database from the Center for Research on the Epidemiology of Disasters at the Université Catholique de Louvain in Brussels, we can track the history of severe floods and their consequences by country. With data for the period 1960-2002, I constructed a weighted human risk measure based on people killed (weight 1000), rendered homeless (10) or otherwise affected (1) by each flood. I've divided by population in 1980 (the period midpoint) to create an index of human flood damage risk in each country. I've also developed a physical flood risk index, by dividing the total number of severe floods from 1960-2002 by population in 1980.

With these indices, we can explore the relationship between flood risks and development status using the World Bank's per-capita income categories (country counts in parentheses): low income (54), lower middle income (48), upper middle income (25) and high income (22). Figures 1 and 2 show the relationship between a country's income level and median index values for countries' physical and human flood risks, respectively.

---

\*David Wheeler (dwheeler@cgdev.org) is a senior fellow at the Center for Global Development.

Figure 1 doesn't reveal a systematic relationship: Physical flood risk increases somewhat from low-income to upper middle-income status and then drops back for high-income countries. Lower physical risk for the richest countries may reflect both more benign climates and advanced flood control capabilities. Among the other 127 countries, there is no indication that floods are more common in the poorest.

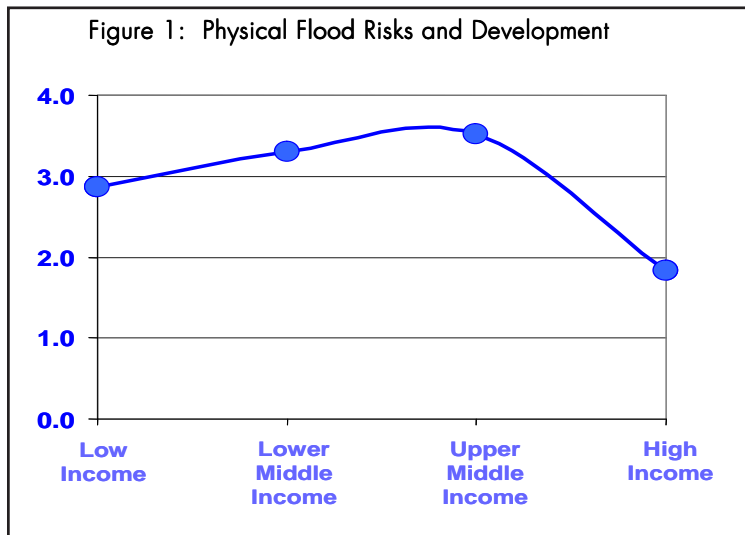
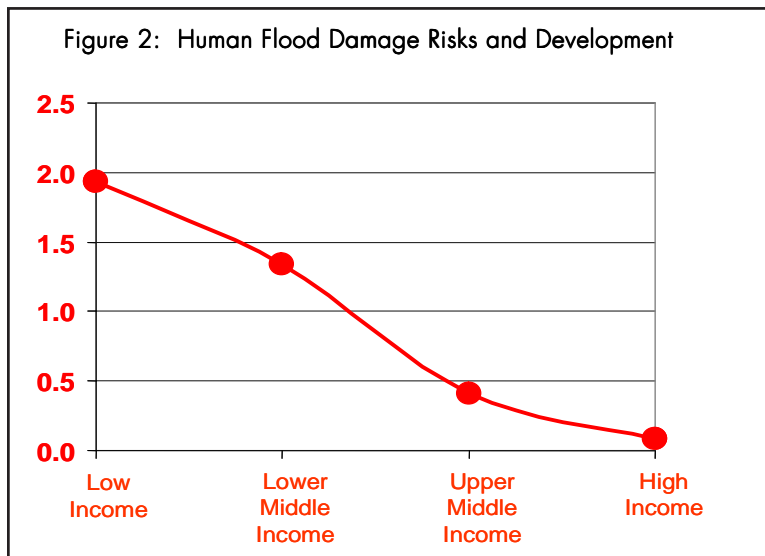


Figure 2 tells a different story: Human damage risk falls sharply and continuously with income status. People in low-income countries bear risks about 23 times higher than those in high-income countries (in contrast to physical flood risks that are about 1.6 times higher).



Climate change has major implications for economic growth, agricultural production, mortality and poverty in developing countries. For the development community—and for all concerned about the impact of climate change on the poorest—the lessons from this Note on flood disasters are clear: The international community must focus on the human consequences of the effects of climate change and help poor countries develop stronger protective institutions, greater resources for flood protection, and affordable insurance for those who suffer damage. Advocates and policymakers should also remember that people in flood-prone poor countries already suffer much more than people in flood-prone rich countries. Flood protection assistance is important now, and its benefits will increase as the rains begin falling more heavily in a warmer world.

**Further Reading**

Intergovernmental Panel on Climate Change, 2007, "Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability - Summary for Policymakers," Working Group II Contribution to the Fourth Assessment Report, April. Available at <http://www.ipcc.ch/SPM6avr07.pdf>.

Dercon, Stefan, 2003, "Insurance Against Poverty," Policy Brief, World Institute for Development Economics Research, United Nations University. Available at <http://www.wider.unu.edu/events/book-launch-20-november-2003/pb-iap.pdf>

The chance that people will suffer death, injury and homelessness from a flood increases dramatically as their income drops.