Payouts for Perils

How Insurance Can Radically Improve Emergency Aid

Theodore Talbot, Stefan Dercon, and Owen Barder

Summary

Millions of people face hazards like cyclones and drought every day. International aid to deal with disasters after they strike is generous, but it is unpredictable and fragmented, and it often fails to arrive when it would do the most good. We must stop treating disasters like surprises. Matching finance to planning today will save lives, money, and time tomorrow.

The Center for Global Development gratefully acknowledges support for this work from the UK Department for International Development and UBS. This work does not necessarily reflect their views.

Theodore Talbot, Stefan Dercon, and Owen Barder. *Payouts for Perils: How Insurance Can Radically Improve Emergency Aid.* Washington: Center for Global Development, 2017. www.cgdev.org/node/3125196

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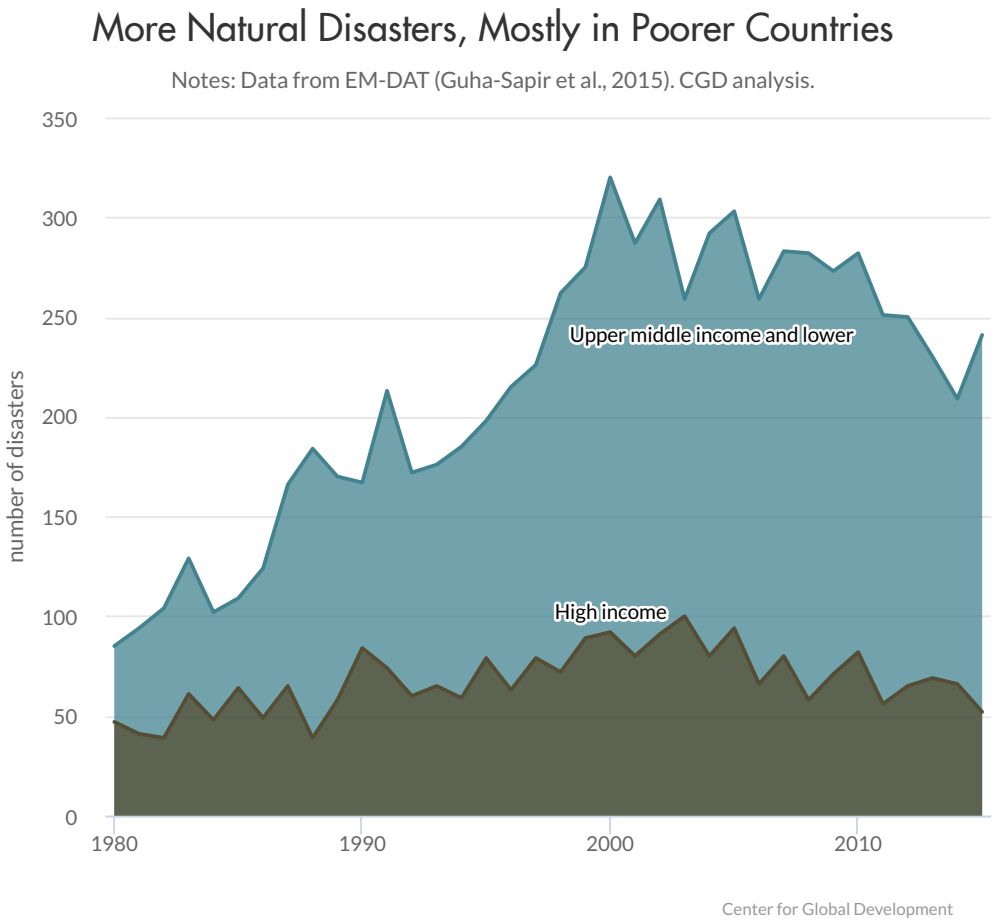
We Can Radically Improve Emergency Aid

Millions of people face hazards like cyclones and drought every day. International aid to deal with disasters after they strike is generous, but it is unpredictable and fragmented, and it often fails to arrive when it would do the most good. We must stop treating disasters like surprises. Matching finance to planning today will save lives, money, and time tomorrow.

Last year, natural disasters—earthquakes, storms, floods, extreme temperatures, and epidemics—affected more than 83 million people in middle- and low-income countries. These are personal tragedies that tear families apart, uproot communities, and destroy livelihoods. And they are international catastrophes that can undermine economic growth, drive mass displacement, and add to regional insecurity.

> The effects of disasters are shocking but not unpredictable. We must stop treating them like surprises.

This is a large and growing development challenge. It threatens our ability to meet the shared commitments of the Sustainable Development Goals. And it unfolds against a backdrop of rising needs but constrained resources. The most conservative estimate is that OECD donors spent over $2 billion a year on average between 2010 and 2015 on the consequences of natural disasters. But there are crucial failures in how this assistance is deployed.



The effects of disasters are shocking—but they are not unpredictable. We know that disasters are getting worse as a result of climate change and accelerating urbanisation that put more people in harm's way. We know that it is the poorest and most vulnerable people in the poorest and most vulnerable countries who are most affected and least able to cope. And we know that governments and agencies need immediate, guaranteed funding in the aftermath of disaster.

So why do we keep treating disasters like surprises? Most response is funded when needs are acute, rather than when money would do the most good. It would have cost $5 million to contain Ebola after it was detected in West Africa in 2014; eight months later, the figure was $1 billion. [1] Planning ahead is difficult because budgets are uncertain and funding is promised but often does not arrive. Despite urgent warnings of food insecurity in Somalia in 2010, donors waited eleven months to scale up assistance. [2] Support is fragmented, gumming up delivery with red tape or bypassing national authorities entirely. Haiti's government managed just $1 in every $100 of emergency aid provided by donors after the 2010 earthquake. [3]

We can do better. Innovative programs in the Caribbean, the Pacific, and Africa enable governments buy insurance that pays out faster and more transparently than most international assistance. Multilateral lenders have developed concessional loans to provide urgent liquidity in response to pre-identified risks. These innovations and others show how we can save lives, money,

and time. But this speed and predictability is conspicuous mainly by its absence. Analysis presented in this report finds that only 10 percent of emergency aid spent between 2010 and 2015 was attached to predictable future emergencies in advance so it could be delivered reliably and quickly when risks materialised.

Our working group proposes two key innovations.

Just as donors have innovated by learning to provide concessional loans, guarantees, and equity, they can also provide concessional insurance.

1. **Pivot existing funding** to enable frontline governments to pre-enroll for quick-fire support (including lending) against predictable future costs. The government of Malawi mobilised concessional lending from the World Bank in five months after devastating floods in 2015. That is much faster than most development loans, but much slower than would minimise suffering and expense by responding quickly and in full.

2. **Transfer risk to the insurance sector** to create certainty (and make donor funds accessible to frontline humanitarian agencies) where no pool of money is available. Premiums are the price of making sure we have funding when we need it. Just as donors have innovated by learning to provide concessional loans, guarantees, and equity, they can also provide concessional insurance.

Relying on ex-post aid tomorrow to tackle problems we can anticipate today is a fundamental mismatch of tool and purpose. Like eating steak with a spoon, you can do it—but it's slow, difficult, and messy.

Relying on ex-post aid tomorrow to tackle problems we can anticipate today is a fundamental mismatch of tool and purpose. Like eating steak with a spoon, you can do it—but it's slow, difficult, and messy. The consequences of this mismatch are symptomatic of a system that can spend money on response but not on planning or prevention. Calling for donors to simply spend more money without calling for smarter design would be like solving the problem by handing out more spoons.

What will change if we apply insurance principles to contract for emergency aid in advance? Frontline governments will have reliable, pooled funding attached to contracts that pay out when disasters hit or in time for hazards to be tackled more cheaply. Donors will be able to cover more risk, more efficiently. Agencies will spend more time on reducing

vulnerability and preparing for disasters—and less time fundraising or running perpetual operating deficits. Most important, we will work together far more effectively to protect families whose ability to cope has been stretched to breaking point by risks beyond their control and for which they are not to blame.

That is the vision. This report sets out why we must realise it—and how we can.

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Actions

Policymakers recognise the benefits of responding quickly and effectively to emergencies. Scaling up pre-agreed aid has been held back by uncertainty that payouts will be used well and by worries about undermining incentives to manage disaster risk, while engagement with the insurance sector has raised concerns about whether the public sector can be an informed buyer.

The working group recommends **four actions** to overcome these stumbling blocks:

1. **Pivot funding.** Predictable funding for disaster response is the most critical resource for dealing with disasters. Funding windows and concessional loans for emergency response exist, but these funds are generally not committed in advance for specific risks, and so spending cannot be planned and response is delayed. Authorities should be able to pre-enroll in existing windows for guaranteed funding against specific future risks.

2. **Reward planning, resilience, and equity.** We can realise a dividend from agreeing money in advance by tying more reliable funding to requirements for investments in risk management and planning. Donors and national authorities might invest in flood defenses, for example, while agencies agree to pre-position emergency supplies and coordinate disaster plans with governments. In parallel, we must demand that support is fairly and transparently distributed, leaving nobody behind. Similar hazards affect people differently depending on their political power and voice. Pre-agreement creates a novel way to incent more equitable, transparent response.

3. **Give technical advice.** Agencies and governments need technically accurate, genuinely independent, and strictly confidential advice to get a clear-eyed view of their potential losses—and the costs for insurance against them. This risk modeling expertise lies with the insurance sector. It has been forced to develop and hone it by strong regulatory requirements—and to avoid bankruptcy. Donors should support a sophisticated advisory facility to deliver the public good of neutral, actionable advice. The facility must have ironclad ethical walls separating it from insurers who might then underwrite risks.

4. **Catalyse the market.** Donors can put money on call to deal with relatively rare and expensive hazards by transferring risk to insurers. Using brokers to get the best deal, benefiting from competition among insurers, and using technically astute estimates of the underlying hazards and exposure will enable the public sector to provide concessional insurance contracts to frontline countries and frontline agencies for the right price. Each dollar of scarce development aid can then cover a

larger volume of potential losses, much as health insurance pays for care that is many times the cost of any single premium payment. We can sharpen incentives to manage risks by building requirements for investing in resilience and planning into these contracts.

Pre-agreed funding and concessional insurance would not undermine national governments' responsibility to govern fairly and deal with risk responsibly. Instead, they would create a platform for better collaboration among donors, agencies, and frontline governments.

Each of these four innovations is set out in detail at the end of the report, together with specific actions donors, governments, agencies, and insurers should take to bring about these reforms.

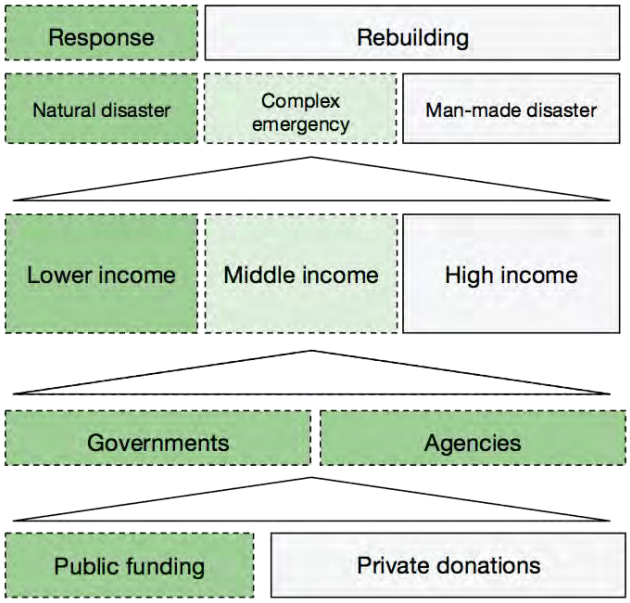
Our Focus: Public Support for Disaster Response

Donors like the government of Japan, national governments like Ethiopia's, and frontline agencies like the International Rescue Committee or World Food Programme—a constellation of actors we refer to collectively as the **global public sector**—respond to disasters ranging from civil war to tsunamis.

These emergency responses differ in four broad ways: **who** pays, governments or private donors; **where** the money goes, to relatively richer countries or relatively poorer ones; **what** kind of emergencies they respond to (natural disasters like epidemics or tropical storms are generally easier to predict—and so to arrange financing for in advance—than political violence like civil war); and **which** stage of emergency the response finances: prevention, immediate response, or the long-term challenge of rebuilding.

This work focuses on enabling more effective response by the global public sector to principally natural disasters in middle-income countries and below. [4] The figure below provides a stylised view of this landscape, with the areas of focus shaded. ("Complex emergencies" is a term of art in humanitarian response, referring to crises in which political and natural causes interact.)

Our Focus: Disaster Aid from Donors



Estimating what donors spend tackling disasters is tricky. As we set out below, $1.6 billion a year on average since 2000 is the most conservative figure. This pales in comparison to private contributions. American NGOs, for example, received over $24 billion in private support in 2013, more than eight times the $2.8 billion they got from USAID. [5]

So does focusing on how donors spend money after emergencies miss the point? It would be good if more private donors supported the kind of smart risk financing we propose here; it would help liberate NGOs from competing for visibility and cash to deliver on their core, lifesaving missions. But public officials do not determine how private citizens or foundations spend their money. We focus on policy innovations that are within the public sector's control, in the hope that reform by the global public sector will catalyse broader change in private giving.

> Smarter financing may help prevent disasters from becoming stubborn and long-term development challenges.

Regardless of whether assistance flows from tax receipts or private donations, it is used to finance response to a range of emergencies. These might be *sudden-onset* shocks, like the Indian Ocean tsunami of 2004, or more protracted challenges. [6] Kenya's *Dadaab* refugee camp, for example, has operated continuously for more than two decades. There is certainly enormous scope for reform in how we support long-term challenges like mass displacement, but that is not the focus here. This report is about how to improve disaster

response. The problems are not disconnected: smarter financing will enable more effective response. That, in turn, may help prevent disasters from becoming stubborn and long-term development challenges.

How We Worked

This work builds on a rigorous scientific literature about how we can match financing to purpose to make response and risk management better by making funding after disasters predictable. It draws on a high-level dialogue between a working group convened by the Center for Global Development at its office in London, composed of senior figures from donor agencies, frontline humanitarian agencies, academic institutions, and the insurance sector.

The working group's analysis and this report were substantially guided by two pieces of prior analysis. The first is *Dull Disasters? How Planning Ahead Will Make A Difference,* a book-length examination of the problems inherent in existing funding models for disasters and how smarter financing can help to catalyse better planning. It was written by working group co-chair Dr. Stefan Dercon and working group member Dr. Daniel Clarke.

The second is a framing paper prepared for the working group by the Center for Global Development, "Payouts for Perils: Why Disaster Aid is Broken, and How Catastrophe Insurance Can Help to Fix It," by Theodore Talbot and working group co-chair Owen Barder. This report draws on analysis in that framing paper and cites from it without specific attribution.

The group's timeline involved three, focused meetings held in CGD's office in London. The first, on July 1, 2016, clarified the problems with existing disaster response, drilling down from the broad question of humanitarian emergencies to focus on risk financing for natural disasters. The second, on September 9, 2016, articulated solutions to the problems and mandated the secretariat to work through them, using data and analysis summarised in this report. In the third and final meeting, on December 9, 2016, participants agreed on recommendations to take these solutions to action.

This work benefits from contributions and revisions set out by the working group, but it should not be construed as expressing members' individual opinions; all discussions were on the Chatham House rule. Working group members and outside experts we consulted are listed in the end matter. Theodore Talbot was the report's lead author and analyst, with contributions from Owen Barder and Stefan Dercon. Caitlin McKee provided excellent research support, and Emily Schabacker provided invaluable editorial assistance. The digital version of the report and dynamic charts were built by John Osterman.

The Center for Global Development gratefully acknowledges support for this work from the UK Department for International Development and UBS. This work does not necessarily reflect their views.

Notes

[1] Roache, et al., 2014.

[2] Checchi and Robinson, 2013.

[3] Ramachandran and Walz, 2012.

[4] To put this in context, the median upper-middle-income country (a taxonomy based on GDP per capita) is the Dominican Republic, while Vietnam is the median lower-middle-income country, and Ethiopia is the median low-income country.

[5] United States Agency for International Development (USAID), 2015.

[6] Of course, the consequences of sudden-onset emergencies can continue for many years. Post-tsunami recovery and reconstruction, for example, was a long-term development challenge in Sri Lanka, which was also affected by an ongoing civil war.

Disasters Undermine Development

Disasters, in some circles, lack the cachet of other kinds of emergencies. The Indian Ocean tsunami of 2004 was devastating, and it caused long-term hardship for many, but happened once in living memory. Deadly civil wars, in contrast, seem omnipresent.

In fact, natural hazards ranging from storms to pandemics are extremely **expensive**, imposing large, recurrent, and sometimes permanent costs on vulnerable populations. They are highly **regressive**, disproportionately affecting the poorest countries and the poorest people in those countries. They are **dangerous** because they contribute to regional instability and drive mass displacement. And they are **getting worse**, as climate change creates more violent weather and urbanisation puts more people in harm's way. (Some prefer the term "natural hazard" to "natural disaster" to reflect the fact that disasters are the interaction of natural risks and human causes, like poor governance, inadequate political accountability, or poverty.)

> National boundaries and border walls will not contain disease outbreaks. A severe epidemic could wipe out up to 5 percent of global income at once.

Disasters deserve our attention for two reasons: first, because of the need to alleviate great human suffering when they happen, and, second, because we must confront and reduce the long-term consequences they inflict on vulnerable households and frontline countries. Better response is a public good in the classical sense, providing shared benefits. National boundaries and border walls will not contain disease outbreaks, for example, and a severe epidemic could wipe out up to 5 percent of global income at once. (To put this in context, it is estimated that global warming will ultimately cost up to 2 percent of global income annually.) So in addition to being a smart allocation of scarce development capital and effort, doing more to contain pandemics and other hazards generates benefits far beyond the vulnerable populations themselves.

Prearranging funding and using concessional insurance will not lower the risk of natural hazards. But these innovations will enable planning ahead, save lives by expediting response, make scarce aid funding stretch farther to deal with more risks, and sharpen—rather than blunt—incentives to reduce vulnerability.

Expensive

Disaster risk is a function of the underlying **hazard** (the chance a storm will make landfall), **exposure** (the mortality and losses in coastal and inland communities when it does), and coping **capacity** (our ability to deal with losses). Risk, when realised, carries its most obvious costs at impact: in 2015, international appeals ranged from more than $533 million to tackle the consequences of a devastating earthquake in Nepal, the largest appeal recorded by the UN's Office for the Coordination of Humanitarian Affairs (UN OCHA), to $1 million to assist the Caribbean island of Dominica after tropical storm Erika made landfall there, the smallest appeal that year. [1]

> Disasters caused more than $37 billion worth of damage and affected nearly 84 million people.

Support from donors helps deal with the immediate consequences of these shocks but covers only a tiny share of overall losses. UN OCHA reported $677 million in funding for appeals to deal with natural disasters in 2015. Data from EM-DAT, a database of natural disasters maintained by a team at Université Catholique de Louvain, indicate that disasters caused more than $37 billion worth of damage and affected nearly 84 million people in low- and middle-income countries the same year. [2]

> Disaster losses can make poor households *permanently* worse off by undermining their capacity to recover.

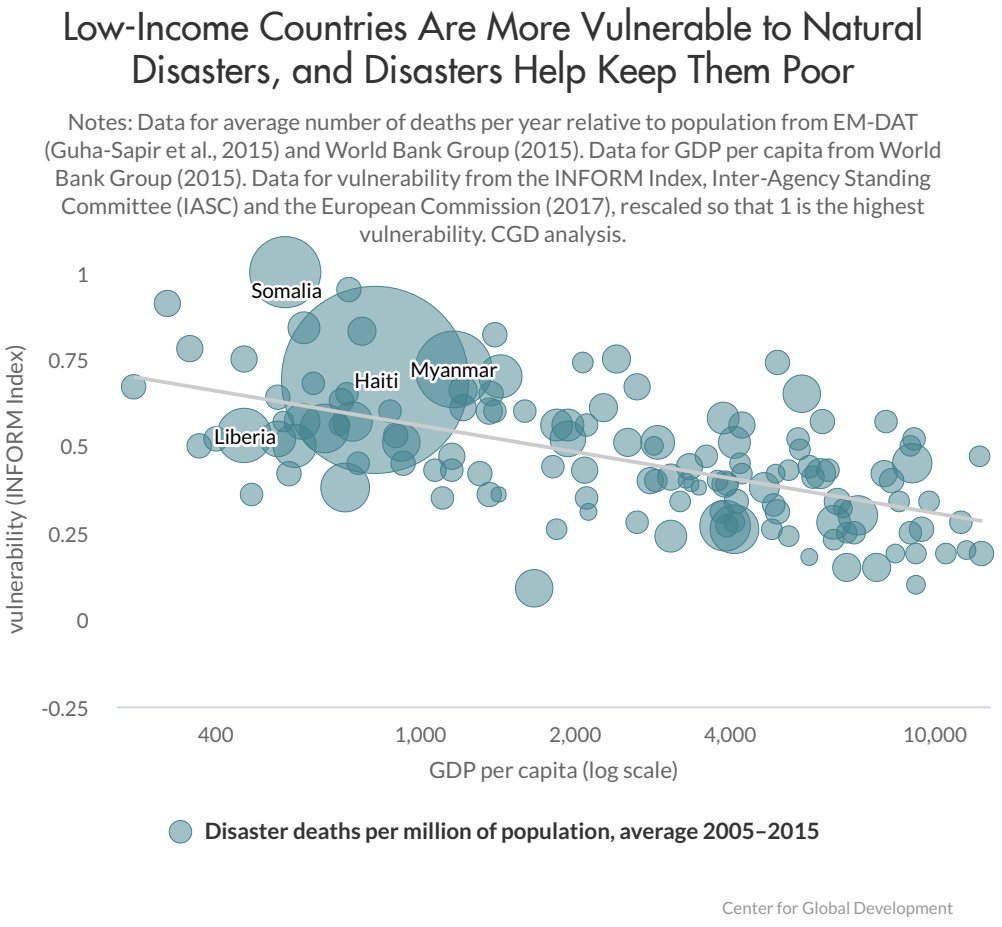
Focusing on disasters' immediate impact can distract us from their longer-term costs. These are often larger and may be more pernicious because they generate less media attention and donor effort. Disaster losses can make poor households *permanently* worse off by undermining their capacity to recover. Droughts, for example, force Ethiopian farmers to sell off livestock en masse. These are valuable assets: in Ethiopia, mature bulls sold for over $560 in some local markets in early 2017, in a country where average incomes are about $620 a year. [3] So droughts effectively compel families to trade in their savings at pennies on the dollar, an example of how disasters leave households impoverished long after they "end." [4]

> The top 1 percent of the most extreme events lowers economic growth rates by over 6 percent amongst low- and middle-income countries.

This effect operates at the level of whole economies. The top 1 percent of the most extreme events lowers economic growth rates by over 6 percent amongst low- and middle-income countries. (The penalty increases more than proportionally: disasters that are twice as violent more than double the cost in terms of economic growth.) [5] This is a huge friction. A country with income per capita growing at 10 percent sees incomes double every seven years, a jump that would make Bangladesh's average standard of living roughly the same as Bolivia's. [6] That change would take a decade longer if a disaster were to lower growth to 4 percent a year.

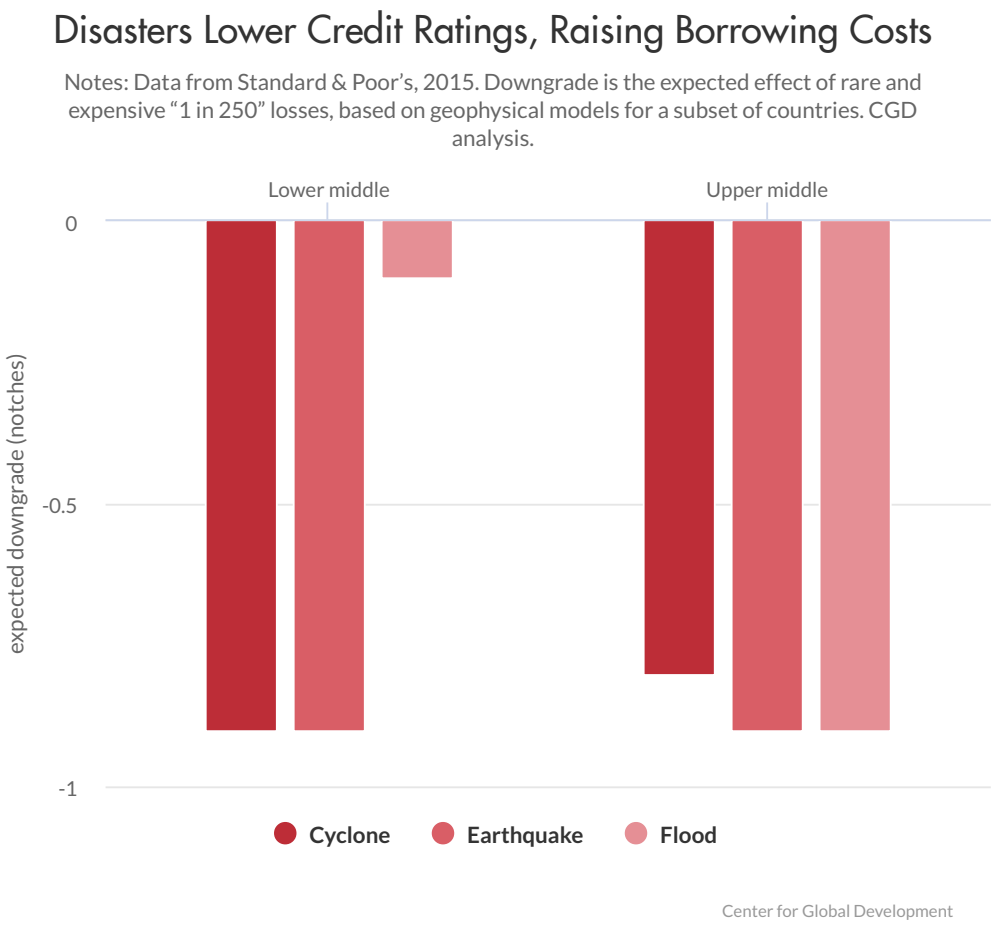
This relationship works in both directions: the poorest countries are most vulnerable to disaster and vulnerability causes poverty when disasters hit. Figure 1-1 combines data on average incomes with the INFORM index, which estimates national vulnerability based on 89 subcomponents. The four countries that reported the deadliest disasters—Haiti, Somalia, Myanmar, and Liberia—are clustered in the top left section of the graph, reflecting the devastating 2010 earthquake, the 2010–12 drought and famine, the effects of Cyclone Nargis in 2008, and the 2014–16 Ebola outbreak, respectively.

Figure 1-1



The link between vulnerability and poverty means that disasters also threaten to undermine the broader development agenda. Credit ratings provide a striking example. Algorithms used by agencies like Moody's to determine creditworthiness explicitly account for the potential effect of disasters. [7] Recent analysis (summarised in figure 1-2) on a select group of countries and disaster risks concludes that severe tropical cyclones, earthquakes, and floods would cause large ratings downgrades.

Figure 1-2



As a result, the threat of disasters raises the cost of borrowing for governments and private projects, whose ratings are typically capped by the sovereign rating of the country in which they operate. That impedes economic growth, as lower-income countries urgently need finance to invest in infrastructure, ranging from roads to electricity generation. This means disasters both raise borrowing costs today and make it more expensive to borrow to respond or rebuild after they hit.

The risk is not theoretical. Storms have caused waves of defaults in the Caribbean by destroying agriculture and infrastructure for tourism, a crucial service export. Hurricane Ivan in 2004 brought about Grenada's debt restructuring after inflicting losses of more than three times GDP, and hurricanes in 2004 brought about the Dominican Republic's 2005 debt restructuring. [8]

In wealthy countries, insurance mitigates the worst effects of disasters by absorbing large, unexpected losses. But the average level of *insurance penetration* in lower-income countries remains stubbornly low. Recent analytical work conducted by Swiss Re, a major global insurance firm, compares the level of insurance premiums to the likely damage caused by natural disasters, and to a benchmark level of what penetration should be for a given level of income per head. It indicates an annual *protection gap* on the order of $112 billion. [9]

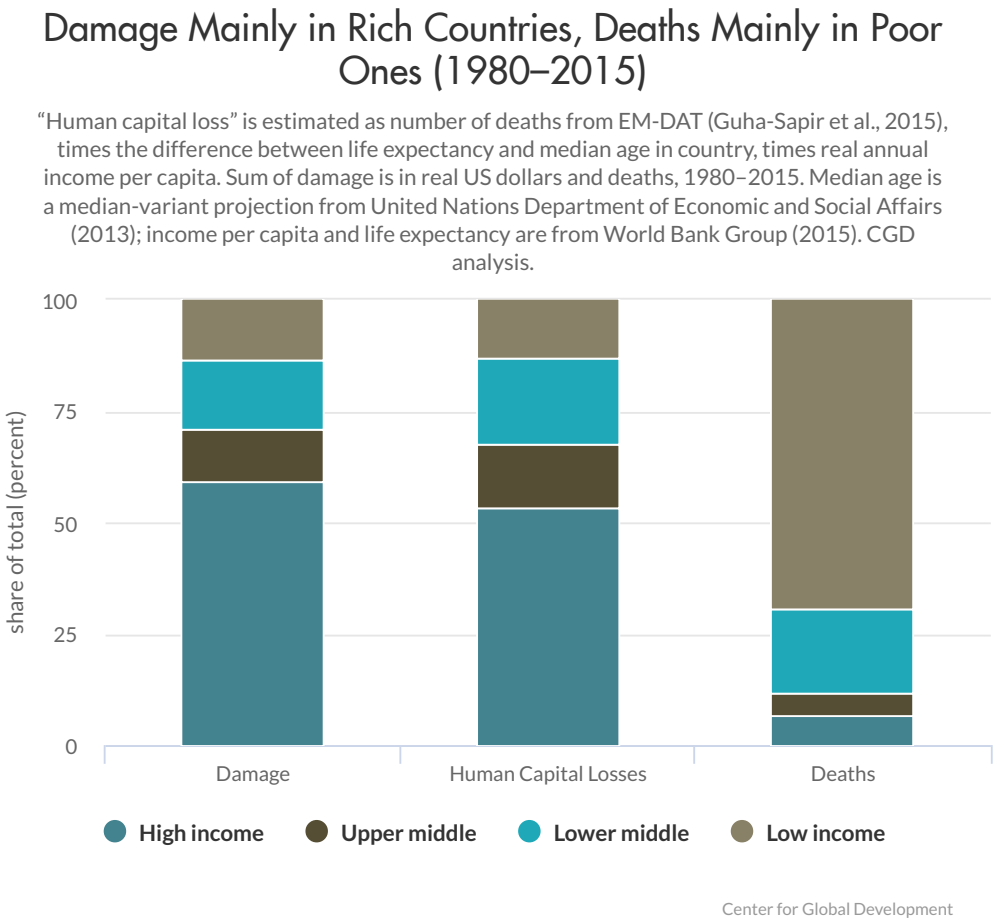
While public and private insurance complement each other, lower-income countries lack sufficient levels of either. A commonly reported data point, for example, is that only 100 million people in developing countries are covered from weather-related risks (this figure is even lower when we account for other hazards, like earthquakes). [10] Though we can (and should) quibble about precise figures, there is broad consensus about a large and dangerous deficit in protection.

Regressive

> The death toll of disasters is highly regressive, borne disproportionately by the poor.

Poorer countries have less capital and infrastructure per person than richer ones, and the cost of replacing that infrastructure is often lower. So a focus on damage or loss estimates expressed in financial terms might make us conclude that poorer countries "lose less" in the event of disaster. One crude way to avoid undervaluing losses in developing countries is to estimate the present value of income per capita lost due to lives taken. Even with this adjustment, lower incomes in developing countries mean that lives lost in rich countries dominate the chart shown in figure 1-3. But although most of the *damage* has been in rich countries, the same figure shows that most *deaths* have been in poor ones. So the death toll of disasters is highly *regressive*, borne disproportionately by the poor.

Figure 1-3



Poor people in poor countries are doubly jeopardised. They live in lower-income countries that are more likely to experience natural disasters, and, when disasters hit, the poor are more likely to be affected. The analysis is not new. As Amartya Sen famously observed, famines do not happen in democracies with a free press. [11] Inequalities—in political voice and financial resources—are the reasons some hazards affect specific groups within countries more gravely than others. [12]

> "In famine epidemiology, the verb to starve is transitive—like wounding or murder, it is something that people do to one another."

As Alex de Waal, a scholar of politicised conflict and member of the working group, has observed "In famine epidemiology, the verb to starve is transitive—like wounding or murder, it is something that people do to one another." [13] The Ethiopian camp at *Korem* that inspired Bob Geldof to launch the famous BandAid campaign was not only a symptom of food shortages, but also the result of a counterinsurgency operation that throttled food supplies. [14]

> Better institutions, higher incomes, and more accountability of the executive to the governed (through democracy) modulate the link between the two.

The statistical evidence backs up the political theory. A 70-country study of natural hazards finds that higher-income countries are not less likely to be affected by hazards—they simply do not evolve into disasters. In richer countries, better institutions, higher incomes, and more accountability of the executive to the governed (through democracy) modulate the link between the two. [15] When disasters do materialise, the poor suffer the most. One study of data from over 180 countries over 40 years finds that a poor person is more than twice as likely to be affected by disaster, even when we account for factors like urbanisation. [16]

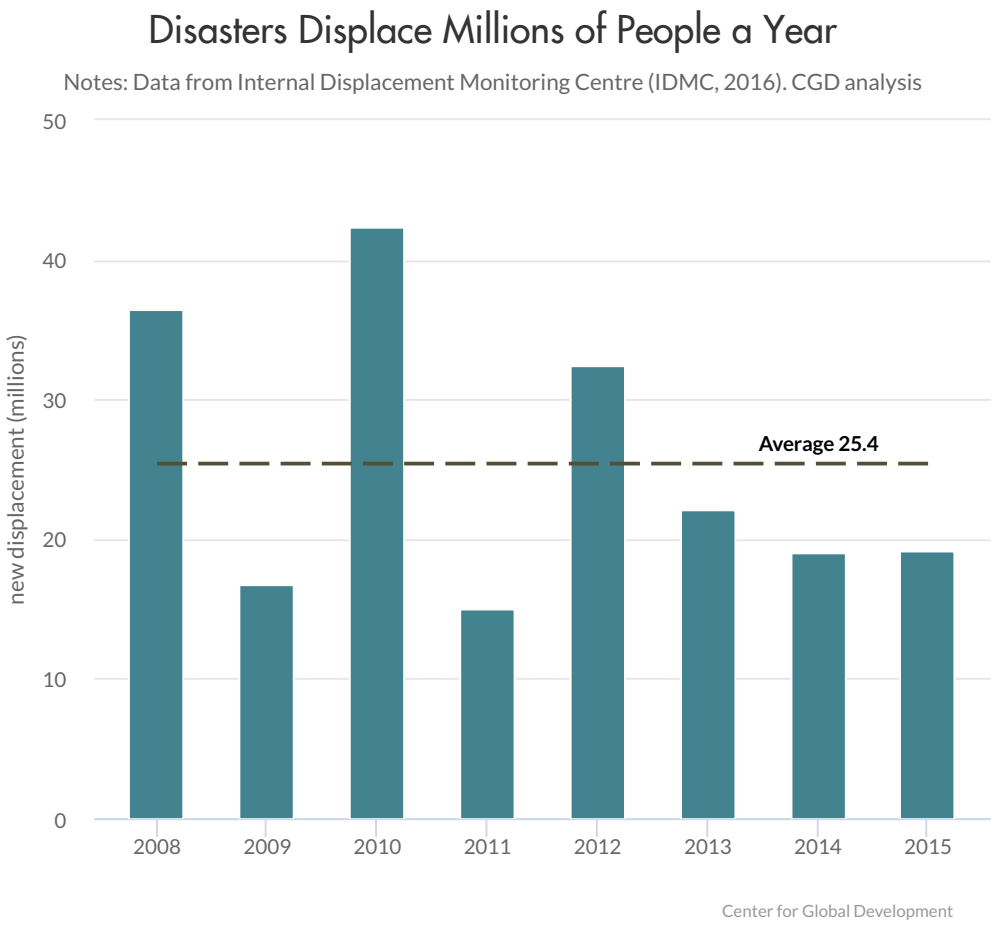
Dangerous

There is an intuitive link between the stress created by disasters and the incidence of conflict: resource scarcity can exacerbate cleavages among groups, sometimes resulting in violent competition. Several analyses show that natural shocks, modulated by local institutions and government capacity, can drive conflict between countries. [17] Separate research appears to confirm a link between disasters and internal conflict, mimicking the different effect that disasters have *across* richer and poorer countries and richer and poorer groups *within* countries. [18] More than half the people affected by disasters live in *fragile and conflict-affected states*, like Somalia, where the government's ability to project authority is effectively limited to areas of the capital city of Mogadishu. [19]

> In 2014 alone, more than 19 million people were newly displaced by disasters in over 100 countries, mainly because of weather-related shocks.

Events like drought and flooding also destroy people's ability to earn a living and can make them leave their homes. This drives mass displacement that contributes to regional instability and increases the shared caseload of roughly 65 million displaced people globally reported by UNHCR in 2016. [20] In 2014 alone, more than 19 million people were newly displaced by disasters in over 100 countries, mainly because of weather-related shocks. [21] As figure 1-4 shows, this was not an unusually bad year; the average annual figure is more than 25 million people since 2008. Worse yet, the burden for most of these displaced people falls on low- and middle-income countries—often exactly the places least equipped to handle more calls on strained national budgets. [22]

Figure 1-4



Pandemics are the clearest case of the dangers that lie at the intersection of natural risk and human mass movement, supplementing our moral obligation to help others with a healthy self-interest in containing their spread. Indeed, there is a complex feedback loop between disasters and epidemics: epidemics are disasters, and disasters can cause epidemics. Displacement and lack of sanitation are primary risk factors. Lack of access to clean water spreads diseases like cholera (like in Haiti in 2010), displacement is associated with a host of acute respiratory infections (like in Pakistan, following the 2005 earthquake), and malaria outbreaks happen after flooding, when pools of stagnant water become breeding grounds for mosquitoes. [23]

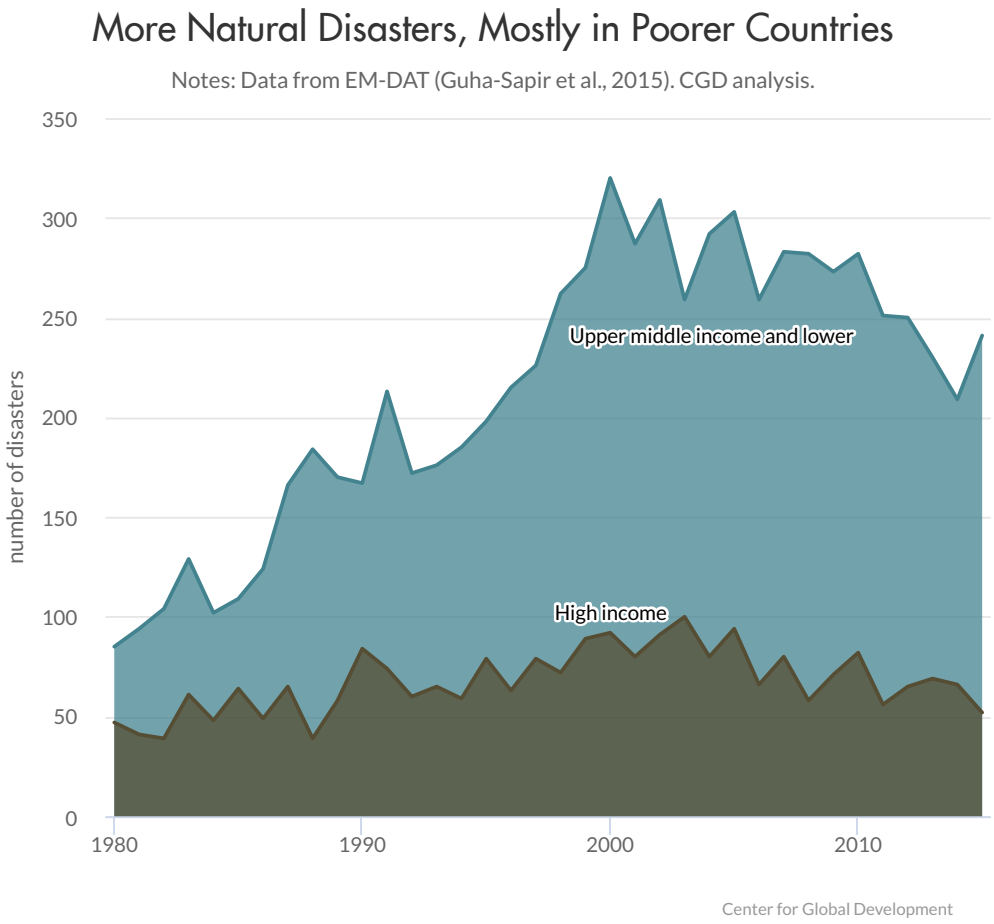
Getting Worse

We face a future in which more hazards will evolve into disasters. First, the share of the global population living in urban areas will double in a century, from a third in 1950 to over two-thirds by the middle of the 21st century. [24] We are projected to have 41 megacities—urban agglomerations with 10 million people or more—by 2030; these have already tripled in number since 1990. The world's urban population has more than quadrupled since just 1970. [25]

These high population densities mean hazards with the same footprints as those that now occur will affect many more people. Although rising incomes will make some communities more resilient, a greater share of urban communities will be in developing countries and so both densely packed and increasingly vulnerable. At the same time, climate change will create a mismatch between our built environments and the more violent weather it causes.

Despite pledges to tackle climate change made in Paris at the end of 2015, the stock of carbon emitted will inevitably cause warming during the 21st century, estimated at between 2°C and 4.5°C. The best-case scenario includes heavier rains in some latitudes and more droughts in subtropical areas, flooding due to higher sea levels, and bigger, more violent storms. Figure 1-5 shows this broad run-up in the raw count of natural disasters reported each year, and that most of the impact falls on lower-income countries.

Figure 1-5



In Bangladesh, a 2°C rise in temperatures is predicted to cause flooding that will lower the amount of usable land by 20 percent in a country that is already one of the world's most densely populated.

What does this shift in climate look like? In Bangladesh, a 2°C rise in temperatures is predicted to cause flooding that will lower the amount of usable land by 20 percent in a country that is already one of the world's most densely populated. [26] Droughts that previously affected Ethiopia every decade or less now occur more frequently, perhaps every two years or less. [27] The Zambezi River used to flood about every five years. Now it breaks its banks annually. [28]

Notes

[1] United Nations Office for the Coordination of Humanitarian Assistance (OCHA), 2015.

[2] Calculated based on data from Guha-Sapir et al., 2015.

[3] Data on cattle prices calculated from Livestock Information Network Knowledge System, 2017.

[4] Dercon, 2004 .

[5] Felbermayr and Gröschl, 2014.

[6] Bangladesh's 2015 Gross National Income per capita was $3,560, compared to $6,710 for Bolivia. World Bank, 2016.

[7] Moody's, 2016a.

[8] Moody's, 2016b.

[9] Swiss Re, 2015.

[10] BMZ, 2015.

[11] Sen, 1999.

[12] Adaman, 2012.

[13] DeWaal, 2008. See DeWaal, 1997, for an important book-length analysis.

[14] DeWaal, 2008.

[15] Kahn, 2005.

[16] Kim, 2012.

[17] Bhavnani, 2006.

[18] Nel and Righarts, 2008.

[19] Kellett and Sparks, 2012.

[20] United Nations High Commissioner For Refugees (UNHCR), 2016.

[21] Norwegian Refugee Council and Internal Displacement Monitoring Centre (IDMC), 2015.

[22] Talbot and Huang, 2016.

[23] Watson, Gayer, and Connolly, 2007.

[24] United Nations Department of Economic and Social Affairs, 2013.

[25] Authors' calculations and Brockerhoff, 1999.

[26] Karim and Mimura, 2008.

[27] Cai et al., 2014.

[28] Chagutah, 2006.

Aid Is Generous but Flawed

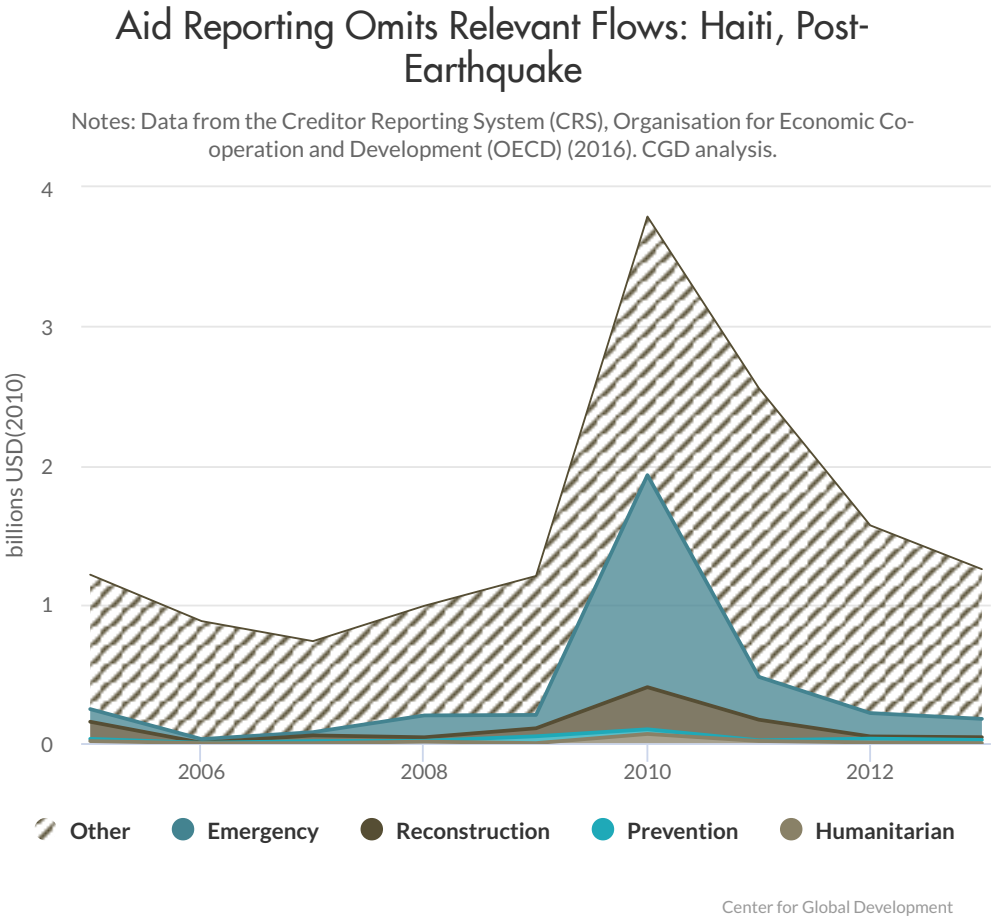
This section summarises two simple points arising from the working group's analysis. First, donors spend a large amount of money each year on the consequences of natural disasters (earthquakes, storms, floods, extreme temperatures, and epidemic disease outbreaks). *Response plans* that appeal for funding to confront natural emergencies provide the most conservative estimate of $1.6 billion a year on average. Second, this money does not deliver bang for the buck, because it is only triggered by acute, visible needs, it undermines planning because it is unpredictable, and it is fragmented and sometimes incomplete (when commitments to provide funds are not followed up by disbursements).

How much do donors currently pay to deal with natural disasters? Estimates vary because disasters are long-lived, so "emergency" response outlasts the duration of the shock. That makes it difficult to bookend aid flows to, say, Vanuatu and ascribe them to the effects of Cyclone Pam. And, more generally, aid reporting is imperfect due to errors and incompleteness, either because of the difficulty of tying a multipurpose grant to a single purpose code or because the interpretation of reporting codes varies by donor.

The OECD's creditor reporting system (CRS) is a tool used by members of the Development Assistance Committee, a club of mainly rich-country donors that includes the countries that provide most global aid. The CRS provides a taxonomy: *humanitarian aid, emergency response, funding for prevention and preparedness,* and *reconstruction and relief* might collectively be called *disaster-related aid.*

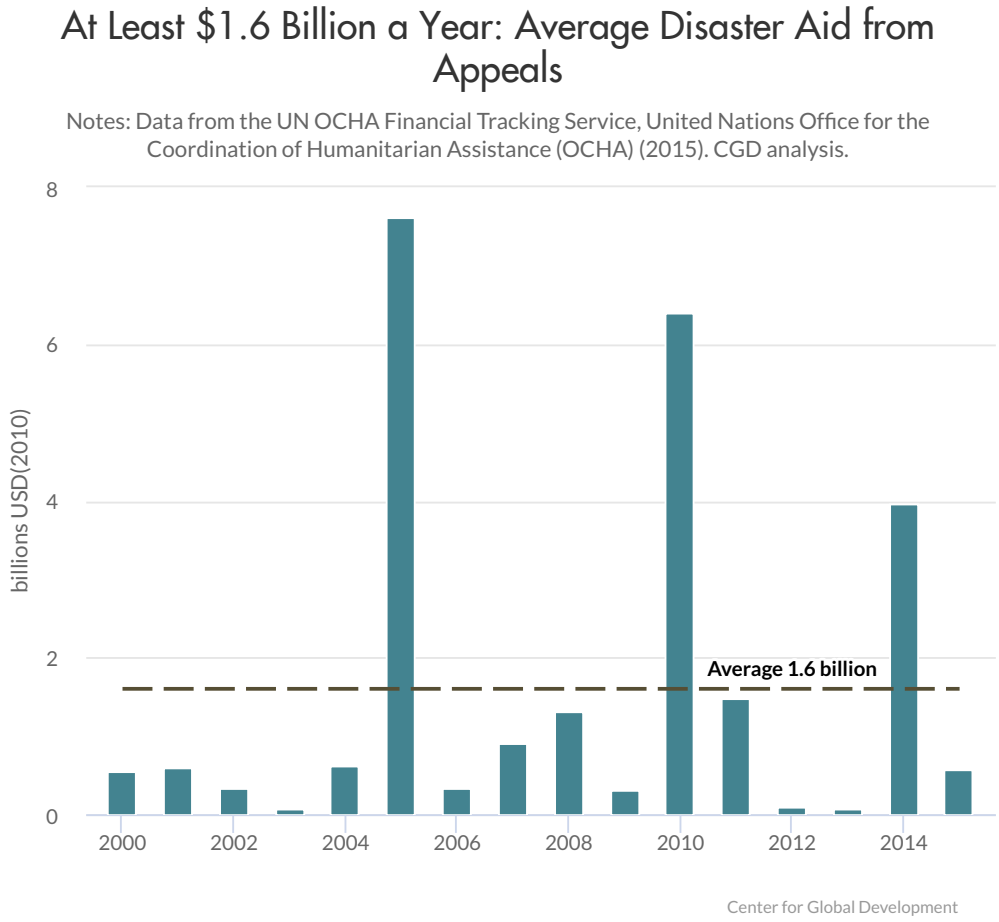
Spending that plainly goes to disasters but which is not included in these codes militates against putting too much faith in any single point estimate of disaster aid spending. We know, for example, that Haiti's devastating 2010 earthquake triggered an increase in all the disaster-related budget lines. But figure 2-1 decomposes total flows based on the purposes reported by donors and shows that $1.9 billion of the $3.8 billion committed to Haiti that year did not fall under *any* of them.

Figure 2-1



Given reasonable omissions and overlaps, the working group used a range of plausible estimates of how much donors spend on natural—and so predictable—disasters each year. First, the UN's Office for the Coordination of Humanitarian Aid provides a voluntary financial tracking service that reports a specific subset of appeals for natural disasters. The results of the analysis of those appeals, shown in figure 2-2, indicates donors allocated $1.6 billion a year on average between 2000 and 2015 after disasters struck.

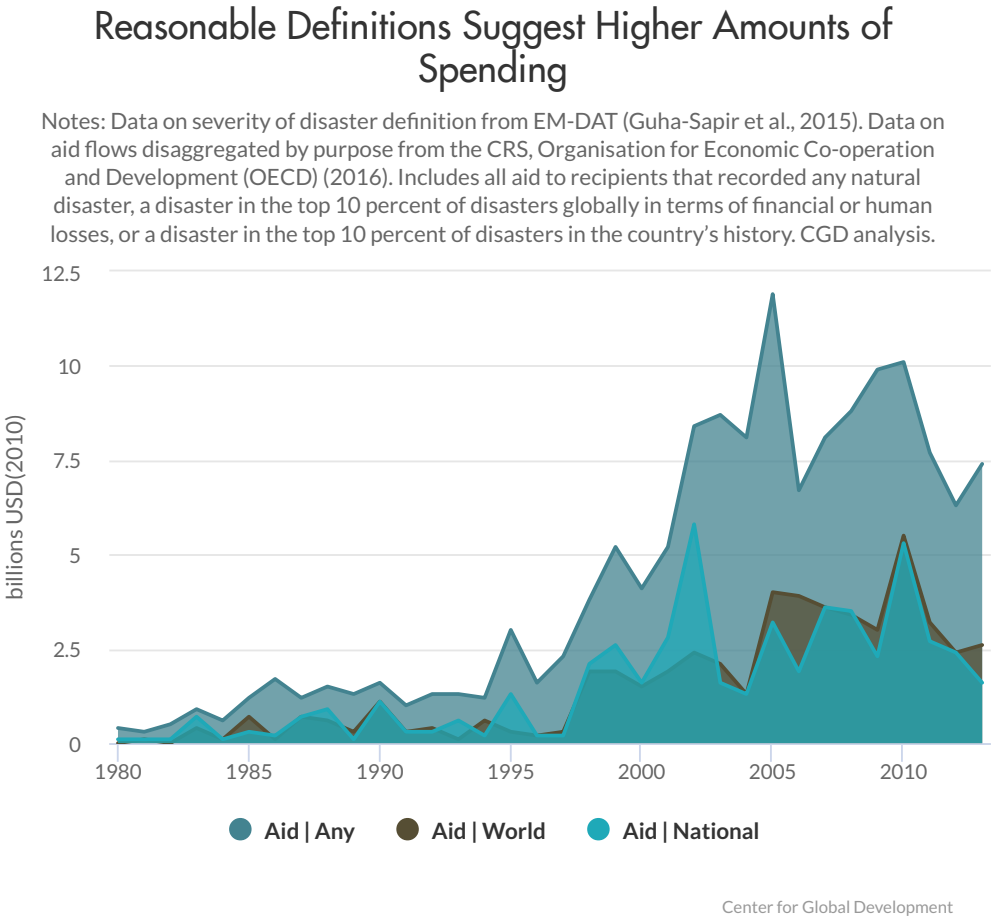
Figure 2-2



This plausible, episode-based correction for misreporting indicates much higher average spending levels on disasters: between $1.6 billion and $7.4 billion a year.

Response to UN appeals is only one, narrow filter for total spending that could reasonably be attributed to tackling hazards. Figure 2-3 supplements that narrow view by including *all* aid scored to countries in which there was, variously, any disaster reported (*Aid|Any*); a disaster in the top decile in terms of people affected globally or the amount of damage reported in that year (*Aid|World*); or a disaster that was in the top decile in a country's history in terms of either people affected or financial damage (*Aid|National*). This plausible, episode-based correction for misreporting indicates much higher average spending levels on disasters: between $1.6 billion and $7.4 billion a year.

Figure 2-3



Regardless of whether we use a maximal or minimal definition (only looking at appeals) of aid for disasters from the global community, the broader point is clear. Our spending on the consequences of deadly emergencies in the world's vulnerable countries is large and growing. That makes it an important component of the total emergency aid envelope, which includes humanitarian assistance alongside financing for disaster response.

Funding Arrives When Needs Are Acute

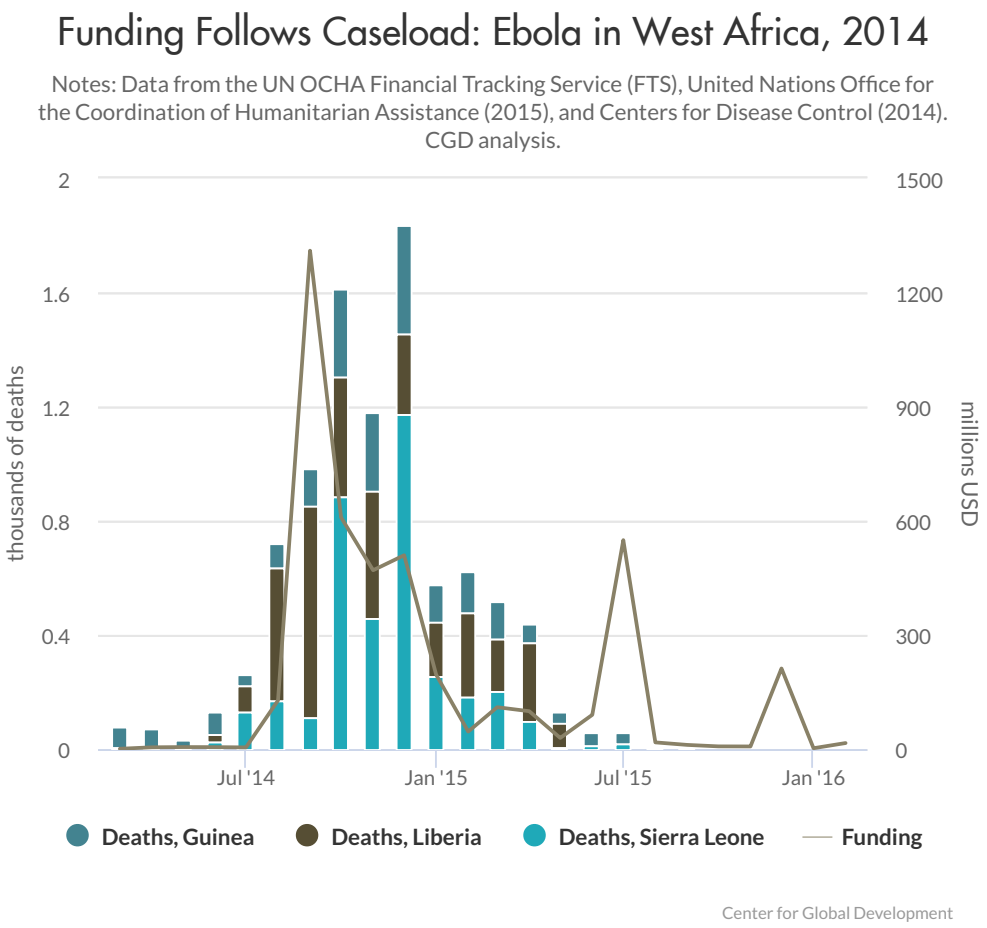
> "The outbreak of a major fire is the wrong time to hold discussions on the pay of firefighters, to raise money for the fire service, or to consider fire insurance. It is too late."

A fundamental theme in the working group's findings has been that the human and financial costs of disasters go up because funding is not available when it would do the most good. "When a fire breaks out in a city, there needs to be a prompt firefighting response," writes working group member Dr. Gordon Woo, a catastrophist at Risk Management Solutions, a firm that builds mathematical models of catastrophes. "The outbreak of a major fire is the wrong time to hold discussions on the pay of firefighters, to raise money for the fire service, or to consider fire insurance. It is too late." [1] Because funding is discretionary and ad hoc, money follows, rather than leads, the most severe symptoms of a crisis. Put differently, waiting to pay for response makes response more expensive by imposing additional damage. This is one more, deadly example of the well-documented tendency for public money to flow too late to prevent the worst of a problem from arising in the first place.

> The tail of Ebola deaths wagged the dog of funding.

Figure 2-4 demonstrates how this played out during the global response to the 2014 West African Ebola epidemic. This analysis, combining data on financial commitments from donors and information on new deaths each month reported by the Centers for Disease Control, suggests the tail of Ebola deaths wagged the dog of funding. By the time donors ramped up funding, the epidemic had spread sufficiently to cause many additional deaths. Funding increased when deaths increased, rather than supporting a sufficient response early on in order to prevent further infections.

Figure 2-4



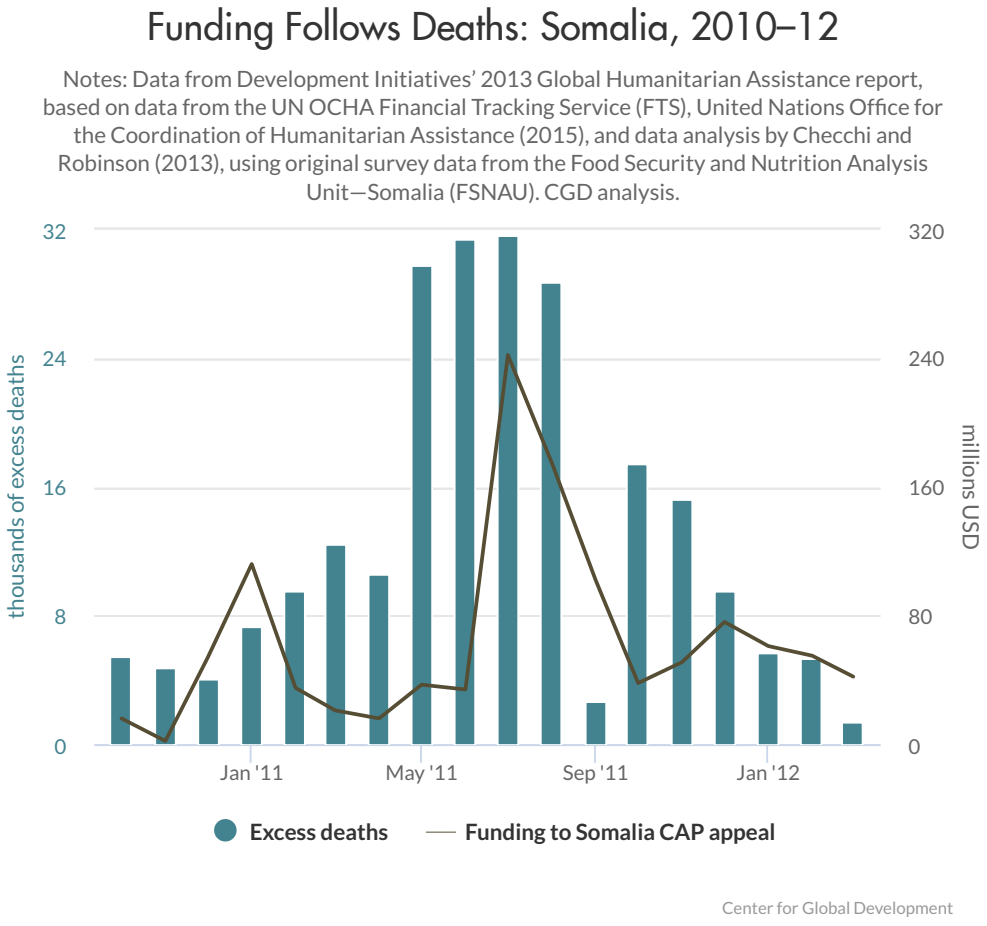
A month after Ebola was detected in Guinea in March 2014, estimates called for a modest $5 million to contain it. Five months later, the cost of control had reached an estimated $1 billion.

At one level, funding following need makes sense: donors provided more support as the needs became demonstrably greater. Seen in another light, it is bewilderingly inefficient. Waiting to mobilise money that would have financed containment and response enabled Ebola to spread and infect many more people, in turn causing much more suffering and requiring more resources to contain it. A month after Ebola was detected in Guinea in March 2014, estimates called for a modest $5 million to contain it. Five months later, the cost of control had reached an estimated $1 billion. [2]

Funding reacted to malnutrition and starvation rather than mobilising to prevent it.

Although epidemics capture our imaginations, devastating outbreaks like the 1918 global influenza pandemic are, thankfully, relatively infrequent. In terms of lives lost, famines have been more frequent in recent history, having killed an estimated 10 million people since 1970. But these *slow-onset* emergencies replicate a pattern of funding that follows, rather than predicts, need. Detailed studies of the 2011 famine in Somalia, for example, suggest tardy response interacted with local political conditions to make what might have been a situation of deprivation descend into starvation. [3] Figure 2-5 tracks the estimated number of excess deaths—that is, mortality above the baseline level, and so attributable to the crisis—and suggests that funding reacted to malnutrition and starvation rather than mobilising to prevent it.

Figure 2-5



This happened even though early-warning systems notified the global public sector about the emergency. As one study of the crisis notes, "Between August 2010 and the declaration [of famine], the Famine Early Warning Systems Network . . . and the Somalia-focused Food Security and Nutrition Analysis Unit . . . produced 78 bulletins and undertook over 50 briefings to agencies and donors." [4] Because of this failure to act with sufficient urgency, tens of thousands of people died and hundreds of thousands of livelihoods were damaged, increasing vulnerability far into the future.

At the time of writing, in 2017, food shortages in Kenya, Somalia, South Sudan, and Yemen threaten to turn into starvation and famine. Yet again, the international community fails to mobilise the funds needed for a large-scale response.

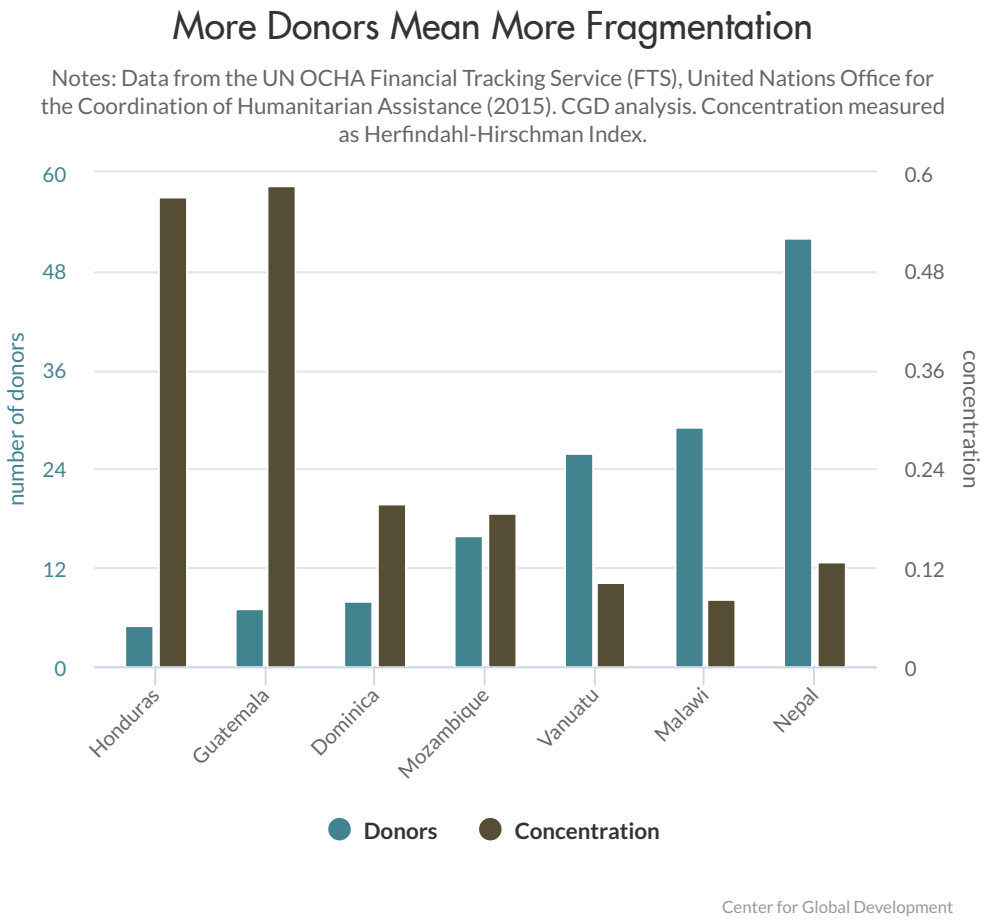
Support Is Fragmented

An under-appreciated consequence of funding disaster response through appeals and other ex-post mechanisms is that a large amount of disaster-related aid is *fragmented*, characterised by many small programmes or projects. One study of decades of donor spending on disasters, for example, has found that more than 85 percent of projects during that time accounted for less than 6 percent of funding. [5] This multiplicity of programmes is expensive to coordinate, and it can deprive any single budget line of the resources necessary to make a difference.

> Large disasters that attract attention and many donors have more fractured response plans.

Figure 2-6 shows the situation for some of the largest emergencies of 2015, each of which triggered *appeals* for international assistance. It also includes a measure of concentration, based on an index borrowed from industrial economics: a value of one means all support came as a single grant; values closer to zero imply many donors gave small shares each, resulting in more fractured aid. [6] As we might expect, large disasters (such as the earthquake in Nepal) that attract attention and many donors are associated with more fractured response plans; donors pay into many smaller budget lines instead of pooling funding to support larger, more coherent programmes. Fractured support is more expensive and harder to manage than unified grants, which can be funneled through a single crisis management budget.

Figure 2-6



An analysis of post-disaster aid flows to Haiti has found that funding was slow to mobilise and badly coordinated, with very little national ownership.

The global response to the Haitian earthquake of 2010 is a frustrating case study of these effects. An analysis of post-disaster aid flows to Haiti has found that funding was slow to mobilise and badly coordinated, with very little national ownership. Although more than $6 billion was spent in Haiti between 2010 and 2012, the study concludes that the country's government received just 1 percent of the emergency aid and only 15 percent of spending on longer-term relief. [7]

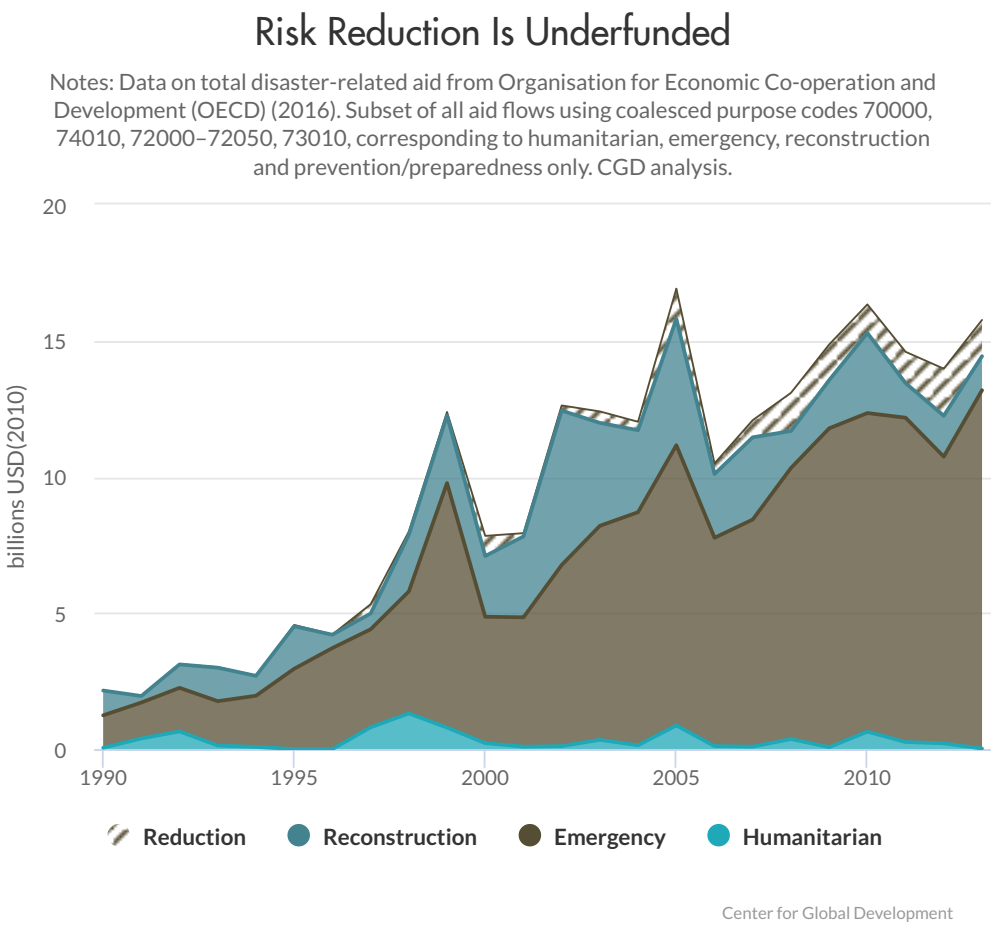
Incentives Are Distorted

Providing discretionary funding after a hazard hits distorts incentives in three important ways: it reduces incentives to invest in planning and in reducing vulnerability ahead of time; it reduces incentives to price the costs of response accurately; and it encourages free riding by donors.

Because financing arrives after disaster strikes, the prevailing mechanisms limit incentives to invest in reducing the costs of disasters by reducing the amount donors are able and willing to spend on mitigating risks. Figure 2-7 parses data from OECD donors and shows the small sliver of disaster-related aid that has been recorded as spent on *disaster risk reduction*; it is on the order of less than half a dollar in every (inflation-adjusted) $100 of aid over the last 20 years.

The working group's consensus is that we should be skeptical of so precise a figure; many investments in resilience are not scored as such in the data on aid flows. Building new schools might be attributed as education spending even if the schools were more expensive because they were built to withstand earthquakes better. But even if our estimated spending on resilience were off by a factor of ten—900 percent wrong—that would imply just $4.30 of spending on resilience in every $100 of aid (in real terms), far lower than the returns on investment from better resilience to natural disasters.

Figure 2-7

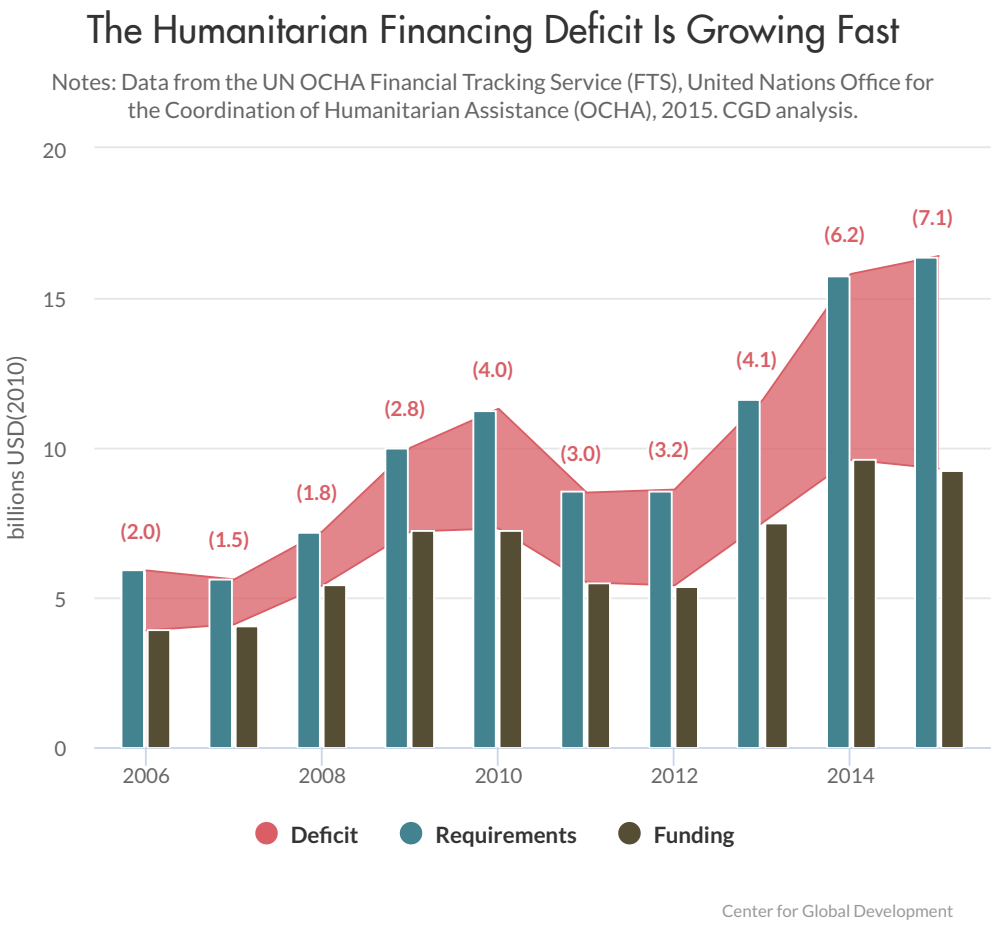


Frontline governments confront pressing social needs, like expanding access to education. This makes it difficult to invest against uncertain future costs. And because aid provides a backstop—however imperfect—when things go wrong, it tilts incentives away from spending money to reduce vulnerability. One study, for example, found that a 10 percent increase in the ratio of aid to a country's GDP in the past raised the chance of disaster by up to 5.7 percent in a large sample of lower-income countries. The interpretation is that aid crowds out incentives to invest in prevention that might otherwise keep hazards from tipping into disasters. [8] (Frontline agencies, for their part, are generally contracted to respond when disasters become acute, rather than investing in reducing vulnerability in advance.)

> Because agencies know they are likely to be underfunded, they have a rational incentive to ask for more.

The second distortion created by ex-post financing is the incentive to inflate estimates of loss. Humanitarian response plans (which we discuss in detail below) are a good example: donors react to plans without a commitment to meet the full funding needs. Because agencies know they are likely to be underfunded, they have a rational incentive to ask for more; and because the agency budgets may be inflated, donors have an incentive to underinvest in meeting them. Figure 2-8 highlights a growing gap between *global humanitarian appeals* and funding provided.

Figure 2-8



> "If you received 66 cents on the dollar for every dollar of needs you set out, what would you do?"

In the decade between 2006 and 2015, appeals were, on average, two-thirds funded. While frontline agencies would certainly benefit from more money, we should be skeptical about the precision of the deficit. As one member of the working group put it, "If you received 66 cents on the dollar for every dollar of needs you set out, what would you do?" Put differently, some level of need inflation is the rational consequence of incomplete funding; incomplete funding is a rational

donor reaction to need inflation. [9] Like the solution to the canonical Prisoner's Dilemma, this strategising leaves everyone worse off. This not a moral failing of hardworking humanitarians. Rather, it is symptomatic of a system that privileges response over planning.

This is a specific example of a broader set of strategic problems with ex-post aid. In particular, donors can *free ride* by waiting for others to step in. In 2015, for example, the United States gave more than three times as much as the next largest donor. [10] This is not to say other donors do not give generously. The UK, for example, has met its international commitment of spending 0.7 percent of gross national income on aid, which the United States has yet to do. But it is certainly the case that donors give unequally to disaster response, and give differently for different disasters within the rubric of disaster response. The United Nations' 2017 humanitarian appeal calls for over $22 billion to tackle emergencies and vulnerability in more than 30 countries. Like past appeals, this is an amount that donors are not likely to be willing to pay in full.

Notes

[1] Woo, 2015.

[2] Roache, et al., 2014.

[3] Bailey, 2012.

[4] Ibid.

[5] Kellett and Caravani, 2013.

[6] The Herfindahl-Hirschman Index usually tests whether a small number of firms have too much market power. In this setting, more concentration is "better" because it is closer to a single, unified grant.

[7] Ramachandran and Walz, 2012.

[8] Raschky and Schwindt, 2016.

[9] In the language of the economics of information, this is a stable Nash equilibrium.

[10] United Nations Office for the Coordination of Humanitarian Assistance, 2015.

The Cost of Treating Disasters Like Surprises

Relying on ex-post financing imposes human and financial costs—savings we could have made by responding appropriately and on time. The working group's analysis can be distilled to an intuitive, three-part argument:

1. Responses are more expensive and less effective if funding depends on demonstrating losses.

2. Less effective response costs lives. A growing evidence base confirms that planning and early response is cheaper and saves more lives.

3. Investments in risk reduction drive down the need for disaster aid in the first place, and this saves money and lives in the long run.

We briefly set out below how ex-post funding fails to deliver the benefits of early response, better preparedness, and more resilience.

In the first section, we describe how risk financing for disasters will address this problem by making sure money is provided when and where it is needed—and is not caught up in the collective action problems of donors. Prearranging funding and using concessional insurance makes support predictable and so helps capture the benefits of responding early, planning ahead, and reducing future losses. Moreover, it helps donors cover more risks for the same amount of money, making support better and more efficient.

Early Response Falls between the Cracks

Drought is the obvious example of a slow-onset emergency: shifts in rainfall lead to crop failures that can be anticipated months before malnutrition and, eventually, starvation take hold. As we discuss above, families that are forced to sell valuable assets like livestock are then *permanently* worse off, and so even more vulnerable to future hazards. Children who endure malnutrition suffer lifelong consequences ranging from stunting to lower cognitive ability. [1] Responding early pays off—for example, providing emergency cash transfers to the poorest and most at risk is often both more effective and cheaper than shipping food aid to affected areas after famine takes hold. [2]

> Responding early pays off—for example, providing emergency cash transfers to the poorest and most at risk is often both more effective and cheaper than shipping food aid to affected areas after famine takes hold.

The paucity of early response to droughts is not because the frontline agencies do not know what works. Frontline agencies understand that responding early is cheaper and more effective than responding late, and they know what to do. *Commercial destocking*, for example, describes a strategy of buying livestock before a crisis, at better prices than local markets would pay when a community tries to sell its animals at the same time. This protects a major source of household wealth during droughts. But if financing arrives only when needs are acute, development agencies instead must spend scarce resources *restocking* after crises, rather than saving time and money before the drought's worst effects are felt. [3]

> Early response is smart and feasible—often just not fundable with existing budget lines.

Existing funding instruments are a bad fit for this problem. Pooled funds capitalised by donors and managed by humanitarians that we describe below, like the Common Emergency Relief Fund, are crowded with other urgent and immediate calls on their budgets, and so prioritise rapid-onset crises. Emergency funding is only available at scale when the symptoms of the crisis are at their worst. Indications of malnutrition, for instance, are more likely to trigger funding than crop failures based on meteorological analysis, even though it is the crop failures that lead to malnutrition. Early response is smart and feasible—often just not fundable with existing budget lines.

We Lose the Preparedness Dividend

Estimating the returns from better planning and preparation is difficult. To assert a value of doing business differently, we need a credible *counterfactual*, an alternative statistical history of what would have happened if a different funding arrangement had been in place. Because conducting a controlled study in an emergency setting is hard or unethical (or both), many existing studies are based on quantitative models calibrated to real-world data. These studies return varied but consistently large estimates of the payoff from responding early. For disease outbreaks, for example, according to one cost–benefit calculation, spending $3.4 billion a year on better disease surveillance and response would save $37 billion a year in future pandemics averted. [4]

In humanitarian response, a study that evaluated $5.6 million worth of preparedness investments in three countries—like the building of an airstrip in Chad for $680,000 that would save $5.2 million by eliminating the need to charter helicopters in the rainy season—concluded that the overall portfolio of investments had a benefit–cost ratio of more than two to one, with time savings in terms of faster responses ranging from 2 to 50 days. [5] In drought response, a model-based study has compared response options in Ethiopia and Kenya, ranging from responding late to acting early (for example, by spending money on commercial destocking). It suggests a planned and funded response that could kick in early pays a huge dividend compared to emergency food aid or cash transfers, with savings of over $1.1 billion from destocking alone. [6]

We Lose the Resilience Dividend

We cannot reduce the chance of a hurricane's making landfall, but we can reduce our losses when it does. But tackling these costs tomorrow demands investment today. A distinct yet related consequence of depending on today's ex-post funding arrangements is a systematic underinvestment in resilience.

This is unfortunate, because the returns to such investments are high. One study of the returns to investing in flood defenses in Mexico compared severe events in 2007 and 2010 (after the flood defenses had been completed) and found that investments had a 200 percent payoff in terms of losses avoided. [7]

An important source of these benefits is economic performance better than what might otherwise have been achieved. Another recent study of Mexican data finds municipalities that got insurance payouts grew 2–4 percent faster than those that experienced a hazard but did not benefit from insurance cover. This differential ultimately generated benefit to cost ratios in the range of 1.52 to 2.89. [8] But missing out on such high-return, low-cost opportunities is not limited to low- and middle-income countries. One study of Australian infrastructure concluded that spending money on a package of resilience measures would cut the costs of recovery from predictable natural hazards in half by 2050. [9]

More broadly, increased exposure to future losses also changes our current behaviour in ways that make us worse off. Farmers without crop insurance choose hardier crops instead of more profitable ones, for example. [10] One helpful characterisation of disaster risk points to three interlocking dividends from greater resilience: the direct payoff of lower losses, a development dividend of investments and growth that would not happen if vulnerability were higher (such as reducing the investment drag of disaster risk on sovereign credit ratings, which we discuss above), and co-benefits such as the value of forest cover from trees planted to lower landslide risk. [11]

Unfortunately, investing in resilience is therefore generally unloved and ignored until immediately after hazards become disasters

Unfortunately, investing in resilience is therefore generally unloved and ignored until immediately after hazards become disasters. After a disaster, spending on resilience tends to spike because the costs of underinvestment have been brought into stark relief. Yet our incentives (and donor financing) to invest in reducing those losses generally remain unhelpfully blunted because most aid is only triggered by large, visible losses.

Notes

[1] Ferreira and Schady, 2009.

[2] Overseas Development Institute and Center for Global Development, 2015.

[3] Baudot and Hillier, 2016.

[4] World Bank, 2012.

[5] United Nations Children's Fund (UNICEF), 2015.

[6] Venton et al., 2012.

[7] World Bank, 2014.

[8] De Janvry et al., 2016.

[9] Deloitte Access Economics , 2013.

[10] Gollier and Pratt, 1996.

[11] Tanner et al., 2016.

From Funding to Finance

> Put simply: funding determines outcomes. When funding is unreliable and improvised, response is difficult to plan and deliver.

Put simply: funding determines outcomes. When funding is unreliable and improvised, response is difficult to plan and deliver. How can financial innovation help us do better? The two cases below suggest how to **match financing to planning**. In both, hazards interacted with poverty and vulnerability (such as a dependence on agriculture). Both were severe emergencies. And in both cases, local leaders, foreign governments, multilateral organisations like the World Bank, and frontline NGOs like Save the Children worked to alleviate the symptoms of suffering.

> Innovations in how we finance response delivered more money, more predictably.

But the two cases characterise two different eras in disaster response. In the first, money was mobilised after the hazards hit. That undermined planning and the mounting of a rapid, organised response. In the second, innovations in how we finance response delivered more money, more predictably. In short, these brief examples demonstrate the benefits of **a transition from funding response to financing risk**.

Two Hurricanes in the Caribbean

On Tuesday, September 7, 2004, a tropical storm picked up speed as it travelled across the Atlantic toward Jamaica. Hurricane Ivan made landfall there and in the Cayman Islands on September 11, leaving thousands without shelter—more than 19,000 in Jamaica alone—and causing more than a billion dollars in damage. [1]

The global public sector's response was generous but torturously slow. More than a month after Ivan had hit, the World Bank and the International Monetary Fund organised a presentation of the official damage assessment to alert donors. [2] It mobilised $150 million in loans and $10 million in emergency liquidity for urgent imports like petrol.

Since the insurance facility began operating in 2007, CCRIF has made 22 payouts worth $69 million to 10 member governments, all within two weeks or less of a hazard.

Over a decade later, on August 27, 2015, the center of Hurricane Erika's mass passed just 90 km south of Dominica, causing flooding and landslides that killed at least 20 people and caused destruction valued at nine-tenths of the country's GDP. [3] But unlike the aftermath of Hurricane Ivan, Dominica's most immediate post-disaster financing needs were paid just two weeks later. The $2.4 million payout came from the Caribbean Catastrophe Risk Insurance Facility (CCRIF), a region-wide insurance pool that we discuss in greater detail below. Since the insurance facility began operating in 2007, CCRIF has made 22 payouts worth $69 million to 10 member governments, all within two weeks or less of a hazard.

Two Floods in Malawi

In 2001, heavy rainfall caused flooding that left fields waterlogged in a country in which eight in ten people derive their main income from agriculture. Maize production dropped to just 1.7 million tonnes, a third lower than the previous season. In late 2001, Save the Children, an international NGO, began warning of acute food shortages for nearly half the households in some districts. [4]

Finally, in January 2003—more than a year after large areas of Malawi were affected by malnutrition—the World Bank mobilised a $50 million package of soft loans and grants.

By April 2002, estimates of *excess mortality* suggested that up to 500 people, mainly elderly people and children, had died from hunger and malnutrition. [5] This was probably an underestimate; lists of the deceased collected by NGOs put estimated deaths between 1,000 and 3,000. [6] Finally, in January 2003—more than a year after large areas of Malawi were affected by malnutrition—the World Bank mobilised a $50 million package of soft loans and grants to augment the state coffers.

In 2015, more than 10 years later, much more severe flooding affected 600,000 people and damaged more than 60,000 hectares of cultivated land in Malawi.[7] A *post-disaster needs assessment* indicated total recovery needs at nearly $500 million, far outstripping the government's contingency funds. [8] By April, the United Nations Children's Fund (UNICEF) had reported 400 cases of

cholera, a waterborne disease that spreads quickly during floods and is especially lethal to children. [9] As in 2002, Malawi's government did not have the capacity to deal with damages on this scale—the country's entire 2015 government budget was $1 billion. [10]

After flooding caused large-scale and visible damage, donors ranging from the Bill & Melinda Gates Foundation to the United States responded through a $50 million appeal. [11] But this time, global assistance was supplemented by $80 million in emergency liquidity provided to Malawi's government from the World Bank's Crisis Response Window (CRW), mobilised in five months. [12]

Rapid payouts to Dominica from CCRIF saved time, money, and lives by supporting a faster, better-organised disaster recovery that was, in turn, only possible because financing had been prearranged.

Rapid payouts to Dominica from CCRIF saved time, money, and lives by supporting a faster, better-organised disaster recovery that was, in turn, only possible because financing had been prearranged. Similarly, emergency credit facilitated by the World Bank smoothed Malawi's national budget, without shortchanging assistance, trying to solicit money through an appeal, or making bad tradeoffs with high opportunity costs, like reallocating funds from health or education budgets. Neither model is perfect, but both indicate the right direction of travel, illustrating the benefits of financing risk over unpredictably funding response.

The Landscape of Innovation

A useful framework is to class these novel programmes based on *who is covered* and *who benefits* directly. Large-scale, or *macro*, cover involves national authorities as counterparties; these authorities then use the cover against natural disaster risk to provide protection to vulnerable households. Smaller-scale, or *micro*, contracts either benefit households directly or have households as the counterparties to contracts, as in microinsurance. Table 4-1 sets out the three broad categories with key examples of each.

Table 4-1. Schemes Vary by Counterparty and Who Benefits

		Who is the counterparty?	
		Meso (e.g., NGOs) Macro (e.g., governments)	Micro
Who benefits?	Meso, Macro	**Sovereign insurance** Like CCRIF, PCRAFI, and ARC Cheap credit Such as the World Bank's CRW	
	Micro	**Safety nets** Like Ethiopia's PSNP and Kenya's HSNP	**Microinsurance**

We describe these facilities in greater detail below and explain why none of the working group's four recommended actions involve microinsurance.

Sovereign Risk Pools

The CCRIF pool that paid out to Dominica is a mutual insurance vehicle that holds natural disaster risk from 17 Caribbean countries. It has paid out 22 times for the risks it covers—hurricanes, earthquakes, and heavy rains—for a collective payment value of nearly $70 million. Members of CCRIF pay premiums of $200,000 to $4 million a year for coverage of up to $50 million, reflecting the high level of cover necessary in these relatively economically developed countries.

Like CCRIF, the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) graduated from a pilot programme established with technical assistance from the World Bank and with donor support, primarily from Japan. It, too, collects premiums from Pacific Island Countries' governments that enable it to pay out in response to severe earthquakes or extreme weather events. In 2015, Tonga and Vanuatu both received payouts of roughly $2 million—small in absolute terms, but large relative to their government budgets (Vanuatu's 2014 budget was about $130 million). More importantly, this financing is particularly valuable because the money is paid when tax receipts are likely to contract the most. [13]

> ARC innovates by requiring new members to set up preparedness plans specifying how payouts will be used.

Finally, like the risk pools in the Pacific and the Caribbean, the underlying financial engineering of African Risk Capacity (ARC) involves collecting premiums from its African member states to finance the underlying *captive* insurance company, a term of art for an insurer that is owned and operated by the entities it insures. In its first year, ARC insured Kenya, Mauritania, Niger, and Senegal for up to $30 million per season, varying by deductible ("attachment point") and limit. [14] ARC innovates by requiring new members to set up preparedness plans specifying how pay-outs will be used. An independent body (neither ARC's secretariat nor the insurance company) vets the plans; coverage is only offered if a plan passes muster. [15]

Contingent Credit

The World Bank has innovated by developing a Crisis Response Window (mentioned above) to mobilise concessional lending to a country affected by a disaster faster than the institution's average turnaround time of 14–16 months.

Development progress has a ratchet effect: locking in past gains enables future ones. Recognising that natural disasters imperil this progress, the World Bank has innovated by developing a Crisis Response Window (mentioned above) to mobilise concessional lending to a country affected by a disaster faster than the institution's average turnaround time of 14–16 months. [16] As a result, Malawi's challenge of meeting the costs of flooding in 2015 was partially offset because the government had access to support from the CRW. [17] Since it was set up in 2010, the CRW has financed response in Guinea, Liberia, and Sierra Leone (to deal with commodity price slumps and the effects of Ebola); Malawi (after severe flooding); Nepal (following the 2015 earthquake); and the Solomon Islands, Tuvalu, and Vanuatu (following tropical storms).

Loans and risk pooling help to fix fundamental problems of how to finance disaster response quickly and without fractured budget lines. Moreover, the working group's analysis demonstrates that making assistance more reliable and providing it on a larger scale are both important steps to improving on the existing aid paradigm. But schemes like the CRW and sovereign pools (with the exception of ARC) omit two essential, further innovations.

First, few such programmes tie financing to planning—that is, provide a clear articulation of how financing to governments will *reach* vulnerable households. Second, disbursement is tied to procedures, rather than external triggers. In Malawi's case, a soft loan from the Crisis Response Window was available in May 2015—five months after devastating flooding in January. That is much faster than typical development lending, but it is much slower than necessary to mobilise an effective, early response.

Household Safety Nets

Programmes in Kenya and Ethiopia link these payments to information about expected food shortages, and Kenya's has enrolled households that only get assistance when food insecurity hits.

A final innovation in response lies in tightly linking funding to distribution through *safety nets*. Like their cousins in countries with higher average incomes, safety nets like Ethiopia's Productive Safety Net Programme (PSNP) and Kenya's Household Safety Net Programme (HSNP) move resources from the central government to household budgets. But the programmes in Kenya and Ethiopia link these payments to information about expected food shortages, and Kenya's has enrolled households that only get assistance when food insecurity hits. Thus the term of art for these programmes: *scalable, shock-responsive safety nets*.

Ethiopia's PSNP provides the same core service as the HSNP at a much larger scale, covering more than 7.5 million *chronically food insecure* people—roughly a tenth of the country's population.

The Kenyan government's HSNP provides regular cash transfers to the poorest group of households in Mandera, Marsabit, Turkana, and Wajir, four counties in northern Kenya with a history of vulnerability. During a drought in 2015, the HSNP scaled up between April and October from its business-as-usual target of over 90,000 of the poorest households to fold in more than 110,000 additional households that were newly vulnerable because of food shortages. [18] Ethiopia's PSNP provides the same core service as the HSNP at a much larger scale, covering more than 7.5 million *chronically food insecure* people—roughly a tenth of the country's population. It is financed by the government alongside a consortium of donors and has an annual budget on the order of $350 million.

A closely related but distinct innovation is safety nets that are used only to distribute contingent funding. As discussed above, a common example of the costs of responding late is that pastoralists lose livestock (or have to sell their animals very cheaply) during droughts, creating poverty and vulnerability that continues long after crises end. Kenya's National Agricultural Insurance Program confronts this liability. The national authorities buy insurance coverage from the private sector that is triggered by early indications of drought; payments are distributed directly to farmers and pastoralists through a safety net without the intermediate step of traveling through government accounts. [19]

What About Microinsurance?

> An absence of donor support is not to blame. Analysis of a compendium of risk transfer programmes in developing countries indicates 83 out of 101 such schemes were targeted to individuals.

There are two reasons that the working group does not focus on scaling up microinsurance to improve emergency aid. First, investing in new pilots would not reform existing spending by the global public sector, the key target for the innovations we discuss in this report. Second, it is not clear that microfinance provides a sustainable way to tackle the fundamental problems of disaster aid. An absence of donor support is not to blame. Analysis of a compendium of risk transfer programmes in developing countries indicates 83 out of 101 such schemes were targeted to individuals rather than firms or public authorities. [20] But the verdict so far on microinsurance programmes appears to be that there has been a lot of investment in experimentation, which has not so far provided evidence of sustainability.

> One study in the Indian state of Andhra Pradesh concluded that less than 5 percent of eligible poor households invested in insurance policies.

Many well-intentioned schemes have been stymied by low demand that does not seem related to particular cultural factors or scheme characteristics. One study in the Indian state of Andhra Pradesh concluded that less than 5 percent of eligible poor households invested in insurance policies; [21] take-up in distant Malawi is similarly disappointing. [22] These careful statistical studies corroborate conclusions from a larger evidence base that designing products for poor families is feasible but catalysing sustainable demand remains a fundamental, unsolved challenge.

As a result, there has not been a micro*insurance* revolution on par with the step-level increase in access to micro*credit*. [23] Where schemes have been successful—for example, when donors and households share the premium payments—they remain expensive, on the order of $50 per policy. That puts them out of the reach of the most vulnerable and so displaces, rather than solves, the problem of delivering better public protection.

> Donors will continue to be enthusiastic about investing in microinsurance programmes, and there is optimism that a particular model will be able to scale up.

Donors will continue to be enthusiastic about investing in microinsurance programmes, and there is optimism that a particular model will be able to scale up. The G7 *InsurResilience* initiative seeks to increase access to insurance (including *direct* access, through microinsurance products) to 400 million people, focusing on the very poorest exposed to climate change. These experiments should be welcomed. But because they can price out the poorest and most vulnerable and struggle to mitigate larger, more expensive risks, they are not the model of smarter financing for public response that the working group focuses on here.

Notes

[1] The Economist, 2004.

[2] World Bank, 2009.

[3] World Bank, 2015c.

[4] Taifour, 2002.

[5] Ibid.

[6] Devereux, 2002.

[7] Hallegatte, Bangalore, and Nkoka, 2015.

[8] Global Facility for Disaster Reduction and Recovery (GFDRR), 2015.

[9] United Nations Children's Fund (UNICEF), 2015.

[10] This government's budget includes *budget support* from donors like the European Union.

[11] United Nations Office for the Coordination of Humanitarian Assistance (OCHA), 2015.

[12] World Bank, 2015b.

[13] Mahul et al., 2015.

[14] African Risk Capacity (ARC), 2016.

[15] ARC is exceptional in this respect; for example, anecdotal evidence indicates a CCRIF payout to Haiti for damage caused by Hurricane Matthew was difficult to track and did not fund a clear response plan.

[16] Park and Strand, 2015.

[17] Unlike mutual insurance pools, these payouts are subsidised but zero-sum. Because countries have a total amount they are eligible to borrow from the International Development Association (IDA), mobilising money now through the CRW implies fewer resources to finance development later.

[18] Heltberg et al., 2009.

[19] World Bank, 2015a.

[20] Oramas-Dorta et al., 2012.

[21] Giné et al., 2008.

[22] Giné and Yang, 2009.

[23] Clarke and Dercon, 2015.

Scaling Up Predictable Aid

> The working group's core conclusion is that the scarce resource is predictability.

Because the vast majority of money spent on natural disasters arrives when needs are acute, we dramatically overinvest in tools that respond to crises *after* they become severe. Yet we underinvest in—or simply do not have—tools that finance risk reduction and fast, early, effective response. The working group's core conclusion is that the scarce resource is predictability. To make aid more predictable, we must set out in advance **who** gets **how much** in response to **which** risk. That, in turn, implies two kinds of policy innovations:

- First, **pivot existing budgets** to pre-agree funding
- Second, **transfer additional risks** to the insurance sector

We can capture the dividends of responding predictably, early, and effectively if finance is available when disasters strike—not when donors decide to invest in response plans.

The common thread running from sovereign risk pools like ARC to household safety nets like the PSNP that we detail above is the match between future risks and funding today. Arranging funding in advance by earmarking existing funds and using concessional insurance enables donors, frontline agencies, and governments to capture the benefits of responding early, planning ahead, and reducing future losses. And it provides smarter, more efficient support.

Most Aid Is Unpredictable

> Governments have urgent priorities, like schooling and health care, so building and maintaining reserve budgets carries very high political and social opportunity costs.

The solution is *not* for governments or frontline agencies to develop large disaster slush funds. Holding a large amount of money against future risks is expensive and often not feasible, and it would be inefficient. Agencies struggle to maintain running balances because of constant pressures on them to respond and deliver, and because funding from donors is mainly predicated on single deliverables or actions, not injected into core budgets. Governments have urgent priorities, like schooling and health care, so building and maintaining reserve budgets carries very high political and social opportunity costs. (We return to these points in more detail below .)

Donors step in to address some of the resulting shortfall. It is useful to separate the tools they use based on whether they **tie funding to specific risks** (so enabling planning and rapid disbursement) or are **not agreed** in advance. Table 5-1 summarises this framework, with examples of different donor budget lines in each cell.

Table 5-1. Disaster Aid Tools Vary by Pre-agreement and Financing

	Agreed on in advance *Ex Ante*	Not agreed on in advance *Ex Post*
Transfers risk	CCRIF, PCRAFI, ARC	Appeals, response plans
Smoothes costs	Catastrophe Deferred Drawdown Option	Crisis Response Window

The Crisis Response Window is an important innovation that allows countries to borrow on an accelerated basis from the International Development Association (IDA), the World Bank's soft loan window. But this funding is not attached to specific, predictable risks. As set out above, in 2015 it took Malawi five months to get access to $80 million from the CRW to respond to devastating floods. But this was not a surprise; analysis of aid appeals shows that flooding had triggered response plans in five of the previous fifteen years.

Some costs are, indeed, transferred from local problems to donors through tools like *humanitarian response plans*. But this is a very **imperfect risk transfer**. As noted above, the assistance donors pay out may be well-intentioned, but it is generally not predictable, unified, or explicitly tied to predefined risks. This causes the **underinvestment in planning** that undermines response. There are alternatives to the imperfect risk transfer of ex-post aid. But the vast majority of funding that is not provided through ex-post aid is not *pre-agreed*. This means that we have not explicitly attached a payout to a predictable future risk, thereby undermining, rather than incenting, planning while blunting incentives to invest in disaster risk reduction.

Table 5-2 sums up the various kinds of instruments donors have supported to provide average annual payouts for each of these categories, collapsing detailed descriptions and estimates summarised in Annex A . In short, this is an **allocation problem**; we spend far too much through budget lines that do not enable planning ahead or create incentives for investment in risk reduction. This analysis highlights the simple point that aid overwhelmingly focuses on ex-post response, rather than pre-committing money that could otherwise enable better planning when predictable hazards arrive.

Table 5-2. Aid Treats Disasters Like Surprises

	Estimated average annual payouts, 2010–15	
	Agreed in advance *Ex Ante*	Not agreed in advance *Ex Post*
Transfers risk	$12 million	$2,276 million
Smoothes costs	$271 million	$185 million

Indeed, pre-agreed risk transfer programmes are conspicuous by their absence. *ClimateWise*, the compendium listing such programmes, includes 101 that were active (rather than proposed) at the time it was published. Of these, 40 had some kind of public sector participation from donors. [1] But because support consists mainly of technical advice or initial fixed costs, payments after disasters that can be linked to pre-agreed donor capital—that is, that can be plausibly scored alongside traditional, ex-post aid—are dominated by the sovereign risk pools of ARC, PCRAFI, and CCRIF. Analysing annual reporting from these pools indicates total payouts of roughly $60 million over five years, or about $12 million a year. [2] Some instruments, like the Catastrophe Deferred Drawdown Option discussed in detail in Annex B , do marry pre-agreed financing to predictable risks. But these tools capture a very small share of donor funds. [3]

This foregrounds a simple argument for innovation. Taxpayers in rich countries provide generous support to emergency response. But this effort has been allocated mainly to ad hoc, responsive budget lines, like appeals. Those are precisely the facilities that are not agreed beforehand, and so *by design* cannot match funding to risks.

Missing Instruments in Disaster Finance

Consider the contrast between available disaster budget lines and how we *finance risk* in our own lives. We *retain* the risk of small losses by planning to cover them with money in our current accounts. For rarer, larger losses, we may *smooth* our losses over time by borrowing from our income next month or next year; we might use a credit card. And we cover our largest and rarest losses, like getting sick or coming home to find the basement flooded, by *transferring risk* to insurers through buying home insurance or medical cover.

Table 5-3. Risk Finance Tools

Action	Tool	Effect
Retain	Savings	Move money from our current selves (by not spending it) to our future selves in case something happens.
Smooth	Loan, credit card, overdraft	Move money from our future selves to our current selves because something has happened.
Transfer	Insurance	Helps us transfer losses by socialising them, sharing possible costs with others who are doing the same with us.

The sum of these instruments is greater than the whole. Without savings, even a small loss causes bankruptcy.

The insight is that the sum of these instruments is greater than the whole. Without savings, even a small loss causes bankruptcy. At the other extreme, lacking insurance may mean facing catastrophic losses, like getting very ill without being able to get medical help. Importantly, the choice of how much cover we have and the price we pay for it captures our sense of how big the losses might be relative to our ability to bear them and how likely they are to happen. In the jargon, we manage our *contingent liabilities*—risks that might or might not materialise—using tools ranging from a savings account to support from our friends and families to an insurer willing to bear some of our risk in exchange for a premium.

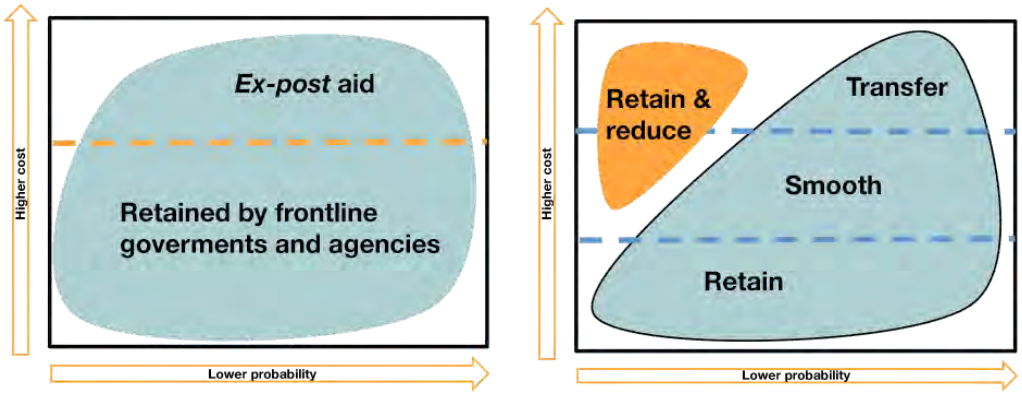
Most aid does not work like this. Because disaster funding is mainly reactive and mainly invested in emergency grants, the vast majority of expected losses are held (*retained*) by vulnerable families, local authorities, and frontline agencies.

Most aid does not work like this. Because disaster funding is mainly reactive and mainly invested in emergency grants, the vast majority of expected losses are held (*retained*) by vulnerable families, local authorities, and frontline agencies. When a risk is realised, frontline agencies and governments often must depend on their own budgets. For agencies, that means spending out of inter-

nal, unrestricted funds, to the extent that these exist; for governments, it means deploying resources from a reserve budget, reallocating money from other budget lines, or borrowing from international lenders.

We set out a highly stylised view of this situation in Figure 5-1. Each axis separates the cost of losses from the chance (probability) they will occur and shows a notional risk layering approach to dealing with these future liabilities.

Figure 5-1. Stylised View of Funding Risk versus Risk Financing



The rightmost figure summarises how we might apportion risk if governments and agencies had access to more tools, such as credit lines that provide liquidity when disasters are likely to happen (like signs of drought pointing to imminent hunger) or happen quickly (like the immediate aftereffects of a violent storm). The tools we use to finance response should correspond to the frequency and severity of the risks we confront. Events that are expensive but common are not rare and so are best tackled by investing in resilience, effectively *retaining* and *reducing* them. Risks that are either relatively cheap to deal with or relatively common, on the other hand, are a good fit for set-asides (in the case of agencies) or reserves (for governments).

Actuarial science combines frequency and severity—the axes of the stylised diagrams above—into a single metric to summarise how often we would expect to see a loss at least as large as some given amount. A "1 in 100" storm, for example, has a 1 percent chance of happening in any given year. [4] Table 5-4 sets out one solution to *layering* such risks for a notional government and set of liabilities. It clarifies the point that savings, set-asides, and reserves are tools that should be deployed against only the most frequent risks, like the "1 in 1" risks we expect to observe once a year.

Table 5-4. Match Risk Finance Tools to Frequency of Events

Frequency (max)	Agreed in advance *Ex Ante*	Not agreed in advance *Ex Post*
"1 in 20" or 5%	Budgetary reserves, set-asides	Emergency reallocation
"1 in 30" or 3.3%	Pre-agreed loans	Emergency loans
"1 in 100" or 1%	Insurance	Aid from donors

Note: Adapted from Clarke and Dercon, 2016.

The general point is that if we are able to develop a clear-eyed view of future potential losses, then developing a *risk financing strategy* —a set of financial tools that provides the most efficient way to confront these losses—is largely a solved problem. Specifically, by combining information about potential losses with data on what the cost of borrowing would be for contingent credit and the size of potential reserve fund (for governments) or set-asides (for agencies), we can set out the cheapest combination of risk finance tools that would meet the range of future costs. [5]

> The challenge is to cultivate the political will to treat disasters as manifestations of risk, rather than surprises, and so to acknowledge that we should spend resources today to finance them tomorrow.

The challenge is to cultivate the political will to treat disasters as manifestations of risk, rather than surprises, and so to acknowledge that we should spend resources today to finance them to-morrow. This is a nuanced point: there is no *single* correct set of dividing lines between layers of risk (the blue lines of our stylised diagram above) and so no *single* best mixture of tools to layer and finance different layers of risk. (Annex B provides intuition for the specific role of insurance contracts in disaster aid.)

The African Risk Capacity provides a useful example. As set out above , the mutual insurance pool is contracted to pay out to member governments based on objective measures, like wind speed for the violence of storms and rainfall for the potential risk of drought. [6] ARC's contract pays out against "1 in 5" risks; it is designed to confront hazards with a one-in-five chance that an event will be violent enough to trigger the contract in a given year.

This is a relatively expensive way to protect frontline governments: the price of insurance is linked to the probability of payouts, plus a margin for insurers to hold money against that risk and various transaction costs. So insuring against risks that are larger or happen more frequently, or both, is more expensive: in our own lives, we are insured against large and rare losses, like home fires, but not against minor and frequent costs, like mildly burning our fingers when we cook breakfast.

But that financing strategy might be politically impossible, because ARC's members—countries like Malawi and Niger—struggle to make a political case for paying premiums with long gaps between payouts. Taxpayers would grow frustrated at seeing a cost centre that "never" pays off, and governments would have to pay premiums for a payout that would be most likely benefit a future administration. That would be the case *by design* for insurance against rarer risks, like a "1 in 100" flood that has a 1 percent chance of being triggered in any given year.

Notes

[1] Authors' calculations based on Oramas-Dorta et al., 2012.

[2] Data on payouts from CCRIF, Caribbean Catastrophe Risk Insurance Facility (CCRIF) SPC, 2015; African Risk Capacity (ARC), 2015; World Bank, 2016.

[3] Moreover, the so-called Cat DDO lends on less attractive terms to fewer, richer countries than the Crisis Response Window.

[4] This does not mean we have only a 1 percent chance of observing losses this size in the next hundred years, or that if the storm happens once it will not happen again for a hundred years, because the odds are for observing the storm in *any given* year. So the chance we will see a "1 in 100" storm once in, say, 70 years is quite high—roughly 50 percent, equivalent to whether a fair coin toss comes up heads.

[5] Clarke et al., 2016.

[6] ARC's contract also includes two *nonparametric* terms: the government that would receive the payout needs to invoke it, and, as we discuss in the main text, it must have a preparedness plan in place, setting out what it will do with the payout.

The Benefits of Predictability

> Agencies and governments find it difficult to keep money *on budget* because *something is always urgent.*

There is a tradeoff here. Pre-agreeing payouts reduces donors' freedom to act, and participating in insurance contracts creates a legal obligation on the part of participants to pay premiums (or lose cover). Because they are a principal source of funding, the working group considered what benefits donors would get in return for this loss of discretion. Moving from funding to pre-agreed payouts carries three advantages that are good for both frontline governments and agencies, and also benefit donors:

> Agencies and governments find it politically and practically difficult to keep money *on budget* because *something is always urgent.*

- **Speed:** Contracts tie disbursement to clear indicators of need, so money arrives when it is needed and is not tied up in political wrangling or bureaucratic procedure.

- **Discipline:** Agencies and governments find it politically and practically difficult to keep money *on budget* because *something is always urgent*; pre-agreed funding and insurance contracts keep money on call but *off budget*.

- **Coordination** : Both pre-agreement and risk transfer create platforms for donors to pool resources, and they provide more unified grants, in contrasts to the inefficient and expensive fragmentation of most ex-post aid.

Risk transfer to the insurance sector confers three additional benefits beyond pre-agreeing conditions that trigger spending of existing donor funds:

- **Leverage:** Paying insurance premiums frees up funding for other priorities, just as our home insurance payments let us spend more today than if we had to save (*self-insure)* against the chance of fire, flood, or burglary.

- **Risk management:** Rather than allowing donors to write dubious contingent contracts that then require the public sector expertly to hold a portfolio of risk, we can pay the insurance industry to do this for us (and so benefit from the regulatory requirement that it be resilient against even rare and expensive risks).

- **Capital depth:** The insurance sector can underwrite much larger, more expensive potential losses than donors can.

We set out each of these points below.

Speed

Haiti's experience with insurance is rarely discussed, but it makes a useful counterpoint to its experience of donor-led funding. As related above , in 2007 the World Bank worked with regional governments to establish CCRIF, a common insurance pool for Caribbean countries. The scheme combined core capital from the Bank with premium payments from the countries themselves that were initially subsidised by donors. Haiti's $8 million payout from CCRIF was available just 19 hours after the 2010 earthquake struck—a faster reaction than that of the IMF, the US government, or the World Bank itself. [1]

> Designing contracts against clear triggers enables governments and agencies to tackle emergencies when resources are needed, rather than when losses become serious (or visible) enough to trigger aid.

This is a general point: designing contracts against clear triggers enables governments and agencies to tackle emergencies when resources are needed, rather than when losses become serious (or visible) enough to trigger aid. In addition to paying out quickly and reliably, contracts beat commitments because they can be tailored to deliver finance before needs are at their greatest.

In 2005, the World Food Programme implemented a pilot program in Ethiopia to buy an insurance contract from Axa Re that paid out when the Ethiopia Drought Index (based on readings from 26 weather stations) showed that a localised drought was likely. [2] Looking ahead, scaling up such parametric insurance and pushing resulting payouts to households through the Productive Safety Net Programme , the country's national safety net, would match financing to purpose in a way that donor funding has generally not done.

The speed of payouts arising from clear contracting is a double-edged sword. In some cases, the conditions governing payouts might not be met, so payouts do not arrive even when the situation on the ground clearly merits them (conversely, they might arrive when they are not needed). This so-called *basis risk* cannot be ignored—but can be managed. We discuss it further below .

Self-Discipline

In November 2008, disgruntled government workers burned Andrès Velasco, then Chile's minister of finance, in the streets of Santiago. That it was an effigy of him gave Dr. Velasco modest comfort. Protestors targeted him because the government he served as minister of finance, led by President Michelle Bachelet, was wildly unpopular. It was saving a large share of record-high earnings from copper, Chile's main commodity export, instead of using the windfall to ramp up social spending. At its peak, the rainy day fund was nearly a third of GDP—a self-insurance policy.

Copper prices collapsed after the start of the 2008 financial crisis, sending Chile's economy into a tailspin; unemployment shot past 10 percent. Bachelet's government was able to use the saved export receipts to raise government spending to offset the worst effects of the crash in a textbook example of countercyclical fiscal policy. By the end of Bachelet's term, she and Velasco enjoyed the highest approval ratings of any leader or minister since Chile's return to democracy.

> Holding money and refusing to spend it is hugely politically challenging.

The general point is that holding money and refusing to spend it is hugely politically challenging. Insurance contracts and pre-agreements about donor funding—rather than self-insurance—dramatically alleviate this political pressure. They create a commitment or a stream of payments to a third party instead of a large, tempting contingency fund. This is not a question of whether the money could be misspent because it is available on budget (although that is a possibility). Instead, it is a reasonable view of the politics of budget management.

> One study of risk management in El Salvador, for example, calculated that filling the national reserve fund would take more than 20 years.

Contingency budgets also have practical problems. Governments and agencies would struggle to fill these funds. One study of risk management in El Salvador, for example, calculated that filling the national reserve fund would take more than 20 years. [3] If a disaster strikes before an emergency budget is capitalised, this layer of risk management fails before it is even tested. [4]

Coordination

Migrating a larger share of future aid costs to contracts combats the fragmentation that gums up ex-post aid. Pre-agreed funding would inject a single, larger grant to support a unified response plan. By definition, this increases the concentration of donor assistance, as compared to the current approach of funding many smaller projects.

These benefits also accrue to risk transfer agreements. Having only a single premium and a single payout per contract focuses donor assistance. And agreements and formal contracts both enable donors and governments to pool funding by allowing multiple donors to support the same concessional insurance contract or pre-agreed grant tied to future risks. That lowers the transaction costs of response for both donors and their partner frontline governments or agencies.

Leverage

Consider a donor that expects to confront losses of a notional $100 to respond to a possible hurricane, on top of the amount it could reliably meet through its own core budget and other resources. It could deal with this *contingent liability* by keeping the full amount on its budget. But that incurs the costs we discuss above : money stored on a budget is a tempting target for other priorities, potentially leaving response underfunded if the drought does arrive. If the risk is not realized, a donor incurs an opportunity cost—urgent development work that was not financed because money was being held against a risk that did not materialise.

Compare this to using a contract to transfer the risk. If there were a one in ten chance of a drought happening during the year, then the *actuarially fair* price for $100 worth of cover would be $10. That is much less than the $100 the donor would have to budget against the potential loss if the same amount of cover were kept "on budget."

So a direct consequence of investing in insurance to cover these liabilities is that the same pool of donor money can be *leveraged* to cover more potential losses. And, as set out above, the donor could plan its response more effectively because it had clear commitments to pay pre-agreed amounts of money in response to specific crises.

The insurance sector has developed highly sophisticated risk modeling to do its work—and to avoid bankruptcy. Donors do not have this expertise and will struggle to replicate it.

Rather than paying a premium for risk transfer ($10 in the example above) or contracting for payouts from existing windows, donors might keep $10 on their budgets to fully cover the 10 percent chance of confronting $100 in losses. Why, then, pay for risk transfer at all? There are two problems with not doing so: the global public sector's lack of **models** and **expertise**. The insurance sector has developed highly sophisticated risk modeling to do its work—and to avoid bankruptcy. Donors do not have this expertise and will struggle to replicate it.

Some donors have added *crisis modifiers* to their sets of internal budget instruments. [5] When USAID delivers a wider development programme in the Sahel, it might include a modifier to allow more funding to come online when a predictable risk like a drought materialises. [6] This approach is a positive, but limited, step. In this setting, USAID is effectively pre-committing to protect its own programme. But the approach still requires donors to estimate correctly the amount of additional funding the programme will need because the level of risk has to be estimated. Once again, an overestimate means money is not used and so incurs opportunity costs—work that could have been done with this budget. An underestimate means response is insufficient.

Even if donors were able to develop capital management and risk modeling skills, these supposedly clear rules might be difficult to adhere to. Anecdotal evidence suggests at least one major donor agency has not triggered modifiers because money had already been spent. [7] Contracts discourage this behaviour by guaranteeing payouts in response to triggers and creating a cost (a legal liability) to not delivering it if the trigger conditions are breached. Moreover, modifiers are generally tied to perceptions of losses or future losses, instead of specific, measurable triggers, making payouts both slower and less predictable.

This would recreate in donor budgets the problems of underfunded or delayed response that risk transfer and pre-agreement should solve.

Put differently, in trying to solve the problem of how much to budget against risks they face, donors, governments, and frontline agencies create a new risk—that of getting it wrong. This would recreate in donor budgets the problems of underfunded or delayed response that risk

transfer and pre-agreement should solve. There is no theoretical reason why the global public sector could not manage calls on capital as effectively as it would achieve by paying insurers for risk transfer. But it is highly unlikely donors could develop the necessary human and financial resources to do it well.

> Calculating vulnerability turns disaster risk and planning from a logistical exercise into a matter of national fiscal and economic health.

The working group highlighted an important positive externality of modeling underlying risks. Doing so often provides a novel—and generally unique—forum for joined up thinking on disaster response in agencies and national governments. As one working group member put it, meetings to discuss risk profiles and insurance purchases usually represent the first time disaster management officials discuss response on an equal footing with ministries of finance and treasuries. Calculating vulnerability turns disaster risk and planning from a logistical exercise into a matter of national fiscal and economic health.

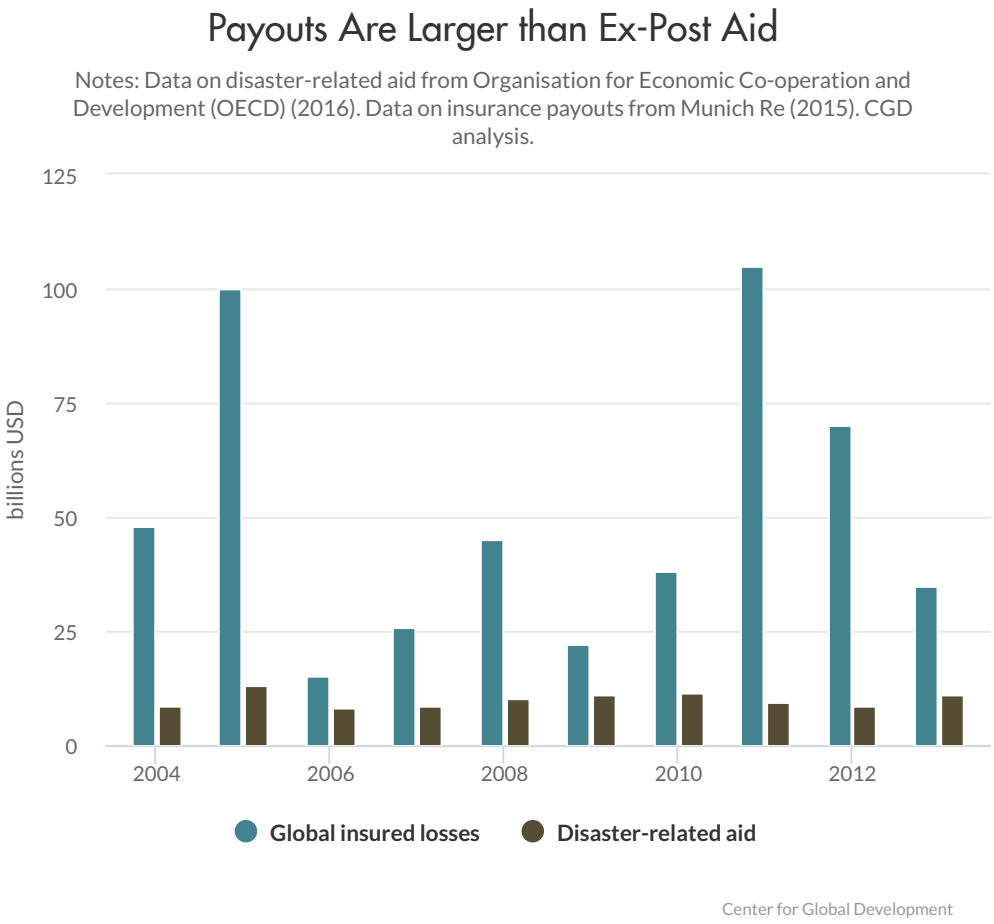
Capital Depth

A related but distinct argument in favour of combining pre-agreement for existing funding with risk transfer is that the insurance industry can underwrite much more expensive losses than aid budgets can. [8] The value of connecting insurance needs in emerging markets with capital in industrialised countries is enormous.

> $13.8 billion was the *least* conservative measure of disaster-related aid in 2010. That year, the insurance industry covered insured losses of $38 billion.

Based on analysis presented earlier , $13.8 billion was the *least* conservative measure of disaster-related aid in 2010. That year, the insurance industry covered insured losses of $38 billion; the next year, it covered losses of $105 billion. [9] Mainly due to flooding in Thailand, 2011 was certainly a rare and expensive year, but it was one the industry absorbed because of the specific regulatory requirement to be resilient to rare and expensive events.

Figure 6-1



Average annual losses from natural disasters have been $190 billion a year since 2005, but the modern insurance industry has evolved to cover more than $300 billion in catastrophe risks globally. [10] The potential costs of some of these risks would overrun even the insurance industry's capacity. Index-linked securities, including catastrophe bonds, are a relatively recent innovation that enables those risks to be transferred from the insurance industry to global capital markets, an effectively bottomless pool of capital with over $280 trillion in assets.

Notes

[1] Roodman, 2010.

[2] Field, 2012.

[3] Mechler, 2004.

[4] A possibility we do not explore here is regional pooling of reserve funds to overcome some of these problems. Examples include the Latin American International Reserve Fund (FLAR) and the Chiang Mai Initiative (CMI) in East Asia. See International Monetary Fund (IMF), 2016, for a useful discussion.

[5] Feinstein International Center, 2016.

[6] An important distinction is that funding from modifiers is typically pre-assigned (but not

guaranteed). This is a bug, not a feature. Since funding is not guaranteed in response to clear criteria like drought warnings, modifiers do not create the certainty that agencies and other partners need to plan a response. As a result, modifiers effectively reinvent many of the same problems that undermine unpredictable, ex-post aid.

[7] Private conversation with senior representatives of a major, US-domiciled NGO which asked not to be named with respect to this point because they work closely with USAID.

[8] This is a nuanced argument. In theory, donors could underwrite much greater amounts of risk by ramping up their foreign aid budgets. But increasing total foreign aid spending is much more politically costly (and so less likely) than leveraging existing aid allocations to make them more efficient and more effective, as we discuss here.

[9] Munich Re, 2015.

[10] McKinsey & Company, 2013.

Design Principles

We face a clear challenge: how to match financing to purpose so that hazards do not become disasters. The proposition is not to replace all ex-post aid with rules and insurance contracts. Instead, it is to save money, save time, and save lives in those emergencies that are the most predictable in advance, and so are *contingent liabilities* that we are best placed to manage today.

> The proposition is not to replace all ex-post aid with rules and insurance contracts; it is to save money, time, and lives in the emergencies that are the most predictable.

This creates **design choices in risk finance**. Should a donor agree to finance future response by frontline organisations and then insure its own balance sheet? Should agencies apply for donor support to take out their own insurance contracts, with premiums supported by donors? Should national governments work with the global public sector to set up new regional or national mutual insurance companies or captive insurance vehicles, populating the landscape with new variants of CCRIF, PCRAFI, or ARC?

There is no simple answer to these questions because there is no single model for better risk transfer. Instead, we face a variety of political, financial, and technical constraints that lead to different implementations of better risk management. The working group concluded that we need a simple framework to inform collaboration among the public sector, civil society, and the private sector rather than a binding target. The group articulated three relevant principles:

1. riskThinking—Price It

> A necessary condition for smarter risk finance is that donors, frontline agencies, and vulnerable countries price their contingent liabilities.

The global public sector's central frustration is a reliance on budget lines that only pay out when a disaster hits, irrespective of the extent to which disasters are predictable. The first step to smarter layering of risks—determining which levels of losses we want to manage, and how—is confronting expected future costs. As in our own lives, nobody wants to invest in risk finance in general and insurance in particular until we are forced to evaluate the risks we face. So a necessary condition for smarter risk finance is that donors, frontline agencies, and vulnerable countries **price their contingent liabilities**.

> If the risk of disaster were made explicit, we would have to make our risk financing solutions explicit.

Donors already have a clear commitment to respond to humanitarian emergencies. If the risk were made explicit, we would have to make our risk financing solutions explicit. The World Bank's Crisis Response Window, for example, does not claim to *hold* weather risk—but it does pay out for weather events, like its $50 million commitment to Vanuatu following Cyclone Pam. [1]

As a result, donor governments and international institutions effectively hold these risks. Acknowledging this explicitly will be a big, but important, step forward. Adopting *riskThinking* means acknowledging the frequency and cost of these future hazards so we can develop a shared a plan to meet those costs. That plan, in turn, should use a broader set of risk finance tools than just relying on ex-post aid or reserves, like set-asides for agencies or contingency budgets for governments.

2. riskPrinciples—Layer It

Having clear information about future losses is only the first step in managing risk effectively. The next is to tie future disbursement to clear rules: rather than waiting for a hazard to develop, adopting *riskPrinciples* means setting out in advance **who owns the risk**.

> Adopting *riskPrinciples* means setting out in advance who owns the risk.

In the stylised diagram of figure 5-1 above , this means setting out where each of the dashed lines should be. For a notional $100 in expected losses, the first $60 might be owned by local authorities, a further $20 by lenders with whom the authorities have a conditional loan agreement (such as a Cat DDO) in place, and the final $20 by the insurance sector, which agrees to hold this risk in exchange for a premium.

In confronting drought risks in the Horn of Africa, for example, the government of Ethiopia's immediate budget would include a reserve fund to pay into its national Productive Safety Net Programme. For a sufficiently severe drought, it might include some contingent credit arrangements to provide emergency loans to cover a larger response. And it might include some layer of risk that is transferred to insurers in exchange for premium payments that could be financed by both Ethiopian taxpayers and donors—to the benefit of both. [2]

3. riskPractice—Manage It

> Considering how much risk to *transfer* is therefore a fundamental consequence of determining the total potential loss and apportioning it out.

Considering how much risk to *transfer* is therefore a fundamental consequence of determining the total potential loss and apportioning it out. But there is no single solution for agencies or state governments. The government of Vanuatu faces different incentives and constraints than the government of the Cook Islands. Retaining money in a reserve fund may be more politically expensive, or obtaining contingent credit arrangements may be more difficult. Because the share of a notional $100 in expected losses that a government can retain varies, so will the amount it will transfer.

> There is no single solution for agencies or state governments. The government of Vanuatu faces different incentives and constraints than the government of the Cook Islands.

As a result, there is no single, optimal amount of risk transfer for every situation; any amount of risk can be transferred for a price. Instead, the working group's conclusion is that we must invest in more and different ways of managing risk, and that one element of this will be risk transfer through formal agreements with the insurance sector and schemes like ARC. The size of each layer of risk—what is retained, and how the rest is managed—reflects idiosyncratic political and financial constraints.

> The size of each layer of risk—what is retained, and how the rest is managed—reflects idiosyncratic political and financial constraints.

Captives or Contracts?

All three sovereign risk pools—ARC, PCRAFI, and CCRIF—that we discuss above were developed with donor support (and with valuable technical assistance, including from the World Bank). All three are either mutual insurance companies or so-called *captive* insurers that are owned and operated by the insured—in this case, member governments. In some cases, they re-

ceived concessionary capital from donors, because an insurer needs a layer of founding capital to enter into contingent contracts. ARC, for example, was set up with €35 million from Germany's KfW and £30 million from the UK's Department for International Development (DFID). [3]

Setting up regional risk pools in the form of captive or mutual insurers creates many benefits for both donors and governments. It ensures local ownership and expertise and builds strong local institutions around risk management. It is also expensive; capital provided by donors needs to be "locked away" for a long time. In ARC's case, donor capital will be returned in 2034, at the earliest. [4] Indeed, CCRIF and PCRAFI *also* received funding that lowered the price of premiums to make these schemes more concessional to participating governments. Of the five governments participating in the Pacific, only the Cook Islands has paid its own way without assistance (principally from the government of Japan). ARC's premiums, in contrast, have been kept relatively low to purchasing countries through donor support to its capital base.

The working group concluded that transferring a much larger share of the predictable risks that vulnerable countries face cannot depend only on setting up technically complex and capital-intensive local risk pools. Instead, we must become more comfortable with risk transfer through contracts to the insurance sector.

By building reasonable expectations into these contracts, all three actors can get the benefits of risk transfer without having to incur the long-term costs. Moreover, doing so would increase the size and range of risks for which donors could arrange funding in advance, lower the transaction costs of providing such pre-agreement, and take advantage of the insurance sector's capital base (and risk management requirements). And it would do this without requiring donors and front-line governments to lock away large volumes of funding for a long time. We turn to these and related considerations in the next section.

Notes

[1] Global Facility for Disaster Reduction and Recovery (GFDRR), 2016.

[2] Clarke and Dercon, 2016.

[3] African Risk Capacity (ARC), 2014.

[4] Ibid.

Making Risk Finance Work

It is important to be explicit about the many side benefits these agreements help to create. Below, we set out four important further considerations for agencies and governments that want to develop risk finance strategies. Our focus is on policy and political considerations that will help donor agencies and governments deliver on this agenda. The agenda calls for donors to exchange more certainty about funding for better investments in frontline **planning and resilience**; address concerns about **moral hazard** head on; deal with the perceived **political risk** of paying for risk transfer; and take advantage of new **global consensus**.

Match Plans to Finance

Financial support for risk transfer and pre-agreed lending creates an entry point for smarter investments in planning and resilience. ARC's core innovation is to require member governments to have an externally vetted preparedness plan before they are eligible for coverage and as a requirement for getting paid if a hazard arrives. Generally, risk financing agreements, either from existing capital or through risk transfer, should clearly set out the following:

- A trigger
- A subsidy regime to make the premium cheaper
- A plan for **who** will get **how much** to do **what** if the trigger is breached
- A link between the premium and investments in risk mitigation
- Grants or financing from donors for investments in resilience

A notional contract for Bangladesh, for example, might insure the country against significant losses from flooding—a risk exacerbated by climate change. The government of Bangladesh, possibly with technical assistance delivered through the World Bank or other centres of technical capacity, might identify the level of coverage it requires and the priority investments required to limit losses. The innovation lies in linking payments to subsidies that require agencies and countries to demonstrate such investments in planning and resilience.

> Crucially, it would connect the cost of subsidies and the level of cover (and so payouts) to the government's own actions and its investments in mitigating risk.

The resulting contract would be signed trilaterally among a donor or multilateral agency, the government of Bangladesh, and an insurance provider. It would set out the level of coverage, the parametric trigger, and the donor's level of subsidy for the concessional insurance. Crucially, it would connect the cost of subsidies and the level of cover (and so payouts) to the government's own actions and its investments in mitigating risk of flooding. Finally, this contract would set out the amount and degree of concessionality of any donor funding for the fixed costs of Bangladesh's investments in resilience. And it would potentially be able to be scaled up (by increasing the amount covered) and across (by increasing the number of risks covered).

The working group identified two important nuances. First, the local public sector and civil society, together with international frontline agencies, are all valid partners. Planning attached to funding is a basis for collaboration, including civil society in planning and implementing plans in partnership with civil society. Analysis of disaster response in Haiti after the 2010 earthquake highlights the perils of getting this wrong. Assistance was often mismatched to needs because civil society was not included in planning meetings. This led to expensive glitches, like aid delivery being cancelled due to "insecurity" when the situation on the ground was peaceful, [1] or international rescue teams heavily focusing in some areas of Port-au-Prince while totally neglecting others.[2]

Second, planning must enable flexibility. Disaster response is often fluid, with new needs arising from a complex interaction of natural risk and human factors. Contracting for specific inputs in planning (and holding agencies and governments to account) without enabling iteration and agility would replicate, in a new format, many of the problems of fractured ex-post aid.

Confront Moral Hazard

The *Peltzman effect* refers to a finding first reported in 1975 that seatbelt laws have the counterintuitive effect of increasing injuries. The theorised mechanism is that reducing the "cost" of crashing encourages riskier behaviour. [3] How could we mitigate this shift in risk-return calculus? The so-called *Tullock spike* answers this with a Swiftian thought experiment: put a sharp spike in the middle of the steering column. [4] That would make drivers think much more carefully about speeding.

A concern about any kind of facility that offsets the costs of risk is that it increases the amount of risk we are willing to tolerate. Economists refer to this as *moral hazard*, a term of art for the possibility that better coverage might lead to worse outcomes by subsidising riskier behaviour. Consider an improved model of disaster financing in which governments and agencies benefit from predictable and pre-agreed financing. This would help them to reap the reward of preparing for future disasters—for example, through the investments in scalable, shock-responsive safety nets, which we discuss above . And it would enable agencies like Oxfam, Save the Children, or International Rescue Committee to respond more effectively to, say, a drought by funding commercial destocking and other measures early enough to offset risks of food insecurity.

> It is naïve to believe moral hazard is not a reasonable thing to worry about.

Could this work exacerbate the risk of moral hazard, making the government spend less on resilience or encouraging a frontline agency like the World Food Programme to allocate less money to preparation, like pre-positioning supplies? It is naïve to believe moral hazard is not a reasonable thing to worry about. There is no facile and politically expedient tradeoff between buying treated bednets to combat malaria at a cost of about $400 per infant life saved or investing that money in, say, better surveillance to catch the next zoonotic disease outbreak. Having more reliable financing in place to support response could well lead to underinvestment in prevention.

> Having more reliable financing in place to support response could well lead to underinvestment in prevention.

Insurance markets deal with moral hazard by offering different prices for insurance and different *deductibles* (the amount of the loss borne by the insured). Safer drivers get cheaper insurance; installing better security lowers the price of home insurance. Risk transfer supported by donors would function like this. Better resilience would be rewarded through lower coverage requirements and, so, lower overheads for premiums. [5] These incentives may be blunted if donors provide concessional insurance—in that case, moral hazard could offset the benefits of greater certainty. (This concern is lessened as agencies and governments invest in risk transfer themselves, with partial financial support from donors.)

> By requiring investments in resilience and preparedness as a condition of supporting better risk finance, donors can collaborate with governments and frontline agencies in a way that *both* lowers moral hazard and improves response.

The working group set out two points that will mitigate this concern. By requiring investments in resilience and preparedness as a condition of supporting better risk finance, donors can collaborate with governments and frontline agencies in a way that *both* lowers moral hazard and improves response. Existing sovereign risk pools already do this. To be a member of the African Risk Capacity, for example, a government must have an externally vetted preparedness plan for how it will spend the insurance payout and be subject to post-payout audits to make sure the money has been spent effectively. [6]

> The existing model also creates moral hazard, but both less effective and more expensive.

Moreover, as we set out above , the existing, mainly response-based aid regime *already* engenders moral hazard. The global public sector has systematically underinvested in resilience, for example. In part, this is because money is available for responding to disasters, so we under-prioritise investing in preventing them. Studies of correlations between aid and under-resilience certainly suggest the data fit the theory: for poor countries, past total aid flows can crowd recipients' incentives to invest in resilience, and this effect is magnified by the lack of democratic accountability. [7] So the existing model also creates moral hazard, but is both less effective and more expensive.

Deal With Political Risk

Transferring risks rather than underwriting them with donors' own budgets triggers a further set of strategic concerns. Pre-agreement and concessional insurance are only credible—and so only useful—if donors forsake some of the flexibility and political leverage that come with discretionary funding. Even though the benefits of better response enabled by predictability would seem to outweigh this political cost, we should not assume it does not matter for donors.

> A standard aid programme could be frozen and staff pulled out in response. But an insurance contract might still be enforced.

Imagine if Sida, Sweden's aid agency, supported concessional insurance for a contract that would benefit a government that began to undermine human rights and imprison dissidents after a contested election. A standard aid programme could be frozen and staff pulled out in response. But an insurance contract might still be enforced, benefiting the odious regime. That could make for an uncomfortable grilling in the Riksdag for Sweden's international development minister.

The working group developed two salient points to respond to this potential problem. First, as with *moral hazard*, we should acknowledge that the risk of supporting controversial and ill-behaved governments attaches not only to more predictable assistance for disasters, but to *any* international development programme. As Paul Rosenstein-Rodin, a past deputy director of the World Bank, memorably put it, "When the World Bank thinks it is financing an electric power station, it is really financing a brothel." That was in 1947. [8] This does not mean we should be less careful about the design of risk finance arrangements. But it contextualises the concern that smarter risk finance for disasters is somehow idiosyncratically dangerous.

> "When the World Bank thinks it is financing an electric power station, it is really financing a brothel."

Second, pre-agreeing funding and transferring risk to insurers provide a clear, mutually beneficial, and *credible* way to require good governance standards. These terms could be written into the agreements, with light-touch monitoring. If countries or agencies renege on this deal, the contract is voided, and donors will not be liable for premiums—and the agencies or partner government in violation lose the benefits of cover.

Requirements would have to be transparent, mutually agreed, and minimal. Long experience in development (and explicit agreements between donors and partner countries made in Paris in 2005 and Busan in 2011) points away from imposing *conditionality*, in which donor requirements become so patronising or onerous that partner governments and agencies cannot operate effectively. And we must be explicit: innovations to deliver better protection to the poorest and most at risk often require a benign political environment—something that cannot be taken for granted, particularly in fragile and conflict-affected countries.

> A fundamental failing of existing aid arrangements has been the negotiation with donors in times of need, which undermines partner governments' dignity and legitimacy.

As Ato Sufian Ahmed, previously a long-serving minister of finance for the government of Ethiopia, reminded the working group, a fundamental failing of existing aid arrangements has been the negotiation with donors in times of need, which undermines partner governments' dignity and legitimacy. A contract to deliver funding, in contrast, holds donors, agencies, and partner governments all equally to account. That conforms more closely with the principle, agreed in Paris, of *mutual accountability*. It helps address donors' concerns that pre-commitment means they will end up supporting odious regimes. And it does so in a way that many current funding tools cannot. [9]

Acknowledge Basis Risk

Making aid more predictable by attaching financing to clear conditions for disbursement has many benefits. But an important caveat to making payouts contingent on these triggers is that, in some cases, a contract may be activated even when a situation does not merit a payout, or that a payout may not arrive when needed because a trigger has not formally been breached.

Basis risk is the term of art for this mismatch between the triggers on which contracts are designed and the situations that payouts from those contracts are meant to tackle. A low-intensity storm might not trigger a payout, for example, but it could damage a weakened sea wall and cause flooding. In that case, losses will be high without being covered by the insurance policy. (Annex B sets out the links between types of contracts and the level of basis risk in greater detail.)

This is not a theoretical possibility. In 2016, ARC, the sovereign risk pools in sub-Saharan Africa, experienced a large mismatch between its modeled loss and actual reported losses. Joint assessments pointed to more than 6 million people needing aid, but ARC's model calculated just 21,000. [10] Similarly, the Solomon Islands dropped out of PCRAFI, the Pacific cousin to ARC, in 2014 after experiencing two violent storms without seeing a payout. [11]

Thoughtful design for triggers and contracts will limit basis risk but cannot eliminate it. We must be particularly alive to this risk as we graduate from ex-post aid to predictable, pre-agreed finance. Most importantly, the proposition is not to develop risk finance strategies to eliminate basis risk; that is not realistic. Instead, it is to lower overall costs through a shift to more predictable emergency aid, thereby liberating donor funding to deal with basis risk and uninsurable costs. Put differently, governments, agencies, and donors currently treat all risks as if they were basis risk; a shift to risk financing will drastically lower this share but cannot reduce it to zero.

Leverage Global Consensus

Investing in smarter disaster finance is timely, capturing a growing groundswell of support for greater effort on risk reduction and a larger push for reform in humanitarian and emergency funding.

We identify at least four broad areas of relevant, high-level policy consensus. First, the **Sendai Framework** focuses on both investing in resilience and transferring risks, including transferring them to the insurance sector. Second, in May 2016, governments and humanitarian agencies, pressured by a mismatch between available funding and growing needs, collaborated on articulating a "**Grand Bargain" for humanitarian reform**. Third, many **climate change initiatives** have brought more attention to the role investments in resilience can play in lowering future costs and in enabling poor people to deal with the consequences of global warming. And, finally, meeting the ambitious **Sustainable Development Goals** requires locking in development progress that is explicitly threatened by vulnerability and ineffective disaster response.

> The Sendai Framework for Disaster Risk Reduction (2015–30) marks a shift in thinking from disaster response to risk management and explicitly promotes risk transfer.

The Sendai Framework for Disaster Risk Reduction. A concerted global policy effort has been focused on natural disaster risks for several decades. The Decade for Natural Disaster Reduction began in 1989, leading into the Yokohama Strategy in 1994 and the Hyogo Framework in 2005. The Sendai Framework for Disaster Risk Reduction (2015–30) marks a shift in thinking from disaster response to risk management and explicitly promotes risk transfer of the kind the working group discusses here. [12] Importantly, it articulates a new consensus about working effectively with the private sector.

The Grand Bargain for humanitarian reform. In May 2016, over nine thousand participants came together for the World Humanitarian Summit in Istanbul to articulate a "Grand Bargain," embracing the need for reform in the humanitarian system that would stress longer-term planning and funding. Applying insurance principles to emergency aid helps solve some of the shortfalls the Grand Bargain is intended to address and frees up disaster response money for other areas of humanitarian assistance.

Climate change initiatives. The Paris Agreement of 2015 seeks to limit greenhouse gas emissions and support adaptation to adverse impacts of climate change, and it calls on rich countries to give developing countries the financial support they need to make this transition. [13] It also explicitly includes risk insurance and risk pooling as an area of cooperation to confront the effects of more violent weather.

The Sustainable Development Goals. The SDGs [14] aim to end poverty and ensure prosperity for all through an ambitious agenda of 17 goals and 169 targets to be accomplished by 2030. Disasters, both natural and man-made, specifically undermine that development progress. The Addis Ababa Action Agenda sets out how to finance the SDGs and promotes the involvement of the private sector as both a funder for development programmes and a source of expertise. The agenda mentions "private sector" eighteen times, as many times as it mentions "international cooperation." [15]

Smarter financing for better disaster response dovetails with and catalyses all these areas of new, high-level political consensus.

Smarter financing for better disaster response dovetails with and catalyses all these areas of new, high-level political consensus. It helps ensure development gains are not eroded through poorly managed crises. It builds our shared resilience to the imminent threat of climate change. It instigates a win–win collaboration with private sector capital and know-how. And it achieves ambitions articulated in consecutive risk reduction frameworks, makes emergency assistance both leaner and more effective, and frees up badly needed bandwidth and funding for unpredictable or protracted crises.

Notes

[1] Heinzelman and Waters, 2010.

[2] Katz, 2013.

[3] Peltzman, 1975.

[4] McKenzie, 2014.

[5] Economic theory is clear about the risk that helping after disasters can reduce incentives to invest in preparing for them. Of course, this is simple to assert on the basis of economic theory but harder to demonstrate clearly in the data. As with showing the value of risk financing more generally, doing so requires us to have a valid counterfactual. This is often difficult, because it means comparing levels of resilience investments for two countries, the *only* difference between which is their expected levels of ex-post disaster assistance.

[6] African Risk Capacity (ARC), 2015.

[7] Raschky and Schwindt, 2016.

[8] Swaroop et al.,1999.

[9] Svensson, 2000.

[10] The Economist, 2016.

[11] Cain, 2015.

[12] United Nations Office for Disaster Risk Reduction (UNISDR), 2015.

[13] United Nations, 2015.

[14] United Nations General Assembly, 2015b.

[15] United Nations General Assembly, 2015a.

Four Actions to Make Payouts Predictable

1. Pivot Funding

Donors already have begun to innovate by establishing pooled, flexible funding for disaster response. These funds remain less effective than they could be; most disaster financing is only available after a hazard arrives. This gives the appearance of improving on unpredictable ex-post aid without actually enabling planning ahead, mobilising early response, or encouraging investments in resilience. The World Bank's Crisis Response Window, for example, mobilises concessional lending in months. When finance is tied to external triggers, funding arrives within weeks– as is already the case for the sovereign risk pools of ARC, CCRIF, and PCRAFI.

> A core innovation is to build ex-ante planning into existing ex-post windows.

A core innovation is to build ex-ante planning into existing ex-post windows, pivoting funding that is already available away from response to events and toward anticipation and shifts in risk. Donors should reform existing facilities so countries and agencies can pre-enroll for this *contingent funding*. If approved, they would have insurance-like coverage. Building on lessons from matching financing to planning in existing programmes, like ARC, eligibility could depend on disaster risk reduction investments, planning, or pre-positioning of supplies.

Table 9-1. How to Pivot Funding

Donors

Reform existing ex-post windows to allow countries to pre-enroll for disbursement if a sufficiently severe hazard happens, based on a clear plan or investments in risk reduction.

Agencies

Collaborate with governments on designing disaster response plans

Integrate your planning with governments; articulate and deliver on your comparative advantage.

Governments

Invest time and effort in advance of future disasters.

Vote with your feet for pre-agreed finance instead of appeals and other ex-post aid.

Insurers

Work with governments and others, including through an advisory facility (discussed above), to develop model-based assessments of risk.

2. Reward Planning, Resilience, and Equity

It is difficult to pin down how much the global public sector invests in lowering the costs of future disasters. Certainly, many donors fund preparedness and other risk prevention programmes. And some investments in protection are not recorded as such; better school buildings, for instance, contribute to resilience but do not get recorded as *disaster risk reduction* in international aid statistics. But there is broad agreement that the level of this spending is lower than it should be, and that programmes do not tie payouts tomorrow to a requirement for better risk management today.

> Concessional insurance or providing contingent funding should be attached to requirements for more and better risk management.

Pre-agreeing funding and supporting risk transfer gives the global public sector a valuable way to encourage the protected and insured—especially national governments—to invest more in risk reduction. Concessional insurance or providing contingent funding should be attached to requirements for more and better risk management. This should not be construed as *aid conditionality* but as a normal part of a contract that articulates shared responsibility for protection.

Pricing the cost of future risks forces governments and key line ministries to confront the costs of inaction. Acknowledging these *contingent liabilities* can, therefore, shift political incentives, while investing in resilience lowers the cost of insurance or the amount of money that must be ring-fenced against future risks, or both.

Table 9-2. How to Reward Planning, Resilience, and Equity

Donors
Articulate a clear offer that supports risk transfer and sets out steps to invest in disaster risk reduction.

Help source concessional finance for build-out costs of resilience.

Agencies
Begin an internal discussion about where planning ahead pays off. Which early responses work well, and which of those can you do well?

Develop financial procedures that work well with donor systems, including procedures to pool donor funding for premium payments.

Governments
Propose attractive risk reduction investments that could supplement risk transfer.

Work with donors to fund risk reduction from new climate and resilience funds or from concessional funding, like IDA project balances.

Insurers
Accept rigorous new transparency requirements that come with public procurement.

Develop financial procedures that work well with donor systems, including procedures to pool donor funding for premium payments.

3. Give Technical Advice

Governments, agencies, and donors will not invest in concessional insurance to support risk transfer if they do not understand the market or cannot defend the prices they pay. [1] Because they have different mandates and human resources than the insurance industry, frontline organisations and governments have little internal understanding of risk finance. As a result, they not have the expertise to broker their own insurance arrangements and are not likely to develop it.

The working group emphasised the value of an advisory facility that can give agencies and authorities genuinely independent advice. The facility would be a trusted, neutral advisor to bridge the public (governments and agencies) and private (insurers) sectors. That, in turn, would have

the crucial benefit of helping organisations and sovereigns parcel out and price their risk. As a conduit between the public and private sectors, the facility should also contain civil society and frontline agency expertise to make sure financing arrangements capture the realities of disaster response in fragile and low-capacity countries—environments in which the insurance industry often has less durable expertise.

Designing such a facility presents two challenges. First, there is a risk of perceived or real bias. A small number of people can staff this kind of an institution; they will be from the insurance industry. It is essential to acknowledge this problem and to police strong ethical walls between advice and decisions about purchasing. Second, there are risks of free riding. Risk transfer agreements are unusual in public procurement. Normally, an agency or national authority can define requirements and narrow down the set of suppliers. Insurance presents the inverse: a small group can do the initial work to price the risk so it can be competitively transferred and then be faced with other players competing for the same deal.

Genuinely independent technical advice is a public good: there are not enough private incentives to provide it even though there are high social returns from having it.

As a result of both these points, genuinely independent technical advice is a public good: there are not enough private incentives to provide it even though there are high social returns from having it. This makes a strong case for public intervention.

Table 9-3. How to Give Technical Advice

Donors

Invest in and scale up an independent, arm's-length advisory facility.

Focus on making agencies and governments informed buyers and co-purchasers.

Require clear ethical walls in procurement that separate the people giving advice from the firms providing insurance contracts.

Open eligibility windows for both governments and frontline agencies.

Agencies

Arrive prepared. Be clear about the risks you face and the benefits of risk transfer.

Be realistic. Risk transfer is not a Ponzi scheme; insurance contracts on average pay less than you or donors will spend on them.

Focus on insurable risks. Everything can be insured, but not everything can be insured for the right price.

Governments

Work across ministries to recognise which threats cause the greatest risk to state capacity, economic stability, and citizens' lives and welfare.

Be clear to donors about which risks demand more predictable financing and why their support makes sense.

Insurers

Be honest with management about the level of engagement you need. Working with the public sector requires patience.

Acknowledge the risks of conflicts of interest, real or perceived, and mitigate them up front.

Compete on a level playing field. Offering subsidised prices to capture market share will only make the market unsustainable.

4. Catalyse the Market

> To dramatically scale up risk transfer, donors need to support concessional insurance alongside and for agencies and authorities.

To dramatically scale up risk transfer, donors need to support concessional insurance alongside and for agencies and authorities. The global public sector has shied away from paying premiums to insurers. Instead, the approach has mainly been to provide concessional insurance through regional pools like ARC, PCRAFI, and CCRIF. While setting up sovereign risk pools (and new bureaucracies to manage them) has been a very valuable innovation, it is expensive and ultimately beholden to political processes. These pools generally do not cater to frontline agencies. And they do not take the most direct route from risk layering to risk transfer. The development community has embraced concessional loans, guarantees, and equity. Now it can radically improve disaster aid by taking advantage of concessional insurance through investing in risk transfer contracts rather than bespoke and expensive risk transfer institutions.

> The development community has embraced concessional loans, guarantees, and equity. Now it can radically improve disaster aid by taking advantage of concessional insurance through investing in risk transfer contracts rather than bespoke and expensive risk transfer institutions.

None of the advantages of pre-agreement should be interpreted to mean that donors must agree to pay specific amounts for specific risks. If those promises were credible, it might be a good way to incentivise smarter response on the back of future development spending. But donors generally struggle to commit to funding contingent liabilities because they do not want public bodies to write contracts they might not be able to honour, and because donors, like governments, get risk estimates wrong or face pressures to spend money in their coffers, or both.

Holding money against a portfolio of future risks would require donors to work and think like insurers, something they are not as good at as insurers themselves. And it would require them to estimate the chance that future risks will materialise, applying modeling and statistical expertise that insurers have developed as condition of avoiding bankruptcy.

Scaling up the use of risk transfer contracts would solve commitment problems that undermine the reliability of funding when crises hit. It would *leverage* scarce donor funding, allowing smaller budget lines to provide more coverage. It would create a platform for collaboration among

donors, agencies, and government, so that none of these is a passive end user of better protection but rather a central stakeholder that can inform smarter risk management and more accurate risk models. All of this, in turn, would free up scarce development funding for response to situations that are not insurable, or not insurable at the right price.

Table 9-4. How to Catalyse the Market

Donors

Invest in pooled funding to provide risk transfer for clearly articulated future costs and in exchange for commitments for risk reduction and preparedness.

Collaborate with frontline governments and agencies to develop risk finance strategies.

Prepare a clear value for money case. Providing predictable support will cost less than and be more effective than unpredictable, ex-post aid.

Agencies

Take advantage of technical advice to make the case for risk transfer as an investable proposition for your donors.

Confront basis risk. There is a chance things will go wrong and contracts will not pay out. This risk, too, is part of a risk finance strategy.

Mobilise internal funding. More certainty and leverage are good whether or not donors fund concessional insurance; co-financing will make a stronger investment case to donors.

Governments

Propose attractive risk reduction investments that could supplement risk transfer.

Take advantage of multilateral support. Technical assistance from the World Bank and others will help you understand your *layers* of risk.

Make a smart case to donors and supporters for what *your* risk transfer arrangements will deliver.

Insurers

Accept rigorous and new transparency requirements that will come with donor-backed procurement.

Develop financial procedures that work well with donor systems, including procedures to pool funding from several donors for single premium payments.

Iterate catastrophe models and acknowledge when you get it wrong. Sometimes accurate models generate basis risk; sometimes, they are flawed.

Notes

[1] This is not an original point. A fundamental observation in the economics of information is that modest differences in information between buyers and sellers can choke off mutually beneficial exchange.

Conclusion

Imagine if donors pooled their political and financial resources to set up an insurance organisation—call it *worldInsure*—to respond to the full range of humanitarian and emergency situations that befall vulnerable countries. Because of the politicised nature of how it would be developed, staffed, and managed, *worldInsure* would operate under very idiosyncratic, highly opaque rules. It would pay out **unpredictably**, awarding very different amounts for similar emergencies, depending on where those emergencies happened or the level of media coverage they received. It could not **agree in advance** on how much it would pay, or under what conditions, or to which agencies or government programmes in affected countries. And, no matter how predictable the future crises were, it would fail to create incentives to **reduce future losses**.

> Even with generous financing from the global public sector, *worldInsure* would be insolvent.

Even with generous financing from the global public sector, *worldInsure* would be insolvent. It might pay out for disasters, but not fairly, transparently, or predictably. That unpredictability would make it difficult for agencies and governments to plan response. Without transferring risks by signing contracts against future costs, it would leave many crises shortchanged.

> The working group's core proposition is to upend this paradigm by moving from funding risk to risk finance.

In short, this model would fail. Yet this is the precisely the predominant approach to rendering aid after disasters strike. The working group's core proposition is to upend this paradigm by **moving from funding risk to risk finance.** Contracts, unlike uncertain promises, pay out reliably, quickly, and on time. They provide an entry point for better policies around risk reduction and early response. And they enable and reward planning by establishing predictability, while creating an opportunity for more and better investments in risk reduction to lower vulnerability.

The most conservative estimate of $2 billion annually in disaster aid from OECD donors is a comparatively small share of total humanitarian aid, which also goes to assist families affected by long-term, unpredictable, and expensive crises, like the war in Syria. But, as the old joke goes, a billion here, a billion there, and pretty soon you're talking real money. Investing in predictability where we can frees up the funding we badly need for other, unpredictable emergencies.

Matching financing to planning for smarter disaster response will save lives, money, and time. It will leverage scarce donor funding during a time of pressure on aid budgets. And it will enable donors to work closely and effectively with frontline governments and agencies. Most importantly, it will result in lower risks and deliver faster, better assistance to people affected by disaster. That is what vulnerable families need—and deserve.

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Working Group

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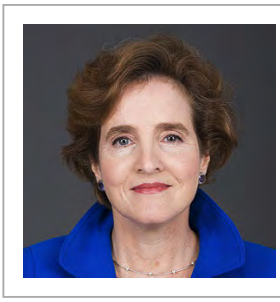
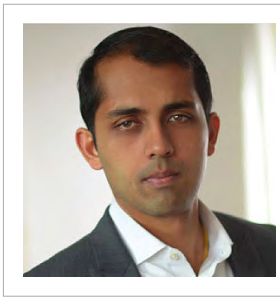
Owen Barder is a Vice President, Director for Europe, and a Senior Fellow at the Center for Global Development. He is also a Visiting Professor in Practice at the London School of Economics. Barder was a British civil servant from 1988 to 2010, during which time he worked in No.10 Downing Street, as Private Secretary (Economic Affairs) to the Prime Minister; in the UK Treasury, including as Private Secretary to the Chancellor of the Exchequer; and in the Department for International Development, where he was variously Director of International Finance and Global Development Effectiveness, Director of Communications and Information, and head of the Africa Policy & Economics Department.

Working Group Members

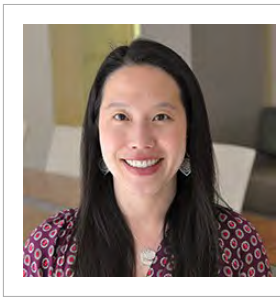
Dr. Alex de Waal is the executive director of the World Peace Foundation and a research professor at The Fletcher School, Tufts University. He is one of the foremost experts on Sudan and the Horn of Africa, humanitarian crisis and response, human rights, HIV/AIDS and governance in Africa, and conflict and peacebuilding. Previously, he worked for several Africa-focused human rights organizations, especially on avenues to peaceful resolution of the second Sudanese Civil War. He was a member of the African Union mediation team for Darfur (2005–2006) and senior adviser to the African Union High-Level Implementation Panel for Sudan (2009–2012).



Alice P. Albright is the Chief Executive Officer of the Global Partnership for Education, overseeing a global fund and multilateral partnership organization made up of over 60 developing country governments. Albright served in the Obama Administration as the Executive Vice President and Chief Operating Officer of the Export-Import Bank of the United States. From 2001 to 2009 she served as the Chief Financial and Investment Officer for the Global Alliance for Vaccines and Immunizations and was named head of GAVI's Washington DC office in 2003.



Aniket Shah is the program leader for the Financing for Sustainable Development Initiative at the Sustainable Development Solutions Network and the SDG Center for Africa. In these roles, Shah works with governments, international institutions, and investors to develop strategies to finance the SDGs. He has been seconded from Investec Asset Management since 2014. Prior to this, Shah worked at The Earth Institute at Columbia University, where he was special assistant to the Director, and prior to that, he was an investment banker at Goldman Sachs & Co., where he focused on mergers and acquisitions in the Financial Services Group. He is a doctoral candidate at the University of Oxford's Smith School of Enterprise and the Environment.

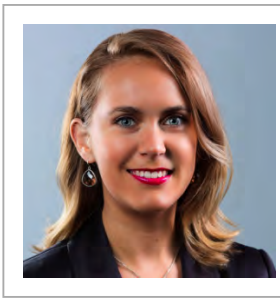


Dr. Cindy Huang is a visiting policy fellow at CGD. She works on issues related to refugees, fragile and conflict-affected states, gender equality, development effectiveness, and strengthening US development policy. Most recently, Huang was the Deputy Vice President for Sector Operations at the Millennium Challenge Corporation where she oversaw the strategic direction and implementation of a $2 billion portfolio of social sector investments. She also served in the Obama Administration as the director of policy of the State Department's Bureau of Conflict and Stabilisation Operations and as senior advisor to the State Department's counselor and chief of staff.

Dan Preston is a clinical assistant professor, chair of the honors program, and an affiliate faculty member at the Russian and East European Institute at the School of Public and Environmental Affairs (SPEA), Indiana University. His work focuses on finance as a catalyst for international development, policy analysis, international relations, and teaching pedagogy. Prior to SPEA, he held investment banking positions with Citigroup in the United States and France, specializing in economic advisory, debt management, and capital raising for sovereign governments in Europe, Africa, and Asia and securitization programs for corporations in Latin America, the Caribbean, and Japan.

Dr. Daniel Clarke is an actuary and economist who works at the UK Government Actuary's Department, primarily on insurance and risk finance for developing countries. Before this, Clarke spent eight years with the World Bank as a senior disaster risk financing and insurance specialist, where he worked with more than 40 developing country governments to develop cost-effective solutions for enhanced financial protection against disasters. He is a Fellow of the Institute of Actuaries and has published papers in a range of peer-reviewed academic journals. He has recently written a book with Stefan Dercon entitled *Dull Disasters? How Planning Ahead Will Make a Difference.*

Debbie Hillier is a Senior Humanitarian Policy Adviser at Oxfam, leading work on DRR and resilience and leading policy work for crises including the Ebola Epidemic and El Niño. For three years she supported crisis response from the Humanitarian Department, including programme development in the Democratic Republic of the Congo. From 2002 to 2010, she has worked in the humanitarian policy team on arms control, working on the development of UK legislation, European arms controls, and most significantly in developing and driving the Control Arms campaign, providing policy, research, and strategic advice to achieve an international Arms Trade Treaty. She has written key think pieces including "A Dangerous Delay" and "No Accident" and a range of crisis-specific policy positions.



Dr. Ginger Turner is Manager, Strategy Development, and chief of staff to the Group Chief Strategy Officer of the reinsurance company Swiss Re. As an economist, she has authored numerous publications on topics in catastrophe risk and insurance, including the behavioural economics of risk-taking after natural disasters, terrorism insurability, mobile distribution in emerging markets, and the global natural disaster underinsurance gap. Turner has worked in the World Bank Office of the Chief Economist, at Goldman Sachs, and at Actis Capital and Pan-African Private Equity in Johannesburg. As an entrepreneur, she helped start Cosmos Ignite, a company that manufactures and distributes affordable household lighting in rural India.

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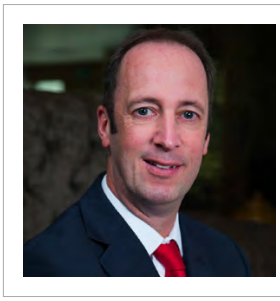
Rowan Douglas, CBE, is CEO, Capital, Science & Policy Practice, at Willis Towers Watson, a leading global advisory and re/insurance broking company and Chair of the Willis Research Network. He led the creation of the Insurance Development Forum of industry, governments, and international institutions to harness the role of re/insurance to meet the Sustainable Development Goals and wider Post-2015 Agenda and was appointed to lead the Implementation Group of the IDF in May 2016. He has held various appointments within the UN and other international organisations and was made CBE in the 2016 UK New Year's Honours List for services to the economy through risk, insurance, and sustainable growth.

Sean Lowrie has led the Start Network since September 2010, enabling NGOs to realise groundbreaking innovation in the humanitarian sector. Sean has over 26 years' experience in the humanitarian sector, specialising in initiatives for interorganisational collaboration. Beginning his career as an engineer and logistician, Lowrie spent 10 years on the front lines of humanitarian action in Kenya, the DRC, Côte D'Ivoire, Liberia, Swaziland, and Tanzania. Lowrie has a BSc from Queen's University in Canada in Mechanical Engineering and an MPhil in Social Science from King's College London.



Dr. Simon Young is currently Acting Underwriter and Advisor to the African Risk Capacity Insurance Company Ltd, and Advisor to the Capital, Science & Policy Practice at Willis Towers Watson. He has worked in a variety of consulting roles in disaster risk management and financing, including as the founding CEO of ARC Ltd and as CEO of Caribbean Risk Managers, where he was closely involved in the development, implementation, and operations of both the Caribbean Catastrophe Risk Insurance Facility and the Microinsurance Catastrophe Risk Organisation. He has a background in Earth Sciences and worked for the British Geological Survey on a variety of projects, including as Chief Scientist and the first full-time Director of the Montserrat Volcano Observatory during the main phase of the volcanic eruptions on Montserrat between 1995 and 2000.

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William Dalziel is a partner and head of the Institutional Division at London & Capital. Dalziel and his team at London & Capital are involved with all areas of the institutional insurance market, focusing on providing innovative investment solutions. Dalziel was previously a Director for Zurich Financial Services' international business in Latin America and spent seven years based in Miami. He is a faculty member of the International Centre for Captive Insurance Education and part of the editorial board of Captive Review.

Contributors

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Deirdre O'Sullivan-Winks is the Programme Director, ACRE and Inclusive Business at Christian Aid. Prior to this, she was Senior Project Manager for New Business Models at the Start Network where she led the development of innovative financing solutions for more effective humanitarian response and anticipation by international and national NGOs. Deirdre has also worked in International Development for CAFOD, Save the Children International and VSO, and has focused on leveraging private sector approaches to improve the effectiveness and sustainability of long-term development work and humanitarian aid. Her previous career was in Investment Management, mainly at AXA Investment Managers.

Emma Williams is Joint Deputy Head of the private sector division in the UK Department for International Development, where she co-leads the team working on insurance and the financial sector. Prior to this she spent four years in the Ethiopia office leading DFID's work on economic development and climate change. She has worked on climate change for over a decade, including as part of the UK delegation to the UN climate negotiations at Copenhagen in 2009. Before joining DFID she worked in the policy unit at CAFOD, a UK NGO, and for the UK Department of Environment, Food and Rural Affairs on emission trading. She holds degrees from Cambridge and Sussex Universities.

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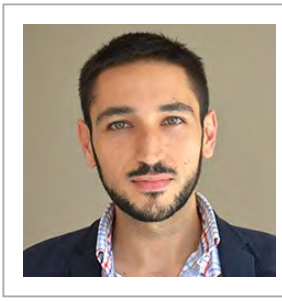
Sophie Evans is the Programme Director for the Capital, Science, & Policy Practice at Willis Towers Watson, a leading global advisory, broking, and solutions company. The Practice confronts the large-scale challenges of risk and seeks innovative uses of risk management and insurance-related mechanisms to build resilient economies and societies around the world to support sustainable growth. Evans is also the Co-Chair of the Insurance and Humanitarian System Working Group for the Insurance Development Forum, a public/private partnership led by the insurance industry and supported by international organisations, including the World Bank and United Nations. Previously, she was Senior Programme Coordinator for the Planning from the Future Project and worked at the Humanitarian Futures Programme, both based at King's College London.

CGD Leadership



Theodore Talbot is the lead author for the report and led the working group process at CGD. Talbot is a Senior Financial Officer with the World Bank, at the Global Partnership for Education. Previously, he was a Senior Analyst with the Center for Global Development's team in Europe. His work focuses on finance for development, with an emphasis on novel contracts and financing structures that enable development actors to work effectively with the private sector. Raised in India and Ethiopia, Talbot has a bachelor's degree in economics, finance, and politics and an MSc and PhD in economics. During his PhD, he was an ODI Fellow in the Pacific. Before joining CGD, he worked at the Ministry of Planning and Investment in Hanoi.

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Annex A: Funding Instruments

The following two sections set out existing aid instruments in greater detail than the main text, summarising their core features. This analysis highlights that a very small share of aid for disasters is matched to pre-agreed risks.

Smooth: Contingent Credit for Natural Hazards

While most humanitarian response funding comes from ex-post emergency grants, a limited but growing number of credit options are available from the World Bank and the IMF. These institutions recognise that disasters can significantly interrupt the development trajectories of a country and so increasingly give technical and financial assistance to national governments to help them prepare for and respond to disasters.

The table below outlines credit options from the World Bank and the IMF that apply most to countries facing crises from natural disasters. This is not a comprehensive list of all credit options available from these institutions. The IMF's Flexible Credit Line (FCL) and the Precautionary and Liquidity Line (PLL), for example, are prearranged tools that address general balance of payment problems only for qualifying countries with strong economic fundamentals, institutional policy frameworks, and track records of policy implementation.

While currently the FCL and PLL have seen limited uptake by only four countries, a recent study provides an in-depth discussion of how these tools could be used more widely. [1] If some of the barriers (perceived or real) were overcome around the various credit tools currently available, they could open additional options for more countries facing natural disasters.

From this table we also exclude Regional Financing Agreements, since they are region-specific, mostly complementary to other tools, and not designed for responding to natural disasters. For reference, these include the Chiang Mai Initiative Multilateralization (CMIM), in thirteen Asian countries; the Contingent Reserve Arrangement (CRA), in the five BRICS countries; the Fondo Latinoamericano de Reservas (FLAR), with eight Latin American countries; and the EU balance of payments assistance (EU BOP), for nineteen Eurozone countries.a

Tool

Catastrophe Deferred Drawdown Option (World Bank)

Action

Smooth

Description

Loan product that allows countries to arrange in advance for immediate access to funds in case a "state of emergency" is declared. It is seen as a bridge to start immediate recovery efforts while waiting for other sources of funding to arrive. The country must have a disaster risk management programme in place to be eligible.

Pre-Agreed?

Yes

Ave. Spending, 2010–15 (Millions USD)

$271

Tool

Crisis Response Window (World Bank)

Action

Smooth

Description

Mechanism for relatively lower-income IDA countries to get access to additional resources in case of emergency or severe economic crisis. This is a supporting safety net and funding of last resort after other funding mechanisms have been exhausted. The decision to trigger is made by the World Bank's Board of Executive Directors; it usually takes some months to disburse.

Pre-Agreed?

No

Ave. Spending, 2010–15 (Millions USD)

$75

Tool

Immediate Response Mechanism (World Bank)

Action

Smooth

Description

Gives IDA countries access to up to 5% or $5 million of their undisbursed IDA project balances following a crisis. The funds are available sooner than the CRW following onset of a crisis, within some weeks.

Pre-Agreed?

No [2]

Ave. Spending, 2010–15 (Millions USD)

Limited data available [3]

Tool

Rapid Financing Instrument and Rapid Credit Facility (IMF)

Action

Smooth

Description

Loans provided in case of need for an urgent balance of payments adjustment, including following natural disasters. All IMF member countries are eligible for the RFI, while the RCF is available on a concessional basis only to low-income countries.

Pre-Agreed?

No

Ave. Spending, 2010–15 (Millions USD)

$110 (RCF only) [4]

Transfer: Emergency Grants for Natural Disasters

When a country faces a peril it cannot manage itself, it might fall to the humanitarian aid system to provide for the bulk of assistance through emergency grants, an imperfect type of risk transfer ("transfer" because it is a way of socialising losses, but without the efficiency gains of insurance contracts).

The UN system provides four main channels for fulfilling emergency grants. Each of these pools resources from donors for common needs set out under the leadership of an in-country *Humanitarian Coordinator/Resident Coordinator,* a high-ranking UN official who has been appointed to manage a crisis. The coordinator works with various sector leaders known as "clusters" (both UN and non-UN) to allocate the funds to implementing agencies.

Tool
Humanitarian response plans

Action
Transfer

Description
Fundraising tools that break down the people in need, the target numbers to be reached, the needs in each sector, and the point person and organisations involved in delivering aid. Donors can contribute directly to the HRP or to one of the pooled funds discussed below, which in turn fund HRPs.

Pre-Agreed?
No

Ave. Spending, 2010–15 (Millions USD)
$2,276 million (Humanitarian response plans and flash appeals) [5]

Tool
Flash appeals

Action
Transfer

Description
Theoretically function as quick-release HRPs because they do not require a needs assessment for either a sudden-onset emergency (like an earthquake or tsunami) or a shift in a protracted situation (like tactical changes in a conflict zone).

Pre-Agreed?
No

Ave. Spending, 2010–15 (Millions USD)
$2,276 million (Humanitarian response plans and flash appeals)

Tool

Central Emergency Response Fund

Action

Transfer

Description

Pools contributions from donors into a single fund with a target of $450 million annually. The CERF's original purpose is very valuable: to finance many of the underfunded or forgotten crises that do not make headlines. CERF funds contribute to HRPs and flash appeals.

Pre-Agreed?

No

Ave. Spending, 2010–15 (Millions USD)

$48 million

Tool

Country-based pooled funds

Action

Transfer

Description

Financing instruments (including the Common Humanitarian Funds and Emergency Response Funds) for specific countries facing crisis. As of 2016, CBPFs were operating in 18 countries. [6] CBPFs contribute to HRPs and flash appeals.

Pre-Agreed?

No

Ave. Spending, 2010–15 (Millions USD)

$44 million [7]

Of these, the CERF is the most flexible; it can be used for any type of emergency in any country, and funds from the CERF and country-based pooled funds can be used to fulfill flash appeals and other response plans. The four budget lines are filled by donor countries and private sector donors, with some actors plainly dominant. In 2016, private donors provided roughly 7 percent of funding for natural disasters, while over a third came from the US government. [8]

Notes

[1] Birdsall, Rojas-Suarez, and Diofasi, 2017.

[2] We classify the IRM as not pre-agreed. The requirements to be eligible to receive IRM funding are agreed on ex-ante including (1) establishment in selected IDA project documents a "contingent emergency response component" and (2) adoption of an IRM Operations Manual. The amount of funding and the uses of the funding are not agreed on in advance, however, so in practice establishing that certain projects are IRM eligible does little to help countries plan for emergencies.

[3] According to CGD's research, there was only one disbursement of IRM between 2010 and 2015, to Myanmar for $32 million in 2015. Given that the IRM was established in 2011 and few countries have gone through the necessary ex-ante steps to make IDA projects IRM eligible, we exclude IRM funding from our calculations of average spending.

[4] We include only the RCF in this estimate, as lower-income countries that are eligible will use this option because it is concessional while RFI is at market rates. Best attempts have been made to include all disbursements of the RCF in this calculation. This number may be interpreted, however, as a slight underestimate if any disbursements did not appear in formal IMF press releases.

[5] The Central Emergency Response Fund and the country-based pooled funds contribute to humanitarian response plans and flash appeals. Hence, the three values given in this table are not mutually exclusive.

[6] United Nations Office for the Coordination of Humanitarian Assistance (OCHA), 2016a.

[7] Country-based pooled funds are tracked by country. Funding data do not indicate whether they were used for a natural disaster or not since by definition these funds can be used for many purposes of need in each country. There was a yearly average of $442 million of funding for the CBPF from 2010 to 2015. We apply the assumption that approximately 10 percent of CBPFs were used for natural disasters during this period because that is roughly the rate at which CERF funds were used.

[8] United Nations Office for the Coordination of Humanitarian Assistance, 2016b.

Annex B: The Insurability of Disaster Aid

There are three broad reasons to privilege pre-agreed credit or paying for risk transfer to insurers, or both: contracts, rules, and risk management.

- **Contracts:** A starting point for the analysis is that ex-post aid demonstrates the limits of our ability to commit to financing future liabilities. If the donor community were to accept risk transfer for pre-agreed financing, it would imply arrangements like, "USAID agrees to pay $20 million to Malawi's Ministry of Health in case a zootropic fever outbreak affecting 20 or more people is detected."

- **Budget rules:** Those arrangements, in turn, would require donor agencies or multilateral facilities like the World Health Organization (WHO) to hold contingent liabilities on their balance sheets. Most cannot do this, for the eminently sensible public finance reason that we do not want agencies to be able to make promises they cannot keep.

- **Risk management:** If donors were able to finance risks, they would either have to keep all the money needed on their budgets or retain only enough to cover their expected costs. The first approach would be very expensive; holding money against the future means we must spend less on issues like global health or governance reform. The second demands that donors hold *just enough* money to balance a portfolio of risks. That expertise rests with the insurance sector. Donors would struggle to develop a comparable capital management specialisation.

In short, this is a better way for donors to design their support. It would catalyse smarter planning, and it could help to align incentives for investments in resilience (better flood protection and zoning, rather than repeated post-flood emergencies, for example). This section sets out the reasoning in full.

A simple way to conceptualise the benefit of risk transfer is based on how insurance premiums are set: they reflect the expected cost of an insurance contract, the cost of making money available when the contract is called, the expenses of administering the contract, and a profit margin. To set a premium, the insurance sector has been forced to develop finely tuned models of the expected cost of catastrophes. The cost of $100 in cover for a cyclone hitting the Solomon Islands, which has a 10 percent chance of occurring, must be at least $10 (to which insurers add the cost of holding money against this risk, and various transactions costs like claims settlement). Getting risk modeling right is essential, not incidental—insurers that get the probability wrong lose money.

The insurer, in turn, must pay if that cyclone makes landfall. By promising to honour a contract, an insurer creates a commercial liability and must have money available against the possibility. (The regulatory requirement is generally that insurance firms' portfolios—in contrast to donors' promises—have to be resilient at least to "1 in 200" losses.) The larger the potential payout and the more expensive it is to meet the regulatory requirement, the higher the cost of capital, and so the higher the potential premium. Again, all this follows only because insurers have an explicit requirement to pay against pre-agreed future costs, and so have very clear legal and commercial incentives to make sure they are solvent when the time comes.

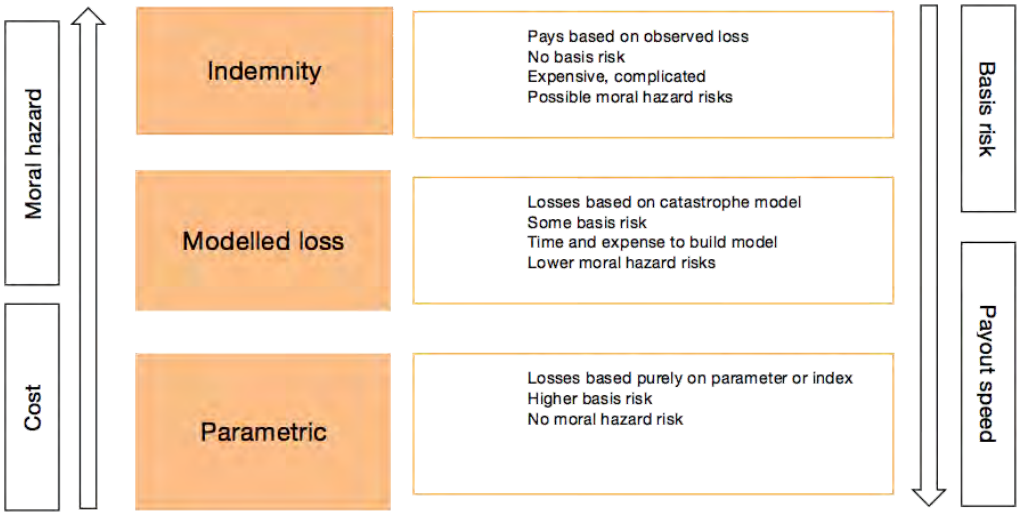
Measures of risk and the cost of holding capital are simply contributing factors; in the absence of competition, insurers would charge higher premiums and so earn higher profits. Competition in the insurance industry is the limiting factor that keeps premiums as close to the cost of capital and the cost of risk as possible. In part, this happens because of the unique role brokers play. Insurance brokers, in effect, earn commissions by matching people willing to pay premiums to transfer risk with insurers that earn the premiums in exchange for holding their risks. [1]

Faced with a particular potential risk ranging from flooding in Malawi to drought in the Sahel, risk modeling asserts the likelihood the hazard will materialise and the costs it might inflict. Armed with this understanding of the contingent liability, brokers enable the public sector to outsource the problem of finding the lowest price for the best contract. This is simplistic, of course. We must be watchful for anticompetitive collaboration between these supposedly independent intermediaries and insurers, and agencies and donors must have a clear-eyed, independent view of the kinds of risks that are predictable and, for costs they need to transfer, insurable. But the general point is that risk modeling and brokers help to overcome gaps in information and market making that would otherwise stymie our ability to improve disaster assistance by pre-agreeing funding for response.

Finally, in contrast to the implicit contract between aid recipients and the global public sector, insurance contracts set out explicitly when they will (and will not) pay out. These contracts can, therefore, be specifically tailored to the situation by using external, observable triggers, such as Richter-scale readings for the violence of earthquakes or rainfall for early warning of drought. So-called parametric triggers are the easiest to calculate based on natural science data.

Take the example of Hurricane Katrina making landfall in New Orleans. A contract based on a parametric trigger of wind speeds of 209–251 km/h (a category 4 hurricane) would pay out immediately, based on publicly available satellite and other meteorological data. Satellite data reporting a hurricane's wind speed are transparent and publicly available. When a variable exceeds an agreed threshold, the contract's clauses to payout are invoked.

Triggers for Payouts Vary by Speed and Basis Risk



Notes: Adapted from Willis Towers Watson, 2014.

Tailoring triggers to the kinds of problems faced by frontline governments and agencies is not a theoretical possibility. The sovereign risk transfer programmes we set out above rely on varieties of parametric triggers to ensure swift payouts, for example. And, as the working group sets out in its core recommendations, many agencies should similarly benefit from predictable funding for predictable emergencies.

There is an important caveat to making payouts contingent on parametric triggers: conditioning on a variable like wind speed creates *basis risk*, the difference between actual losses and the trigger. A low-intensity storm might not trigger a parametric payout, but it could damage a weakened sea wall, causing flooding; losses will be high without being covered by the insurance policy.

Donors confront three main concerns when they contemplate whether and how to invest in premiums. First, they are not sure agencies and development partners will get a fair deal or set aside enough money to cover the basis risk of insurance contracts. This can be tackled by requiring set-asides in exchange for premium support and ensuring access to high-quality technical advice (as the working group has also recommended).

Second, there are concerns about aid spending being used to procure services from the private sector. Spending taxpayers' money to support development outcomes by using the private sector is not new. We want to immunise children, but policymakers should not put on lab coats. We know building infrastructure unlocks growth, but development economists should not lay tarmac. The insurance industry has a single specialisation—to deliver on contractual commitments to pay out when things go wrong. This service can disrupt our learned habit of treating disasters like surprises with something much more effective.

Finally, there are political concerns that premiums will support payouts to agencies that are underperforming or national authorities that do not have political legitimacy. What will happen when OECD donors have supported insurance for a regime that is subsequently found to be conducting illegal land grabs? The working group concluded this was a misleading complaint. Since cover is conditional on premiums, supporting payments gives funders a way to create reasonable expectations on the insured that are managed by contracts to which the insured agrees. Inserting simple, transparent, and mutually agreed clauses on observing human rights, for example, is entirely feasible—and defensible for donors.

Notes

[1] There are 65 insurers and reinsurers and more than 200 brokers in the City of London alone. Her Majesty's Treasury (HMT), 2016.