

## U4 Helpdesk Answer

# Corruption risks and mitigation approaches in climate risk insurance

**Author(s): John Hewitt Jones, Euromoney Institutional Investor**

Reviewer(s): Matthew Jenkins, Transparency International and Aled Williams, U4 Anti-Corruption Resource Centre

Date: 28 December 2018

Without donor intervention, the costs of disaster insurance for poor communities bearing the brunt of climate change is prohibitive, and in general insurance coverage among the poor in developing countries is very low compared to OECD countries. Donor-supported initiatives that create new disaster insurance regimes for poorer countries, like any other kind of fund or fiduciary transfer, are accompanied by certain corruption risks. This Helpdesk Answer considers some of the central risks and discusses potential countermeasures. In identifying corruption risks in climate risk insurance, this Helpdesk Answer adopts a value chain analysis, which conceives of a sector in terms of the processes required to produce and deliver public goods and services. This response defines corruption as “the abuse of entrusted power for private gain” (Transparency International 2018). The working definition as defined by Transparency International applies to both the public and private sectors.

## Query

What evidence exists on how corruption might affect climate risk insurance schemes in the context of disaster mitigation, relief and recovery? What are good practices for effective monitoring and evaluation frameworks to ensure that transactions connected with disasters are transparent and accountable, as well as in line with the affected population's wants and needs?

## Caveat

This Helpdesk Answer does not attempt to provide a comprehensive list of all potential corruption risks in climate risk insurance schemes. Instead, it identifies and describes predictable risks based on the known general types of corruption.

The exact drivers, forms and modus operandi of corruption depends on a range of variables, including country context, institutional setting and working practices. Corruption risks of specific insurance schemes may only be identified with the help of a thorough corruption risk assessment of each individual scheme, which goes beyond the scope of this Helpdesk Answer.

## Contents

1. Climate risk insurance
2. Monitoring and evaluation frameworks
3. Corruption risks in climate risk insurance
4. Corruption mitigation in climate risk insurance
5. Concluding remarks
6. References

## Main points

- Value chain analysis is a useful way to map corruption risks at sector level (Campos and Pradhan 2007).
- Risks can be characterised according to whether they occur at the stages of policymaking, organisational resources or client interface along the value chain (Transparency International 2017).
- To gain meaningful insights, it is necessary to go beyond high-level mapping of corruption risks and conduct bespoke appraisals of different sectoral value chains.
- Key remedies for corruption risks associated with this type of finance include greater claims disclosure, simpler contracts and an increase in civil engagement.

# Climate risk insurance

## Climate risk management

Worldwide, climate change is generating an increasing number of extreme climate- and weather-related events, such as changing rainfall patterns, more severe and more frequent storms, sea level rise, droughts and widespread desertification. According to the World Bank (2017), these events cause damage and economic losses that amount to as much as USD\$520 billion a year, including indirect damage, such as a drop in consumer spending, but excluding non-economic repercussions, such as loss of human life, security and biodiversity (Schleussner et al. 2016).

As indicated by the long-term global climate index, the 10 countries most affected by climate change are developing countries in Asia and Central America (Germanwatch 2016). With climate-related events increasing in both frequency and intensity, it is the poor and vulnerable in these countries who are most at risk, despite contributing least to the drivers of climate change. Low-income households, in particular those living in coastal or mountainous areas, are faced with threats to their lives and livelihoods. Trying to cope with the loss of income, harvest and livelihoods, they are at risk of sliding back into extreme poverty. Climate change, alongside violent conflict, is now considered the biggest threat to achieving the Sustainable Development Goals (SDGs), with natural disasters pushing about 26 million people back into poverty every year (Hallegatte et al. 2017).

Low-income countries are especially vulnerable to the effects of global warming and often lack the capacity to anticipate, absorb or adapt to extreme weather events (ODI 2015). To increase these states' resilience, options to manage and transfer risks need to be created through comprehensive climate risk management.



Comprehensive risk management entails both ex-ante risk analysis and preventive measures and requires the development of strategies for coping with the consequences of climate change that cannot be prevented. There are five key phases used to identify the threats of climate risk (Schaefer et al. 2017):

- Risk analysis: analysis forms the foundation of climate risk management. The aim is to identify climate risks and their possible costs and consequences, as well as cause-and-effect relationships.
- Risk prevention: aims to avoid damage in the first place; preventive measures include limiting global warming, as well as the preservation of land and preventing the contamination of agricultural areas.
- Risk reduction and disaster preparedness: if risks cannot be avoided, the amount of damage can be reduced through early warning systems, climate adaptation (such as the cultivation of more drought-resistant crops) and protection against catastrophes (such as the heightening of dikes).
- Disaster management: in case of disasters, rapid emergency relief and civil protection measures are needed to contain the fallout and save lives.

- Resilient recovery: during or after a catastrophe, recovery measures include the compensation of victims, as well as reconstruction.

Climate risk insurance is a financing tool that – in conjunction with other disaster risk management tools and strategies – can help reduce the vulnerability of those who are not adequately protected against extreme weather events. When climate shocks like storms, droughts and floods strike, insurance schemes can transfer the residual risks by ensuring the quick allocation of funds to cover losses and damages, as well as assist emergency responses and social protection systems. Climate risk insurance works by replacing “the uncertain prospect of losses with the certainty of making small, regular premium payments” (Churchill 2006).

Financial protection through insurance occurs both ex-ante and ex-post: ex-post when financial protection becomes effective after an actual event occurs, and ex-ante, when insurance incentivises risk reduction behaviour by rewarding investments in loss reduction measures with reduced premiums, thereby promoting a culture of prevention focused on risk management (Schaefer et al. 2016).

### Insurance typology

Before turning to look at climate risk insurance schemes, it is useful to first give an overview of different types of insurance policy:

- direct versus indirect
- indemnity versus index-based
- cash payout versus benefit in kind

First, the relationship between the policyholder and the risk-taking entity can be either direct or indirect. Direct insurance schemes entail a contractual relationship between the insurer and

the citizen or local company who has purchased cover to protect themselves against a certain risk.

Indirect insurance schemes use an intermediary entity, such as an insured government or institution, which then passes on the benefits to the intended target group. In low-income countries, insurance contracts are often sold by microfinance institutions, banks, farmers’ cooperatives, NGOs or local insurance companies.

These types of policy – of which sovereign risk pools, catastrophe bonds or crop reinsurance programmes are examples – insure vulnerable populations by indemnifying governments or other national agencies who use international financial markets to obtain cover. Government programmes usually target predefined groups and change in response to political demands and a country’s wider disaster response plans. The payout received from many of these schemes are often determined by the use of indices relating to an event – such as a certain amount of rain falling – instead of waiting for a claim to be filed for flood damage. These types of policy triggers can speed up payments and reduce claims disputes but can heighten basis risk – the possibility of a mismatch between policy trigger and insured risk.

Second, insurance schemes can be differentiated according to insurance product type. Indemnity-based insurance schemes provide protection against the loss of a specific asset, making payouts based on post-disaster damage and loss assessments. Indemnity-based schemes can be vulnerable to delay and political interference in countries with weaker legal systems, but they are less vulnerable to basis risk.

Index-based insurance provides an alternative trigger for risk coverage, paying out a set amount based on the fulfilment of certain parameters within an index. This type of insurance is therefore

sometimes referred to as parametric insurance. A claim is triggered automatically, once an objective metric or index, such as a meteorological indicator (e.g. the length of a dry period, wind speed or the quantity of rain) laid out in the insurance policy reaches a certain threshold. The insured is then free to use the payments to compensate direct and indirect loss and/or any loss-related expenses.

Lastly, policies can also be distinguished by the type of payout the policyholder receives. While some insurance provides cash only, others supplement their payouts with non-cash benefits. For example, direct agricultural insurances in developing markets often disburse agricultural advisory, equipment, seeds or food emergency packages together with cash. Usually, supplements are distributed alongside cash when a claim is triggered, but in some instances, they are also given out immediately upon buying an insurance policy, thereby increasing the attractiveness of the insurance in the eyes of the buyer (Schaefer et al. 2016).

### **Alternative risk transfer (ART) products**

Catastrophe bonds are part of a relatively new class of (re)insurance-related financial instrument, known collectively as alternative risk transfer (ART) products. These bear a separate mention within a typology of climate risk insurance as they allow entities such as governments and insurance companies to pass on risk to the capital markets. They usually pay out in response to natural disasters such as earthquakes and tsunamis.

This category of financial instrument includes insurance linked securities (ILS), catastrophe bonds and industry loss warranties (ILW), which were introduced after Hurricane Andrew tore through the US gulf coast in 1992.

These differ from conventional (re)insurance contracts in three main ways: they do not pay out following a loss absorbed by a specific portfolio of risks, the capital for these products is provided by capital markets rather than the (re)insurance industry, and deals are multi-year rather than annual (Jarzabkowski et al. 2015).

Under a conventional reinsurance contract, a reinsurer agrees to assume the liabilities for a certain segment of risk ceded by an insurer. However, these types of products instead usually trigger on the basis of a particular type of industry loss or the magnitude of a catastrophe event. An ILW might, for example, trigger only if the industry loses more than a specified amount as a result of a specified disaster. Or a catastrophe bond might pay out after an event such as an earthquake hits a particular region within a specific radius or at a certain magnitude.

In the case of catastrophe bonds, the capital is typically provided by pension funds or hedge funds. These parties invest in the instrument, which, in combination with the premium paid by the cedent is managed in a special purpose vehicle – known in some jurisdictions as an insurance special purpose vehicle (ISPV). The funds within the vehicle are invested to generate money market returns, and if none of the identified losses occur, the investors receive quarterly returns as well as the principal back on maturity.

If the bond is triggered, however, all or part of the principal is paid to the insured. These products can either be issued by insurance companies as an alternative to buying insurance, or they can be issued by entities such as governments or other organisations.

In 2017, the World Bank issued a US\$320 million catastrophe bond as part of a pandemic insurance facility in response to the West Africa Ebola

outbreak in 2014. The instrument will pay out in stages following a certain number of fatalities (Trading Risk 2017). According to reports, the government of the Philippines is considering issuing a catastrophe bond as part of its parametric disaster risk programme Government Service Insurance System (GSIC) (Trading Risk 2018).

### Classification of climate risk insurance

In the context of natural disasters related to climate risk, parametric – or index-linked – insurance schemes have gained popularity as they can offer some distinct benefits compared to indemnity insurance.

First, parametric policies can reach a broader population faster and earlier, which can avert a humanitarian and economic crisis, especially in vulnerable countries where wide-ranging and hard-to-quantify loss events can quickly threaten lives and livelihoods (Pazarbasioglu 2017). As parametric insurances do not require traditional claims assessments on the ground, they allow for quicker disbursement of payments, even to hard-to-reach victims of disaster in remote areas. Under such a contract, payment can often be made in a matter of weeks compared to months or even years under a standard indemnity contract. Providing payouts based on pre-determined metrics also facilitates early intervention, because a policy could be triggered not by the calamity itself (such as crop failure) but by its cause (such as inadequate rainfall). By underwriting adverse events instead of specific assets, index-based insurance also has a broader scope, extending to various entities affected by the same event. For example, agricultural microinsurance policies are often only available to farmers to protect them from yield losses, but exclude processors or wholesalers, who may be equally adversely affected by low yields (GlobalAgRisk 2012).

Second, in addition to these benefits related to building resilience and saving human lives, parametric insurance can be economically advantageous. By eliminating the complex claim assessment process, index insurance simplifies and lowers the costs of the settlement process, making it more attractive to enter the insurance market with parametric products. Index insurance also lowers the transaction costs inherent in the insurance process because it is much less prone to moral hazard; in other words, the tendency of the insured to behave in a way that increases the probability of loss. Moral hazard generates problems in identifying what losses are caused by an actual event and what losses are caused by misconduct on the part of the policyholder, which disincentivises insurers from insuring certain risks altogether (GlobalAgRisk 2012). Since, in the case of parametric contracts, the amount of payment is unaffected by the total loss, the insured still has an incentive to minimise their losses, which decreases the risk of moral hazard for the insurer.

Despite its advantages, index insurance is still rarely directly provided by insurance companies in developing countries because of obstacles on both the demand and the supply side. On the demand side, there is often little awareness among the population of risk and of the possibility of buying insurance in first place. Even if there is, insurance is usually considered a luxury good, ranking below food, shelter and savings in a household's priority list. While governments have increased their efforts to promote private insurance and improve financial literacy, the poor and vulnerable rarely consider acquiring insurance (Schaefer et al. 2016).

On the supply side, climate risk insurance is perceived as a complex product by the private sector, and most insurers lack the knowledge and technical capacity to design sustainable and profitable index insurance products (Pazarbasioglu



2017). In addition, especially in small and less developed countries, precisely where populations are most at risk of climate change, private insurance companies are often deterred from entering the market due to high operational, product procurement, product design costs, and an adverse legal, political and regulatory framework (Schaefer et al. 2016).

### Initiatives and stakeholders in climate risk insurance

To overcome the current lack of development in climate risk insurance markets in vulnerable countries, several initiatives have emerged. Promoting both direct and indirect index insurance, these initiatives support a range of stakeholders with funding, advisory services, or their convening power.

#### **InsuResilience**

The InsuResilience Global Partnership is an initiative founded in 2015 by the G7 with the goal of making affordable climate risk insurance available to an additional 400 million poor and vulnerable people in developing countries by 2020. Bringing together more than 40 partners, the Global Partnership seeks “to stimulate the creation of effective climate risk insurance solutions and markets and the smart use of insurance-related schemes for people and assets at risk in poor and vulnerable developing countries” (InsuResilience). It brings together the G20 with the Vulnerable Twenty (V20), fosters collaboration between stakeholders from civil society and academia, and pools resources with the private sector, development banks and development agencies.

Supporting both direct and indirect insurance schemes, InsuResilience aims to amplify the impact of ongoing initiatives and has thus worked, among others, with the African Risk Capacity (ARC), the

Caribbean Catastrophe Risk Insurance Facility (CCRIF), as well as the NWK Agri-Services cotton company.

In 2017, InsuResilience also established the InsuResilience Solutions Fund that promotes the development of financially sustainable insurance solutions from the concept to the product stage. Complementing the design of insurance solutions, the InsuResilience Investment Fund provides debt and equity, along with technical assistance, to qualified insurers, reinsurers and companies in the insurance value chain in developing countries.

#### **Blue Marble Microinsurance**

Blue Marble Microinsurance is a consortium of nine insurance firms established with the goal of providing commercially viable insurance protection to underserved populations. Incubating and implementing index-based microinsurance ventures, Blue Marble launched its first project in Zimbabwe in 2016 and has since expanded the insurance protection it offers against extreme weather conditions for smallholder farmers in the country.

#### **Global Index Insurance Facility (GIIF)**

Most recently, in October 2018, the World Bank, together with Germany and the UK, launched the GIIF, a multi-donor trust fund that promotes access to finance for smallholder farmers, micro-entrepreneurs, and microfinance institutions through the introduction of risk transfer solutions and index-based insurance. The facility not only finances the establishment and expansion of climate risk insurance schemes and innovative insurance solutions but also gives technical advice to and engages in policy dialogue with insurance companies, and partner countries. Operating in sub-Saharan Africa, Asia, and Latin America and the Caribbean, GIIF, together with its regional

partners, has reached over one million people with information on and access to index insurance.

### Risk pools

Sovereign risk pools are one mechanism to compensate for losses caused by infrequent but severe disasters. Based on a parametric system, they are intended to release money quickly after disaster.

#### **Africa Risk Capacity (ARC)**

ARC is a risk pooling and transfer facility open to African Union member states that offers indirect index insurance against droughts. Each government deciding to join the pool comes up with a preapproved contingency plan, laying out in advance how insurance payments are to be distributed in an emergency. Once disaster hits and a pre-agreed threshold is reached, this set up allows for a quick and targeted payout of assistance. ARC member states currently pay premiums through national budget processes and receive payouts from ARC's financial affiliate, ARC Ltd. Incorporating humanitarian actors into ARC's government-led risk management approach, ARC's Replica Coverage allows UN agencies and other humanitarian actors to match ARC country insurance policies and take out their own insurance.

#### **Caribbean Risk Insurance Facility (CCRIF)**

Launched in 2007, CCRIF became the world's first multi-country risk pool to develop parametric policies backed by both traditional and capital markets. Open to all Caribbean and Central American states, CCRIF currently provides earthquake, tropical cyclone and excess rainfall policies to 19 states in the Caribbean and one in Central America. Most recently, payouts of more than US\$55 million were made to 10 CCRIF

member states, following the devastating impacts of hurricanes Irma and Maria in the Caribbean in September 2017.

#### **Pacific Catastrophe Risk Assessment and Financing Initiative Facility (PCRAFI)**

Established in 2016, PCRAFI comprises both the PCRAFI Facility, an insurance scheme designed to offer the PICs catastrophe risk insurance coverage, as well as a technical assistance programme that provides stakeholders with technical assistance and capacity building.

## A framework for corruption risk assessments

To understand how corruption might affect climate risk insurance schemes, it is necessary to adopt an approach to identify and categorise corruption risks. Corruption risk assessments provide such a methodological framework. They are designed to diagnose vulnerabilities within a system that may present opportunities for corruption to occur, rather than seeking to detect and measure the actual incidence of corruption or deterring corruption.

The findings of corruption risk assessments are frequently used as a management tool to improve the governance of a specific institution, sector, project or process (Selinšek 2015) or to guide anti-corruption interventions. Risk assessments can illustrate relationships between different risks, processes and actors and help prioritise risks and inform the development of appropriate preventive measures (McDevitt 2011).

While various approaches, models and conceptual frameworks attempt to identify corruption risks in the public sector (Asian Development Bank 2008; Blais and Schenkelaars 2009; Council of Europe 2010; Selinšek 2015; USAID 2005 and 2009), as



well as in the private sector (Transparency International 2009; UN Global Compact 2013), there is a general consensus across the literature that, rather than dogmatically adhering to any particular template, the key is to find a broadly appropriate model and develop a custom approach best suited to the task at hand (Selinšek 2015).

When considering corruption risks in climate risk insurance, there is a need to go beyond a narrow focus on a specific body or agency and to examine interactions between a range of different stakeholders, such as insurers, reinsurers, brokers, banks, governments and insured parties.

A framework that can accommodate the interaction of various entities in the insurance process is value chain analysis. By foregrounding the processes needed to produce and deliver goods and services, such as insurance, the analysis becomes less concerned with an individual institution and is better able to account for the different opportunities for and forms of corruption at vulnerable points of interaction between different entities (Asian Development Bank 2008).

The concept of a value chain originates in the private sector, where it refers to the idea that a company can be conceived of in terms of the processes it relies on to generate profit (Porter, 1985). More recently, the notion of a value chain has been adopted to the public sector (Rapcevičienė 2014). The essential difference is in the definition of the “value” being produced. While a private sector value chain describes processes used to generate profit, a public sector value chain lays out the processes used to deliver goods or services to citizens.

The value chain describes the full range of activities required to do so, from designing the good or service at the policymaking level, through the different phases of mobilising or procuring resources to produce this good or service and ultimately to the final delivery to citizens. We can conceive of a distinct value chain for each public service being provided to citizens: healthcare, education, clean water, electricity and so on.<sup>1</sup>

The degree of corruption is determined by the context in which the insurance scheme is established, the network of actors involved and the specific type of insurance scheme. Conducting a full risk assessment would necessitate an in-depth study of the specific value chain of each individual insurance scheme. Since such an extensive analysis is not feasible within the scope of this Helpdesk Answer, the following analysis traces the stages of a value chain in the insurance sector to identify general types of corruption that could occur at different stages of the chain. It distinguishes between three broad stages in the process: policymaking, organisational and service delivery.

At the policymaking stage, corruption can take place inside governments, international organisations, insurance risk pools or multinational insurance companies. Inside government, “grand corruption” can take place when senior government officials distort policies or take actions that enable insiders to benefit at the expense of the public good. Private firms can exert “undue influence” to shape the formulation of laws or regulations, such as through illicit payments to legislators or other officials.

This report defines the next step in the value chain as the actor level; the stage at which risk pools, insurance companies, or other private sector organisations distribute their own policies or

---

<sup>1</sup> There are a number of different applications of value chain analysis, including sequential stages in a (sub)sector, levels of operation within a (sub)sector, interactions in a (sub)sector, project

cycle and process flow. For more information, see Asian Development Bank 2008.

products commissioned by a government or local community.

Finally, this report identifies service delivery as the final level of the value chain vulnerable to different forms of corruption. As microinsurance and climate risk insurance contracts tend to be issued in less economically developed countries, the relationship between consumer and insurer – and between a national government and its insured population – can be harder to analyse and track. Put simply: in developing economies, information can be scarce, and it can be hard for communities with low levels of education and economic literacy to ascertain if the products they buy are appropriate for the risks they are seeking to insure (Platteau et al. 2017). Asymmetric information of this kind increases opportunity for bribery (Dhami and al-Nawaihi 2007). In the case of microinsurance and sovereign risk pools, this could equate to mis-selling or the failure to undertake a transparent tender process when awarding public reconstruction contracts.

After setting out the methodological framework for a corruption risk assessment in climate risk insurance, the following sections evaluate the risk of corruption in both direct and indirect index-based insurances.

## Corruption risks in climate risk insurance

Corruption risks at the policymaking level

### **Political corruption**

In addition to devastating physical damage and loss of life, natural catastrophes create their own economy. In the immediate aftermath of a drought, earthquake or tsunami, the sudden influx of donor finance, government resources and NGO support can create a windfall for elected officials

(Yamamura 2013). While climate risk insurance is not unique in introducing the opportunity for the solicitation of bribes and misappropriation of public funds, the transfer of a significant payout from a company or non-profit organisation after a claim has been triggered introduces the opportunity for the corruption of officials at the policymaking level. The nature of parametric insurance contracts – the size of policies offered and the speed at which they pay out – makes this a particular corruption pressure point. Research shows a positive relationship between public corruption and natural disasters; specifically, between senior government officials embezzling funds or accepting side-payments in return for reconstruction contracts (Leeson and Sobel 2006).

In 1997, the US Federal Emergency Management Agency provided US\$1.2 million in relief to Guam to replace bus shelters destroyed by Super Typhoon Paka. The governor of the island territory awarded a large contract to a primary business rival in return for their support in the 1998 gubernatorial campaign. A similar pattern of improper spending was discovered in the aftermath of the 2011 Tohoku earthquake, where funds from a special budget account established for the reconstruction of communities devastated by the temblors, tsunami and ensuing nuclear disaster were used to pay for unrelated projects. Money reserved for rebuilding was improperly spent on projects to improve the buildings of the central government's local branch offices and on measures to deal with anti-whaling groups (Yamamura 2013).

Meanwhile, a study of participation in a rainfall insurance programme in rural India from 2008 suggests that high intensity marketing targeted at village opinion leaders – instead of the merits of the microinsurance product itself – may have played a significant role in increasing the number of policies purchased (Giné et al. 2008).

A relative lack of transparency around the inner workings of risk pool contracts sold to states heightens the risk that senior public officials resort to bribery when distributing payouts after natural disasters.

Forest (2018) identifies three key disclosure failings in this area:

- policyholder and hazard coverage
- premiums and risk transfer parameters
- payouts and their use

The public should have easy access to information about who the policyholder is and what hazard has been insured against. This applies to sovereign risk pools, but the principal also stands in relation to microinsurance policies provided to communities.

Clear information must also be made available about the amount of premiums paid and the risk transfer parameters agreed. In the case of catastrophe bonds and sovereign risk pools, the involvement of NGOs and donors reinforces the argument for the public provision of details about premium volumes and risk transfer parameters.

Ensuring that details of payouts are publicly provided is arguably the most important step in countering bribery and misappropriation of public funds at the policymaking level. The amount of a payout alone, without information on how it was used, masks its potential impact. CCRIF, PCRAF and ARC publish clear information about when claims are triggered, but are less consistent in their publication of how quickly funds were used by recipients, how they were used or at whom the funds were targeted (Forest 2018).

Most risk pools have failed to provide clear, reliable and timely public information on policyholders and hazard coverage, premiums and risk transfer parameters. PCRAFI, for example, stated that eight

policies were sold to five different countries in 2017/2018, yet the client countries and type of cover received remains unclear (Forest 2018).

None of the risk pools circulate regular information on premiums or risk transfer parameters, making it impossible for citizens to understand where their taxes have gone (Forest 2018). The complex structure of these products involves a multitude of financial stakeholders that can make it difficult for taxpayers to trace tax money and hold their governments accountable. ARC, for instance, has historically provided information on what was paid in premiums by each member state during the first year of its operation, but not offered information for ensuing years. In addition, without any information on risk transfer parameters, premium figures give little indication on the extent of protection provided by the scheme. The piecemeal availability of information brings with it an increase in basis risk.

While pools publish details of payouts, they are less transparent about how these payouts are used in detail. Specifically, recipient governments have not been very diligent in making public how fast a payout has been used and where funds have been directed. This makes it difficult to assess the net impact of such a financial product. PCRAFI and CCRIF, for example, published information on payouts only twice between 2007 and 2017, despite disbursing funds a total of 33 times. The disclosure of this information is a logical next step for actors at the policymaking level seeking to address the risk of senior national and community figures behaving in a corrupt fashion after the payout of these funds (Forest 2018).

Extreme weather events such as droughts or floods cause major political shocks. The sudden inflow of capital provided to a disaster-struck area by a sovereign risk pool or a private company providing microinsurance contracts can exacerbate high level

political instability. Significant capital shifts heighten the potential for political corruption by creating uncertainty, which can encourage markets to pursue alternative measures to influence policymakers. Climate risk insurance contracts are often distributed alongside – and support – the provision of other forms of international relief finance, such as microloans. The multiplication effect this has on the scale of capital involved heightens the impact of wrongdoing (Clarke et al. 2011).

Studies examining the impact of corruption following windfalls in the form of aid and relief highlight the myriad externalities (re)insurers must be alive to. A quantitative analysis by Rahman et al. (2008) found a direct causal effect between flood-induced corruption and increased autocratic tendencies within an incumbent regime. However, the same research also indicated that, over a longer time horizon, extreme rainfall-driven floods can indirectly result in more democratic governance. According to the study, once a government is re-elected, they are held to higher standards of public accountability as a result of voter dissatisfaction.

Evidence from Sri Lanka in the aftermath of the 2004 Indian Ocean earthquake and tsunami shows that the Sri Lankan military used a windfall of resources to weaken the Tamil Tigers and end their multi-decade insurgency. The provision of US\$13bn in international aid facilitated the appropriation of resources that paved the way for a heavy-handed populist regime (Beardsley and McQuinn 2004).

Meanwhile, a qualitative stakeholder analysis of the feasibility of introducing health insurance in Afghanistan illustrates the political pressure required at the highest level to implement such a scheme, as it required lobbying within parliament, the cabinet of Afghanistan, ministries and the

people to implement the insurance programme (Zeng et al. 2017).

The study of health insurance in Afghanistan by Zeng et al. (2017) illustrates the close interaction between the (re)insurance markets and public policy instigated by governments in developing economies.

The number of government agencies and intermediaries involved in maintaining these relationships – which are central for the provision of policies guaranteeing against either risks to health or coral reefs – necessarily results in increased opportunities for bribery and extortion.

(Re)insurance contracts implemented as part of public policy in developing economies are especially vulnerable to corruption because of the short length of contracts typical across the industry. Unlike other products that come up for tender, most policies have an annual renewal date, and even multi-year contracts tend to be shorter than those issued for other public service contracts.

In addition, the role of supra-national bodies such as the World Bank in administering risk management structures, such as climate risk catastrophe bonds or Africa Risk Capacity, increases the opportunity for corruption at the supra-national level.

The German (re)insurance group Allianz regards these concerns as a threat to the delivery of insurance products in developing economies. In a case study report on the future of microinsurance, the carrier warns that changeable and unpredictable political and economic situations may result in the company having to withdraw completely from a given market, losing the capital already invested as well as prospective income (Allianz 2012).

## **Regulatory uncertainty**

Regulation is critical for the successful functioning of an insurance market; for a carrier to inspire trust, it must hold sufficient capital on its balance sheet to pay claims promptly, even in the face of a major financial shock.

Weaker regulatory regimes in developing economies may permit unscrupulous insurers to offer products that fail to pay out when disaster strikes.

This represents a clear corruption threat for those taking out climate risk insurance because lower standards of regulation make it easier for carriers to set up entities such as cell companies that are designed to fail in the face of a major claim and help the insurer avoid paying out.

Research examining levels of trust within communities deciding whether to subscribe to potentially life-saving mutual insurance policies in West Africa shows that concerns over management and oversight can be especially acute in developing economies (Criel and Waelkins 2003).

Participants in a health mutual in Guinea-Conakry underlined a link between embezzlement and formal structures, citing experience of mutual health insurance programmes that had taken money and simply disappeared.

Lax regulation can therefore have the dual effect of increasing levels of vulnerability to corruption relating to the payment of claims while also reducing levels of trust among customers, thereby eroding demand (Allianz 2012).

Insurance regulators and governments have a central role to play in improving access to microinsurance and establishing the appropriate products for a nation to use as part of a wider climate risk mitigation strategy. The International

Association of Insurance Supervisors has acknowledged the need for principles, standards and guidelines to be developed that assist with the identification of which entities are regulated by existing insurance laws and which remain entirely unregulated (IAIS 2007, Section 5). These principles have a twofold effect: they help guard against the creation of risk-bearing entities that are designed to fail, and will also discourage insurers attracted to developing markets not by the potential volume of positive business to be tapped but instead by the prospect of slashing compliance costs in regimes that do not have developed regulatory systems (Clarke et al. 2011; Maxwell et al. 2011).

In January 2010, the Philippine Insurance Commission issued new microinsurance regulations that until then had been provided by a mixture of entities, not all of which were licenced insurance companies (Philippines Insurance Commission 2010). Following the legislation all providers of microinsurance must be licenced by the commission, although different regulations apply to microinsurance operations across the areas of agent training and solvency requirements, for example.

Concerns raised by IAIS include the need to limit moral hazard and fraud by promoting awareness and putting in place controls and incentive systems. This highlights the need for a clear regulatory framework for each type of product, and overseas donors have a strong role to play in applying pressure on regimes that receive funding for climate risk insurance or crop insurance that they have suitable regulatory measures in place to ensure funds are spent responsibly.

Claims arbitration relating to policies designed to cover climate risks is further complicated because of the instability of liability legislation in the jurisdiction in which the type of product is offered.



In liability insurance, problems arise because of long delays between the writing of a contract and the realisation of a loss. These are exacerbated significantly in regimes where changes arise from legislative and judicial precedents that re-interpret the wording of insurance contract (Doherty 1991). The nature of microinsurance and sovereign risk pools means they are often deployed in developing economies where legal systems can be unstable or underdeveloped. Delays or obstructions in the judicial process have spurred the creation of new types of insurance – such as mutuals – and may represent one reason why forms of index-based policy could prove more attractive for providers operating in unstable political regimes.

#### Corruption at the service provider level

##### **Asymmetric information**

Research into the economics of corruption suggests asymmetric information has a strong effect on bribery and corruption. According to Garroupa and Jellel (2007), unequal information can incentivise rent-seeking behaviour, as those involved are likely to incorrectly estimate the cost-benefit of taking or paying bribes.

Basis risk is a term used in insurance to describe the risk of choosing an incorrect base for the settlement of claims. An insurance product may be designed to mitigate the effects of climate change damage, but if the index used to trigger a payout fails to accurately capture the nature of the risk, it may not pay out despite disastrous damage taking place. Conversely, the policy could pay out despite no meaningful claim taking place (Clarke et al. 2011). An information imbalance between insurer and insured greatly heightens the risk of corruption because index-based triggers are inherently complex, and this introduces a temptation for carriers to obscure information. A product that is difficult to understand can provide an opportunity

for insurance companies to insert exclusion clauses or additional terms and conditions into contracts or other risk transfer products. This process – known in the commercial insurance market as introducing exclusions and tightening terms and conditions – can be used as an opportunity to avoid covering perils. While the insurance company has a commercial prerogative to decide what risks it is able to cover, the obstruction of information in relation to public contracts represents a significant risk to the integrity of risk transfer contracts.

This is the single largest concern of companies, NGOs and governments involved in the administration of microinsurance and risk pooling schemes, as basis risk can have devastating consequences if a farmer or country incurs a loss but is not sufficiently compensated by their (re)insurance contract or risk pool (Clarke et al. 2011).

Basis risk can cause particular damage in index-based insurance programmes, because, unlike indemnity-based contracts, it is much harder for policyholders to dispute claims. Paradoxically, it is this characteristic that also makes such contracts attractive to (re)insurers and policyholders in the first place (Clarke et al. 2011). Reported low levels of transparency over the construction of parametric triggers may in some cases increase integrity risks associated with these types of policy (Action Aid 2017).

The failure of risk pool finance provision in Malawi has received widespread international attention in recent years. In April 2016, the country was hit by a drought induced by a supercharged El Niño event. Malawi had bought an insurance policy from the G7-backed ARC for a premium of US\$4.7 million. However, when climate disaster struck and 6.7 million food-insecure Malawians needed assistance, the policy did not pay out. ARC's calculations put the number of people whose food



security was affected at 20,594 – below the level at which the product would pay out.

According to ActionAid, the insurance failed to deliver the funds needed in the months after a national emergency was declared in April 2016. Sources interviewed by the NGO estimated that Malawi's food insecurity response plan launched in response to the crisis had a funding gap of US\$304 million at the time (Action Aid 2017)

Basis risk lies at the heart of ARC's initial failure to pay out after a crisis was declared. According to sources interviewed by ActionAid, the model used by the risk vehicle worked under the assumption that local – or open-pollinated varieties of maize, with maturation times of 120-140 days had been planted across the country. Researchers from the Lilongwe University of Agriculture and Natural Resources in fact found that 60% of maize planted was hybrid maize with a maturation time of 90 days. The shorter growing period effectively meant more of a gamble on the weather, since there was no chance for later rains to compensate for dry spells coinciding with the period when the maize most needed water. Using more realistic information in the calculation resulted in the figure of 20,594 people affected changing to 2 million (ActionAid 2017).

#### **Institutional risk within alternative risk transfer**

Alternative risk transfer products rely on complex company structures to transfer risk to capital markets. Institutional investors, including pension funds and hedge funds, use these types of products as a way of diversifying their portfolios and decorrelating risk. Insured perils such as earthquakes or tsunamis are unlikely to occur at the same time as a crash in the equity markets, making the products ideal vehicles for major investors seeking to achieve steady returns over a defined period (Jarzabkowski et al. 2015).

However, increased complexity brings with it more opportunities for corruption, in relation to the use of obscure legal entities and assumptions over the non-correlation of risk. Many ART products use company structures based in regulatory regimes such as Bermuda, Guernsey and the Cayman Islands. The relative lack of transparency associated with insurance special purpose vehicles in these jurisdictions can in some circumstances prevent those who are insured from obtaining a clear view of exactly where funds come from, potentially obscuring anti-money laundering measures and preventing in-depth analysis of funds used to capitalise some climate risk insurance products.

Institutional investors providing capital for alternative risk transfer products rely on the Sharpe ratio to determine what role structures such as insurance linked securities and catastrophe bonds can play within their portfolios. The Sharpe ratio is a measure that allows investors to examine the performance of an investment by adjusting for its risk. However, literature across the realm of academic actuarial research indicates the accuracy of this measure is not conclusive. In 2005, a study by the University of Sydney found the ratio can be simply too large to draw useful conclusions (Christie 2005). Over-reliance on this ratio has the potential to heighten opportunities for corruption in alternative climate risk insurance products because it could help provide a smokescreen that obscures information about the product. Lack of transparency over the way in which a financial institution conceptualises a financial instrument often filters down to affect how the product is constructed and managed.

#### **Corruption at the point of delivery**

##### **Petty corruption**

Strong parallels exist between corruption risks at the level of service delivery and the risks that arise

when international agencies respond to disasters. In the same way that fraud and embezzlement affects the delivery of funds intended for disaster victims, without sufficient oversight or fiduciary controls insurance claims payments may not reach their intended target (Linnerooth-Bayer & Mechler 2006). During service delivery, corruption can occur at two different stages: First, during the targeting and registration of recipients, and second, during the actual physical distribution.

The process of assessment, targeting and registration of recipient populations are often subject to manipulation and may depend on personal bias. Local elites involved in the distribution process may use pressure or bribery to influence where assessments and/or programmes are carried out, or to determine which groups are included or excluded (Transparency International 2014). Elites or staff of local organisations may favour an area or a group of recipients based on political, religious, ethnic or tribal affiliations. Similarly, local elites and staff on the ground can distort needs, costs or beneficiary numbers to generate surplus resources for corrupt diversion.

Second, the actual physical distribution of payouts bears risks for corruption insofar as distributors have the power both to manipulate the amount of assistance a recipient receives, and to distribute assistance to people that are not registered beneficiaries.

Intermediaries are relied on across all stages of the climate risk insurance value chain. In extreme cases, working with intermediaries may entail cooperating with local powerbrokers or gatekeepers, who have better access to the population on the ground. Especially if a local agency's capacity is not well-known to the partner organisation, the partner has to rely on the local agencies' assessment of the situation and their

ability to distribute resources (Transparency International 2014).

Evidence from India shows intermediaries wielding similar power at the local level. Giné et al. (2008) found that members of a borewell association in India were 37 percentage points more likely to buy an insurance contract if they knew the vendor personally. This led microfinance institutions to heighten the intensity of marketing towards community leaders and existing customers, in some cases using a locally recruited agent to introduce an insurance educator into households (Platteau et al. 2017). While education can play an important role in closing the insurance penetration gap, the failure to regulate increases the likelihood of corruption.

Overall, there is a perceived trade-off between control and empowerment that comes with these partnerships. Implementing strong measures of corruption prevention requires a certain level of control that is not always conducive to the building of trust that is needed for organisations to work along the value chain. Furthermore, it is not always possible to terminate the partnership after corrupt practices have been detected as in many cases there is a lack of alternative partners, especially in case of emergencies (Maxwell et al. 2011).

## Corruption mitigation measures in climate risk insurance

### Transparency

Shining a light on the inner workings of index-linked policies is the single easiest way to tackle the risk of corruption at the policymaking level. Forest (2018) identifies the need to achieve greater transparency regarding the type of risk transfer product employed as well as the payout made to enable sovereign risk pools to function effectively.

Currently, there is a lack of public information or clarity regarding which countries have taken out an insurance policy against which hazard, and the premiums paid and risk transfer parameters are generally treated as confidential (Forest 2018).

Since the parametric nature of these schemes means that insurance claims paid by these pools cannot directly be linked to a specific loss, transparency over insurance coverage becomes a precondition for accountability. Only if citizens can understand what is covered by the insurance under which conditions and for what risks, are they able to hold their governments accountable for policies and by extension hold risk pools responsible for their performance.

Other industries have set a clear precedent for the disclosure of information relating to public-private partnership schemes. The Extractive Industries Transparency Initiative requires both governments and companies to provide information, such as revenue, that might previously have been considered confidential (EITI 2018).

One concrete measure would be to compel risk pools to adhere to the World Bank's Framework for Disclosure in public-private partnerships, which requires both governments and companies to disclose information such as their revenues (Jarvis and Kenny 2018)

### **Education**

Government officials deciding whether to accept proposals made to participate within a sovereign risk pool programme and farmers considering crop insurance require the knowledge to be able to understand the intricacies of the product they are purchasing and assess the appropriateness of each (re)insurance product. Education is the most powerful way of achieving this, and can come in many forms (Platteau et al. 2017). Microinsurance

companies seeking to implement health insurance programmes have sought to boost uptake with the provision of training in financial literacy; however, the effect of this on uptake of the final product remains unclear.

The complexity of climate risk insurance products sold at a governmental level makes it necessary for senior officials to have a sophisticated understanding of the risk management options they have in front of them. The case of Malawi and Africa Risk Capacity demonstrates that even when equipped with this, it can be extremely difficult to fully comprehend the triggers used for these parametric products (ActionAid 2017). The need for this high level of understanding is imperative for governments and the international entities helping to provide risk solutions. Service providers must support an informed, inclusive, country-driven appraisal of the nation's priorities when it comes to establishing a risk reduction system.

Research by Clarke et al. (2011) underscores the role of governments in making insurance more attractive to their populations by subsidising premiums or the costs incurred by insurers providing microinsurance. If governments choose to invest in educating the population about the benefits and risks of insurance, it has two key effects: it increases insurance penetration across a country and improves the quality of the government's knowledge of the risk transfer products it either regulates or seeks to purchase.

Through education and advisory support, governments and donors can equip communities and decision makers with the information to decide whether or not the insurance product recommended to them does in fact represent the best possible option for their situation. Following an analysis of microinsurance demand in the National Capital Region of India, for instance, Uddin (2017) recommends that the country's

Insurance Regulatory and Development Authority (IRDA) reach out to the poor, the less educated and the unemployed. This would help provide citizens with impartial information about what types of product might be useful in their specific situation.

The reliance of service providers on distribution networks through intermediaries – whether a multinational reinsurance broker administering a sovereign risk pool or catastrophe bond or a local village representative for a microinsurance product – makes the role of education vital in ensuring greater transparency across the risk transfer process (ActionAid 2017).

ActionAid also highlights the importance of collaboration with experts across a range of areas, including social protection and rural development, to ensure governments have enough information to make informed decisions when signing up to insurance schemes such as sovereign risk pools.

### **Contract simplicity**

Adopting climate risk insurance products that have a design appropriate for the environment in which they are deployed is extremely important. As Clarke et al. (2011) describe in detail, some of the most scientifically accurate weather index insurance products have failed to achieve scale or take-up because they are too difficult to explain to local partners and customers. Most significantly, however, design complexity can heighten opportunities for exploitative practices within the value chain by increasing the asymmetry of information between service provider and buyer.

Most (re)insurers do not have granular data to enable the accurate assessment of customers' vulnerabilities in developing economies, and therefore a hefty margin of error must be built in, followed by a process of continuous adjustment once claims begin to materialise (Allianz 2012).

Evidence from a funeral mutual insurance scheme implemented in a village in north-eastern Thailand shows the positive effect of administrative simplicity on this kind of insurance programme (Bryant & Prohmmo 2002). A clear structure significantly increased public approval of the insurance, firstly because it enabled costs to be kept down – an important feature for the village. The committee's duties following a death consisted of little more than checking the registration form of the household suffering a loss, keeping track of households that had made payments and performing some elementary arithmetic. Light duties meant the society needed only to charge a small fee of 250 baht (US\$7.65).

Administrative simplicity of the scheme also led to transparency. This ensured that it was straightforward for the procedures to be followed and decisions taken by the organising committee to be verified, making the programme highly resistant to mistakes or cheating, and increasing scheme loyalty.

In developed markets, the complexity of products may help insurance providers retain a competitive advantage. However, in new markets where insurance penetration is low, a lack of understanding may raise questions and distrust if contract simplicity is not a feature of product design (Allianz 2012).

In its analysis of errors in the case of the 2015/16 policy bought from ARC by Malawi that did not pay out, ActionAid outlines a fundamental objection to the complexity of the product's trigger mechanism. In their view, a risk model that seeks to represent the complex causal relationship between drought and food requires too many assumptions and contains potentially significant gaps. In addition to recognition that climate risk insurance policies can only be part of a country's broader risk mitigation plan, ActionAid calls for the implementation of a

basis risk fund – a simple savings-based structure that would step in when a provider such as ARC clearly misses a crisis that such a policy is meant to insure against (Action Aid 2017).

### **Civil engagement**

Increasing transparency and publicly available information about claims contracts cannot alone reduce corruption risks. Establishing an environment in which citizens have a clear understanding of products being purchased on their behalf is critical in facilitating democratic enquiry and establishing accountability. Research carried out by the Caribbean Policy Development Centre (CPDC) for Christian Aid found that in four Caribbean countries there was limited knowledge of the sovereign risk pool among community stakeholders (Christian Aid 2009). Ensuring a “two-way street” between policymakers and citizens – which includes heightening public awareness of the type of risk insurance products being purchased – is critical for the long-term understanding of the contribution made by risk pools to resilience (Forest 2018). Service providers could lead from the front and ask governments’ permission to publish information about premiums, cover sought and claims paid. This would help risk pools develop increased awareness of citizens’ needs within the countries they serve and also to explain the risk protection their policies offer. Increased stakeholder engagement may also reduce the political tensions that lead to countries deciding not to renew their policies (Forest 2018).

It is through end user engagement that errors in the implementation of climate insurance schemes can be identified and remedied. Evidence from the study of an insurance programme suffering from declining participation in Guinea-Conakry in West Africa shows how engagement corrected an erroneous hypothesis that details of the scheme had not been communicated properly (Criel and

Waelkens 2003). Discussions with insurance programme subscribers showed the low quality of care offered by the insurance product was the main reason for the lack of interest. Most participants canvassed considered the insurance premium of US\$2 per person to be fair, but speaking to locals also highlighted that many poor or large families were unable to raise subscription money for all household members (Criel and Waelkens 2003).

The launch of a typhoon weather index insurance in the Philippines in 2009 was underpinned by questionnaires and focus groups conducted by an insurance broker on the island of Panay in the preceding two years. This enabled the rural banks and microfinance providers and insurance company involved in administering the scheme to establish what risks smallholder farmers were most concerned about, as well as determine whether there was sufficient demand for their product.

Engagement with farmers highlighted dissatisfaction with the multi-peril product made available to communities by the government because of dissatisfaction with the level of previous payouts and the length of delay in such payouts being made. If a claims assessor takes two months before visiting a field, the farmer is obliged to leave the ground in a damaged, unproductive state for this length of time. In this example, close civil engagement augmented the initial design of the product and increased the quality of service delivery (Criel and Waelkens 2003).

Forest (2018) argues that the provision of direct financing to civil society groups and non-governmental organisations to build capacity on the topic of climate and disaster risk financing policy and practice should be a central pillar of a donor’s strategy.



## Concluding remarks

This Helpdesk Answer provides a jumping off point for further enquiry by outlining some of the corruption risks associated with climate risk insurance. While the forms of insurance schemes range widely, from microinsurance to sovereign risk pools and catastrophe bonds, some of the general integrity vulnerabilities are common to all.

The value chain analysis conducted in this report indicates it is useful to consider implications of corruption at three levels: the level of policymaking, the level of the service provider and at the point of delivery.

This answer is not an all-encompassing overview of the threats and opportunities for governments and risk transfer providers, but rather it highlights the gaps – and in some areas serious deficiencies – in communication between policymakers, service providers and civil society. Reduced visibility of contracts and opacity over intended risk transfer goals has the effect of lowering levels of trust across both civil society and the (re)insurance industry.



## References

- ActionAid. 2017. The Wrong Model for Resilience: How G7-backed drought insurance failed in Malawi and what we must learn from it. Johannesburg.
- African Risk Capacity (ARC): <http://www.africanriskcapacity.org/>
- Allianz Group: Microinsurance. 2012. Marketline Case Study.
- Asian Development Bank. 2008. [Diagnostics to Assist Preparation of Governance Risk Assessments](#).
- Blais, D. and Schenkelaars, F. 2009. *Institutional Risk Assessment – Best Practices Compendium*.
- BMZ. 2015. InsuResilience. The Climate Risk Insurance Initiative. Berlin.
- BMZ. 2017: [https://www.bmz.de/en/zentrales\\_downloadarchiv/cop23/BMZ\\_Factsheet\\_insuresilience\\_EN.pdf](https://www.bmz.de/en/zentrales_downloadarchiv/cop23/BMZ_Factsheet_insuresilience_EN.pdf)
- Bryant, J. and A. Prohmmo. 2002. Equal Contributions and Unequal Risks in a North-East Thai Village Funeral Society.
- Campos, J. and Pradhan, S. 2007. The Many Faces of Corruption: Tracking vulnerabilities at the sector level. <https://openknowledge.worldbank.org/handle/10986/6848>
- Caribbean Catastrophe Risk Insurance Facility (CCRIF): <https://www.ccrif.org/content/about-us>
- Christian Aid. 2009. Does Disaster Insurance Have a Role in Climate Change Adaptation?
- Christie, Steve. 2005. Is the Sharpe Ratio Useful in Asset Allocation?
- Churchill, C. 2007 'Insuring the Low-Income Market: Challenges and Solutions for Commercial Insurers.
- Council of Europe. 2009. *Corruption Risk Assessment Methodology Guide*.
- Clarke, D. and Dercon, S. 2016. Dual Disasters? How Planning Ahead Will Make a Difference. Oxford University Press: Oxford.
- Clarke, D., Agrotosh, M., Stein, D., Grenham, D., Sharpe, J. 2011. Crop Microinsurance: Tackling Poverty, One Insurance Policy at a Time.
- Criel, B. and Waelkens, M.P. 2003. Declining Subscriptions to the Maliando Mutual Health Organisation in Guinea-Conakry (West Africa): What is going wrong?
- Dhami, Sanjit and Ali al-Nowaihi. 2007. Corruption and the Provision of Public Output in a Hierarchical Asymmetric Information Relationship.
- Doherty, N. 1991. The Design of Insurance Contracts When Liability Rules are Unstable.
- Extractive Industries Transparency Initiative: <https://eiti.org/>.
- Forest, Rosemary. 2018. Climate Risk Insurance: Transparency, Participation and Accountability. An overview Assessment of Regional Risk Pools. [http://www.climate-insurance.org/fileadmin/mcii/pdf/DiscussionPaperSeries/MCII\\_DiscussionPaper\\_Vol2\\_2018\\_CRI\\_Transparency\\_Participation\\_Accountability\\_FINAL.pdf](http://www.climate-insurance.org/fileadmin/mcii/pdf/DiscussionPaperSeries/MCII_DiscussionPaper_Vol2_2018_CRI_Transparency_Participation_Accountability_FINAL.pdf)
- Garoupa, N., and Mohamed Jellal. 2007. Further Notes on Information, Corruption, and Optimal Law Enforcement.
- Germanwatch. 2016. Global Climate Risk Index. <https://germanwatch.org/en/11366>
- Giné, X., Townsend, R., & Vickery, J. 2008. Patterns of rainfall Insurance Participation in Rural India.
- GlobalAgRisk. 2012: <http://seguros.riesgoycambioclimatico.org/publicaciones/Nota-Tecnica4-eng.pdf>
- Hallegatte, S. et al. 2017. Unbreakable. Building the Resilience of the Poor in the Face of Natural Disasters. Climate Change and Development. World Bank. Washington DC
- IAIS. 2007. Issues in Regulation and Supervision of Microinsurance. Technical Report.

- Isakson, Ryan. 2015. Small Farmer Vulnerability and Climate Risk: Index Insurance as a Financial Fix. Canadian Food Studies. <http://canadianfoodstudies.uwaterloo.ca/index.php/cfs/article/view/109>
- Jarvis, M., and Kenny, C. 2018. It's Time for a Code of Conduct on Transparency for Financiers Backing PPPs. <https://www.cgdev.org/blog/its-time-code-conduct-transparency-financiers-backing-ppps>
- Jarzabkowski, Paula, Rebecca Bednarek and Paul Spee. 2015. *Making a Market for Acts of God*.
- Leeson, Peter T. and Russell S. Sobel. 2006. Weathering Corruption.
- Loughborough University. 2007. A Note on Research Methodology for Combating Corruption. [https://wedc-knowledge.lboro.ac.uk/resources/books/A\\_note\\_on\\_Research\\_Methodology\\_for\\_Combating\\_Corruption\\_-\\_Complete.pdf](https://wedc-knowledge.lboro.ac.uk/resources/books/A_note_on_Research_Methodology_for_Combating_Corruption_-_Complete.pdf)
- Martini, M. 2012. Influence of Interest Groups on Policymaking. <https://knowledgehub.transparency.org/helpdesk/influence-of-interest-groups-on-policy-making>
- Maxwell, Daniel, Sarah Bailey, Paul Harvey, Peter Walker, Cheyanne Sharbatke- Church, and Kevin Savage. 2012. Preventing Corruption in Humanitarian Assistance: Perceptions, gaps and challenges.
- McDevitt, A. 2011. Corruption Risk Assessment Topic Guide. <https://knowledgehub.transparency.org/product/topic-guide-on-corruption-risk-assessments>
- MCII. 2016a. Making Climate Risk Insurance Work for the Most Vulnerable: Seven Guiding Principles. UNU-EHS Publication Series Policy Report 2016 No. 1. Bonn
- MCII. 2016b. Climate Risk Insurance for the Poor and Vulnerable: How to Effectively Implement the Pro-Poor Focus of InsuResilience. Edited by MCII. Bonn.
- Miller, A. And Swann, S. 2016. Innovative Insurance to Manage Climate Risks. EMCompass Note 9. International Financial Cooperation. World Bank Group: Washington DC.
- Mills May, A. 2012. Causes of Corruption in Public Sector Institutions and Its Impact on Development: Turning What We Know in What We Do. <http://unpan1.un.org/intradoc/groups/public/documents/un-dpadm/unpano49589.pdf>
- Pacific Catastrophe Risk Assessment and Financing Initiative Facility (PCRAFI): <http://pubdocs.worldbank.org/en/178911475802966585/PCRAFI-4-pager-web.pdf>
- Pazarbasioglu Ceyla. 2016. Index Insurance is Having a Development Impact Where It's Needed Most. World Bank Group: Washington DC.
- Platteau, Jean-Philippe, Ombeline de Bock and Wouter Gelade. 2017. The Demand for Microinsurance: A Literature Review.
- Porter, Michael E. 1985. "Competitive Advantage". The Free Press. New York.
- Rahman, Muhammad Habibur, Nejat Anbarci, Prasad Sankar Bhattacharya, Mehmet Ali Ulubaşoğlu. 2017. Can Extreme Rainfall Trigger Democratic Change? the Role of Flood-Induced Corruption.
- Rapcevičienė, D. 2014. Modelling A Value Chain in Public Sector. [http://stics.mruni.eu/wp-content/uploads/2014/08/STICS\\_2014\\_2\\_42-49.pdf%20](http://stics.mruni.eu/wp-content/uploads/2014/08/STICS_2014_2_42-49.pdf%20)
- Reeves, Jonathan. 2016. Ten concerns about climate and disaster insurance schemes – and one rights-based alternative, ActionAid UK. <http://www.actionaid.org/2016/05/ten-concerns-about-climate-and-disaster-insurance-schemes-and-one-rights-based-alternative>
- Rose-Ackerman, S. 1996. The Political Economy of Corruption: Causes and Consequences. <https://openknowledge.worldbank.org/handle/10986/11629>
- Schäfer L, Waters E, Kreft S, Zissener M (2016) Making climate risk insurance work for the most vulnerable. Policy Report No. 1. United Nations University Institute of Environment and Human Security (UNU-EHS), Bonn. [http://www.climate-insurance.org/fileadmin/mcii/documents/MCII\\_PolicyReport2016\\_Making\\_CRI\\_Work\\_for\\_the\\_Most\\_Vulnerable\\_7GuidingPrinciples.pdf](http://www.climate-insurance.org/fileadmin/mcii/documents/MCII_PolicyReport2016_Making_CRI_Work_for_the_Most_Vulnerable_7GuidingPrinciples.pdf)

Scherer, N. 2017. How to Advance Regional Climate Risk Insurances. Climate Diplomacy Policy Brief. Adelphi.

Schleussner et al. 2016. Armed Conflict Risks Enhanced by Climate-Related Disasters in Ethnically Fractionalized Countries.

Selinšek, L. 2015. [Corruption Risk Assessment in Public Institutions in South East Europe: Comparative Research and Methodology](#).

Trading Risk. 2017. European Cat Bond Investors Pick Up Bulk of World Bank Pandemic Deal <https://trading-risk.com/articles/118134/european-cat-bond-investors-pick-up-bulk-of-world-bank-pandemic-deal>

Trading Risk. 2018. Philippines Raises \$386mn for Disaster Programme Renewal. <https://trading-risk.com/articles/123762/philippines-raises-386mn-for-disaster-programme-renewal>

Transparency International 2009. Global Corruption Report: Corruption in the Private Sector. [https://www.transparency.org/whatwedo/publication/global\\_corruption\\_report\\_2009](https://www.transparency.org/whatwedo/publication/global_corruption_report_2009)

Transparency International 2014. Preventing Corruption in Humanitarian Operations. [https://www.transparency.org/whatwedo/publication/preventing\\_corruption\\_in\\_humanitarian\\_operations](https://www.transparency.org/whatwedo/publication/preventing_corruption_in_humanitarian_operations)

Transparency International. 2017. Monitoring Corruption and Anti-Corruption in the Sustainable Development Goals. [https://www.transparency.org/whatwedo/publication/monitoring\\_corruption\\_and\\_anti\\_corruption\\_in\\_the\\_sustainable\\_development\\_goals](https://www.transparency.org/whatwedo/publication/monitoring_corruption_and_anti_corruption_in_the_sustainable_development_goals)

Transparency International. 2018. What is Corruption? [https://www.transparency.org/news/feature/what\\_is\\_grand\\_corruption\\_and\\_how\\_can\\_we\\_stop\\_it](https://www.transparency.org/news/feature/what_is_grand_corruption_and_how_can_we_stop_it)

USAID. 2005. *Tools for Assessing Corruption & Integrity in Institutions: A Handbook*.

USAID. 2009. *Anti-Corruption Assessment Handbook*.

World Bank. 2017. Sovereign Climate and Disaster Risk Pooling. World Bank Technical Contribution to the G20. World Bank Group: Washington, DC.

Yamamura, Eiji. 2013. Impact of Natural Disaster on Public Sector Corruption.

Zeng et al. 2017. Assessing the Feasibility of Introducing Health Insurance in Afghanistan: A Qualitative Stakeholder Analysis.

## **Disclaimer**

All views in this text are the author(s)' and may differ from the U4 partner agencies' policies.

## **Partner agencies**

DFAT (Australia), GIZ/BMZ (Germany), Ministry for Foreign Affairs of Finland, Danida (Denmark), Sida (Sweden), SDC (Switzerland), Norad (Norway), UK Aid/DFID.

## **About U4**

The U4 anti-corruption helpdesk is a free research service exclusively for staff from U4 partner agencies. This service is a collaboration between U4 and Transparency International (TI) in Berlin, Germany. Researchers at TI run the helpdesk.

The U4 Anti-Corruption Resource Centre shares research and evidence to help international development actors get sustainable results. The centre is part of Chr. Michelsen Institute (CMI) in Bergen, Norway – a research institute on global development and human rights.

[www.U4.no](http://www.U4.no)

[U4@cmi.no](mailto:U4@cmi.no)

## **Keywords**

risk assessment – climate – insurance

## **Open access**

We apply a Creative Commons licence to our publications: CC BY-NC-ND 4.0.



*U4 Partner staff can use the helpdesk for free.  
Email us at [helpdesk@u4.no](mailto:helpdesk@u4.no)*