

CLIMATE RISK INSURANCE FOR THE POOR & VULNERABLE:

**HOW TO EFFECTIVELY IMPLEMENT THE
PRO-POOR FOCUS OF INSURESILIENCE**

An analysis of good practice, literature and expert interviews

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ABBREVIATIONS

ACRE Africa	Agriculture and Climate Risk Enterprise Ltd.
ARC	African Risk Capacity
CCRIF SPC	Caribbean Catastrophe Risk Insurance Facility
FONDEN/AGROASEMEX	Mexican National Disaster Fund/Mexican Rural Insurer and Reinsurer
IBFIP	Index-based Flood Insurance Project
IBLI	Index-based livestock insurance (Kenya)
IBLIP	Index-based Livestock Insurance Project (Mongolia)
IPCC	Intergovernmental Panel on Climate Change
La Positiva	La Positiva Seguros
LPP	Livelihood Protection Policy
MCII	Munich Climate Insurance Initiative
MFIs	Microfinance Institutions
MicroEnsure	MicroEnsure Rwanda
MiCRO-Haiti	Microinsurance Catastrophe Risk Organisation (Haiti)
mNAIS	Modified National Agricultural Insurance Scheme (India)
NGOs	Non-governmental organizations
PCIC	Philippine Crop Insurance Corporation
PCRAFI	Pacific Catastrophe Risk Assessment and Financing Initiative
PepsiCo	PepsiCo India
PlaNet Guarantee	PlaNet Guarantee microinsurance company
PPP	Purchasing power parity
R4	The R4 Rural Resilience Initiative
SANASA	SANASA agricultural insurance
UNFCCC	United Nations Framework Convention on Climate Change

EXECUTIVE SUMMARY

Background

The devastating impacts of climate change are already being felt around the globe, threatening sustainable development and resilience, impairing socioeconomic development and reinforcing cycles of poverty. In both rich and poor countries, the frequency of weather-related loss events is rising. The world's poorest people bear a disproportionate burden of climate stress, yet they have contributed least to the drivers of anthropogenic climate change. In the face of predicted increasing weather extremes and profound shifts in natural systems, the need is greater than ever to support the most vulnerable people and countries in finding effective strategies to manage risks and unexpected shocks and to build resilience to climate impacts.

Insurance can be a tool to help people manage risk more effectively, yet it is hardly available for poor and vulnerable people in developing countries. Currently, only about 100 million people in Africa, Asia and Latin America are covered by insurance schemes against climate risks (GIZ and BMZ, 2015).

The year 2015 marked a milestone in international climate policy, setting the stage for shaping “the trajectory of resilience and sustainable development for the coming decades” (GIZ and BMZ, 2015). The relevance of insurance as a tool within comprehensive climate risk management has been recognized by policymakers around the world and is now anchored in major international policy agendas. Many actors are currently investing resources in developing and supporting climate risk insurance schemes, and are looking for ways to implement insurance at a larger scale; many of these efforts are specifically targeted at covering the poor and vulnerable in developing countries. As part of its global commitment, the G7 announced a Climate Risk Insurance Initiative (“InsuResilience”), which is unique in its scale and focus on highly exposed poor and vulnerable people. By increasing insurance coverage to protect up to 400 million additional people, the initiative aims to create pathways towards climate resilience (ibid).

Now is the time to learn and adapt from existing pilots and schemes, to ensure that climate risk insurance efforts effectively contribute to supporting poor and vulnerable people in finding climate-resilient development pathways.

Objective

Climate risk insurance that successfully targets the poor needs strong guidance for planning and implementation. The results presented in this research report, and the Pro-Poor Principles for Climate Risk Insurance in particular, are MCI's contribution to supporting and guiding current and future efforts in reaching and benefiting the poor and vulnerable with climate risk insurance.

This study contributes to the learning process and the global discussion on addressing climate change risks for the poor. It does so by presenting research results based on the analysis of 18 already existing climate risk insurance schemes. Our research investigated:

1. If and how climate risk insurance can contribute to building the resilience and alleviating poverty of its target group.
2. How climate risk insurance can effectively reach the poor and vulnerable, including success factors and challenges.

The primary objective of this study is to support the preparation and implementation process of InsuResilience. It does so in the following ways:

- **Providing the theoretical and normative background** for InsuResilience by investigating the potential impact of climate risk insurance on resilience-building.
- **Outlining relevant principles** that can guide InsuResilience in effectively targeting poor and vulnerable people, while at the same time improving their resilience and alleviating poverty.
- **Defining the target groups of the initiative** to ensure that efforts reach those who need it most.
- **Formulating recommendations** for InsuResilience based on lessons learned from existing insurance schemes. The study explores what new thinking and action is needed for InsuResilience to reach 400 million additional people with direct and indirect insurance by 2020 and how the findings of this study can be used for monitoring and evaluating the success of the initiative.
- Furthermore, we aim to **identify gaps and research needs** that would be important to address to support the implementation process of InsuResilience.

Main findings

Pro-Poor Principles to effectively reach the poor and vulnerable with climate risk insurance

Based on the analysis of 18 existing climate risk insurance schemes (both direct and indirect) and interviews conducted with experts from the fields of insurance, climate change adaptation, disaster risk reduction and climate risk management, we distilled **Pro-Poor Principles for Climate Risk Insurance**. The principles can guide climate risk insurance schemes before and during operations and are a key component for establishing solidarity-oriented insurance schemes and responding to concerns of equity.

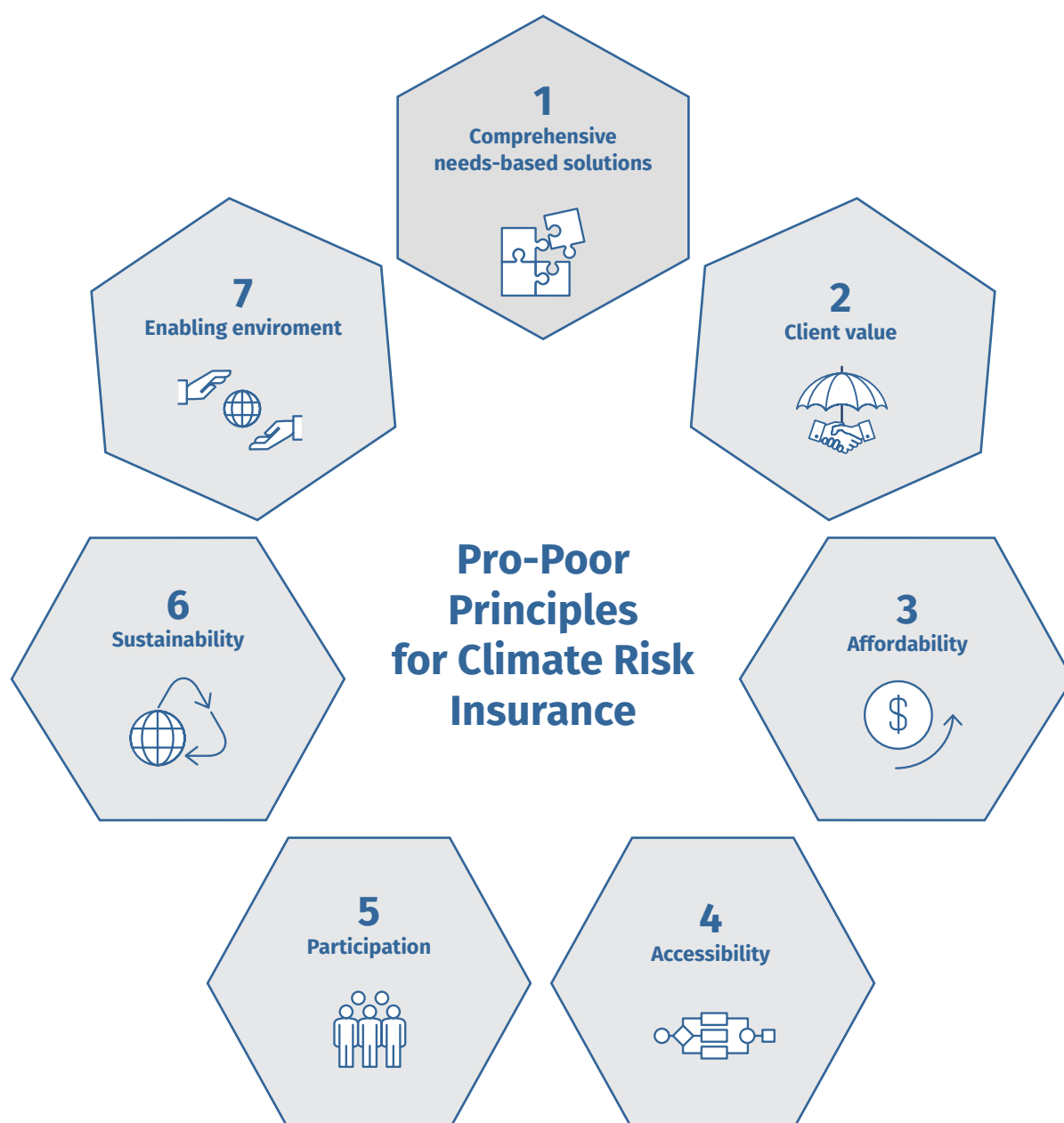


Figure 1: Seven Pro-Poor Principles for Climate Risk Insurance

Source: Own graphic.

The research revealed distinct factors for success and an enabling environment as well as challenges in reaching poor and vulnerable populations with climate risk insurance. For pro-poor oriented climate risk insurance schemes to be successful, the following points are crucial.

1. **Comprehensive-needs based solutions:** Solutions to protect the poor from extreme weather events must be tailored to local needs and conditions.

It is imperative to embed insurance in comprehensive risk management strategies that improve resilience.

2. **Client value:** Providing reliable coverage that is valuable to the insured is crucial for the take-up of insurance products.
3. **Affordability:** Measures to increase affordability for poor and vulnerable people are paramount to the success of an insurance scheme and also important to satisfy equity concerns.
4. **Accessibility:** Efficient and cost-effective delivery channels that are aligned with the local context are key for reaching scale.
5. **Participation, Transparency & Accountability:** Successful insurance schemes are based on the inclusive, meaningful and accountable involvement of (potential) beneficiaries and other relevant local-level stakeholders in the design, implementation and review of insurance products, creating trust and providing a basis for local ownership and political buy-in.
6. **Sustainability:** Safeguarding economic, social and ecological sustainability is crucial for the long-term success of insurance schemes.
7. **Enabling environment:** It is vital to actively build an enabling environment that accommodates and fosters pro-poor insurance solutions.

An elaborated table of the principles with respective recommendations for action can be found in chapter 6, *Pro-Poor Principles for Climate Risk Insurance*, and a detailed explanation of the lessons learned, which were used to derive the principles, can be found in chapter 5, *Lessons learned: how to make insurance work for the poor and vulnerable*.

The contribution of climate risk insurance to the resilience-building of the poor and vulnerable

Using the 18 schemes (for a complete list see sub-chapter 2.3) we analysed if and how insurance schemes contribute to increasing the resilience of poor and vulnerable people. Our research provides evidence that suggests that – if embedded into a wider risk management approach – climate risk insurance can contribute to improving key capacities that are imperative for reducing poverty and making poor and vulnerable people more resilient. These capacities include anticipatory, absorptive and adaptive capacities. The Pro-Poor Study showed that insurance can contribute to increasing these key capacities, both ex-ante and ex-post, in four ways¹:

1. **Protecting against climate shocks:** By providing timely finance that improves financial liquidity after a disaster, insurance can play a role at the micro level as a safety net and buffer for people and countries shortly after an event. We find that under these circumstances, insurance can

¹ This framework was inspired by a similar concept on social protection from Devereaux and Sabates-Wheeler (2004).

help beneficiaries to better absorb shocks, as they may not have to resort to coping strategies that might impede sustainable development. It can also help people from slipping (back) into poverty (e.g. insurance can help to reduce distress asset sales and help to increase food security, both enabling faster recovery after a shock).

2. **Promoting growth by unlocking opportunities:** By reducing the residual risk that could not be reduced by measures already taken, insurance can help lessen financial repercussions of volatility and, in the longer term, create a space of certainty within which investments, planning and development activities can be undertaken. In this way, at the micro level insurance can help to unlock opportunities and may help increase savings, increase investments in higher-return activities and improve creditworthiness, all of which might allow people to escape from poverty traps or from the threat of them. At the macro level, research suggests that insurance may contribute to economic growth by allowing for more effective risk management.
3. **Catalysing other elements in the process of comprehensive risk management that are necessary to build resilience:** Both at micro and macro levels, insurance can act as a catalyst for risk assessment. Risk assessment is a vital part of insurance as it is the precondition for calculating premium levels for policyholders. Accordingly, insurance can facilitate regional and international data analysis, such as establishing data standards, methods and data repositories. It can therefore be a catalyst for risk assessment. Assessing the risk of loss and damage is a prerequisite for identifying needs and policy priorities. Moreover, “public awareness of risk can have a major effect in reducing the impacts of extreme weather events: risk awareness encourages risk-reducing behaviour and increases the demand for insurance coverage” (Warner et al., 2012).
4. **Spurring transformation by incentivizing risk reduction behaviour and fostering a culture of prevention-focused risk management:** Insurance spurs transformation by helping countries to reshape the way risks are managed. It does so by encouraging risk reduction, catalysing risk assessment and driving a more structured decision-making process around ex-ante risk. At the political level, we see that requesting contingency planning as eligibility criteria for insurance has changed the process of disaster relief programmes in the relevant countries. In this way, insurance can encourage countries to develop a culture of data-driven, prevention-focused risk management. Insurance can incentivize

risk reduction behaviour, e.g. by providing the option for people to work for their insurance cover by engaging in community-identified projects to reduce risk and build climate resilience.

For more information refer to chapter 4, *The impact of climate risk insurance on resilience*.

Below, we summarize three ways in which the findings of this report can be used for the further development and implementation of the InsuResilience Initiative.

1. How can the findings of this study be applied to define a target group?

In order for the initiative to effectively reach its objective, there needs to be clarity around the specific target group of the initiative. In other words, who are at the most risk due to climate impacts and of those people, who might benefit from insurance? This report offers a categorization of groups, which can provide clarity on who to target, ultimately fostering the counting process of beneficiaries.

We recommend defining the target groups of InsuResilience as follows:

1. Extreme poor, hereafter defined as people earning below \$1.90 PPP/day.
2. Moderate poor, hereafter defined as people earning below \$3.10 PPP/day and above \$1.90 PPP/day.
3. People vulnerable to climate risk with the risk of slipping (back) into poverty, hereafter defined as people particularly exposed to extreme weather events earning below \$10 PPP/day and above \$3.10 PPP/day.

With the ultimate objective of ensuring the pro-poor focus of the initiative, we recommend the use of a “burden of proof” for climate vulnerability for insurance schemes when crossing the threshold between target groups (1) + (2) and target group (3); this means providing evidence that the potential beneficiaries in group (3) are actually highly exposed or sensitive to extreme weather events and that an insurance approach could help to cushion their impacts (see sub-chapter 3.1.5 for more details).

2. How can InsuResilience use the Pro-Poor Principles for reaching the poor and vulnerable with climate risk insurance?

We recommend that InsuResilience embed the Pro-Poor Principles for Climate Risk Insurance as a core part of its pro-poor strategy, by using them to facilitate direct and indirect insurance schemes. This could entail selecting, designing and implementing, as well as providing financial means for, insurance programmes supported by InsuResilience.

We recommend that InsuResilience...

- Agree on the Pro-Poor Principles as the **normative framework** for the initiative.
- Use these principles as a minimum benchmark for **monitoring and evaluating** the initiative.
- Support climate risk insurance schemes that meet the principles or supports schemes in meeting the principles when **designing and implementing** the initiative.
- Use the principles for the **prioritization** of investments and support in partner countries and schemes.

3. How can the findings of this study be applied to InsuResilience's efforts to effectively contribute to increasing the resilience of the poor and vulnerable?

We recommend that InsuResilience...

- **Develop the following long-term vision:** The impact of InsuResilience can significantly contribute to the resilience of the target group by increasing in the beneficiaries' capability to anticipate, absorb and adapt to climate change impacts, which can be measured based on the determinants outlined in this study. By showcasing the complex relationships between climate risk insurance and resilience as part of this long-term vision, e.g. on a pilot basis, InsuResilience can contribute to the discussion on how to effectively increase resilience, e.g. in the context of the Sustainable Development Goals, the UNFCCC, the Sendai Framework for Disaster Risk Reduction, the Accelerating Action to Resilience Initiative and others.
- **Measure the impact** on increasing the resilience of the target group as the contribution to anticipatory, absorptive, adaptive capacities and transformation towards a culture of resilience.
- Actively **support or initiate activities** that contribute to increasing
 1. anticipatory capacity, e.g. promote risk assessment activities;
 2. absorptive capacity, e.g. strengthen responsive delivery channels that make fast payouts after a shock possible, hence immediately improving financial liquidity after an event;
 3. adaptive capacity, e.g. promote risk reduction activities; and
 4. transformation, e.g. support the introduction, implementation or

improvement of contingency plans as a precondition for supported macro-level insurance schemes, ensure a pro-poor focus in such plans and support insurance schemes that promote risk reduction behaviour.

- **Identify gaps** in respective partner countries and supported schemes with regard to capabilities that are necessary to build resilience and actively strengthen these capacities, building on existing local policies and activities (e.g. national adaptation plans).
- **Address research gaps** with regard to the potential of insurance for reducing vulnerabilities and enhancing resilience to better decide on adequate activities, e.g. by supporting comprehensive impact evaluations of existing insurance schemes.

➔ Although this report narrows in on the ways in which InsuResilience can apply the findings, the findings are relevant to other actors outside of this initiative. Please see sub-chapter 7.2 for a list of recommendations for these actors.



1

INTRODUCTION



The devastating impacts of climate change are already being felt around the globe, threatening sustainable development and resilience, impairing socioeconomic development and reinforcing cycles of poverty. In both rich and poor countries, the frequency of weather-related loss events is rising. According to Munich Re's NatCatService, climate-related loss and damage has quadrupled since 1992. Scientists are increasingly able to confidently attribute the increased intensity and frequency of extreme weather events – such as droughts, heatwaves, floods and cyclones – to the influences of human-induced climate change (NAS, 2016). As stated by the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), the risks associated with these extreme weather events will further increase with rising temperatures (IPCC, 2014). The adverse effects of climate change are not evenly distributed across the world because of differing exposures, vulnerabilities and coping capabilities.

The world's poorest people bear a disproportionate burden of climate stress, yet they have contributed least to the drivers of anthropogenic climate change. Extreme weather events are reinforcing poverty cycles and near-future predictions state that climate change will significantly increase the number of impoverished people in developing countries (Hallegatte et al., 2016). In the face of predicted increasing weather extremes and profound shifts in natural systems, the need is greater than ever to support the most vulnerable people and countries in finding effective strategies to manage risks and unexpected shocks and to build resilience to climate impacts.

However, the way risks are currently managed in developing countries is often not effective. The mainly ex-post risk management strategies are not timely and can lead to financial burdens as well as volatility and uncertainty in decision-making. They can ultimately threaten the resilience of poor and vulnerable people, (re-)enforce poverty cycles and impede sustainable development. In the face of the predicted growing weather extremes and profound shifts in natural systems, the need is greater than ever to support vulnerable people and countries in finding effective strategies to manage risks and unexpected shocks and to build resilience to climate impacts.

1.1 The potential of insurance solutions

As this research report will illustrate, well-designed climate risk insurance – when applied in conjunction with other disaster risk management measures and strategies – can protect people against climate shocks by acting as a safety net and buffer shortly after an event. In this way, insurance can promote opportunities by helping to lessen financial repercussions of volatility and can stimulate transformation by incentivizing risk reduction behaviour and fostering a culture of prevention-focused risk management. Moreover, our research shows that insurance can play a role in increasing the resilience of poor and vulnerable people, suggesting that insurance helps to improve capacities to anticipate, absorb and adapt. We have also found indications that insurance can also spur a transformation towards a

culture of resilience and risk-reducing behaviour. However, meaningful insurance coverage is currently not widely available for poor and vulnerable people, particularly in developing countries. Based on a broad estimate, only about 100 million people in Africa, Asia and Latin America are covered by direct and indirect insurance against climate risks (GIZ and BMZ, 2015). Data reveals that between 1980 and 2015, only 2 per cent of losses caused by weather-related natural catastrophes in lower middle and low-income² countries were covered by insurance (Munich Re, 2016). This means that about 98 per cent of catastrophe losses have been borne by individuals, firms and governments.

1.2 The political momentum

The year 2015 saw a major shift in political narratives about how climate-change-related risks are addressed – moving away from an attitude of coping with impacts (ex-post), to that of effectively managing risks before they occur (ex-ante). If applied in the right way, climate risk insurance can play an important role in realizing this shift in practice. The need to enhance action to reduce the risk of climate change and manage residual impacts has been recognized in many international agreements and frameworks that guide policy agendas and set the stage for shaping “the trajectory of resilience and sustainable development for the coming decades” (GIZ and BMZ, 2015). Climate risk insurance is specifically anchored as one tool to address the risk of climate change in such policy agendas. The Sendai Framework for Disaster Risk Reduction highlights the importance of mechanisms for disaster risk transfer and insurance at all levels – global, regional, national and local – and, for the first time, this framework includes an explicit role for the private sector to contribute to disaster resilience (UNISDR, 2015). The topics of “risk insurance facilities, climate risk pooling and other insurance solutions” are mentioned explicitly in Article 8 of the recent Paris Agreement as areas of cooperation and facilitation to enhance understanding, action and support for loss and damage (UNFCCC, 2015). Already two years earlier, insurance approaches were included in the two-year workplan of the Executive Committee of the Warsaw International Mechanism for Loss and Damage, as part of comprehensive climate risk management approaches. Moreover, the now fully operative Green Climate Fund can provide funding for large-scale adaptation projects in developing countries including innovative risk transfer mechanisms.

Harnessing the political will regarding the topic of climate risk insurance, the G7 countries announced a Climate Risk Insurance Initiative (InsuResilience) during their 2015 summit in Elmau, Germany, to point the way towards climate-resilient development pathways (G7, 2015). InsuResilience aims to increase the number of poor and vulnerable people in vulnerable developing countries who have access to direct or indirect insurance coverage against the negative impact of climate-change-related hazards by up to 400 million by 2020 (G7, 2015). The G7 InsuResilience Initiative creates momentum to increase insurance

² According to the World Bank, lower middle income countries have a gross national income (GNI) of between USD 1,026 and 4,035 and low-income countries have a GNI of < USD 1,025.

coverage and thereby fosters a paradigm shift in how climate-change-related risks are addressed worldwide.

The relevance of insurance as a tool within comprehensive climate risk management has been recognized by policymakers and practitioners around the world. Many actors are currently investing resources in developing and supporting climate risk insurance schemes, and are looking for ways to implement insurance on a larger scale; many of these efforts are specifically targeted at covering the poor and vulnerable in developing countries. Now is the time to learn and adapt from existing pilots and schemes, to ensure that climate risk insurance efforts effectively contribute to supporting poor and vulnerable people in finding climate-resilient development pathways.

1.3 Introducing the report

Objective of the report

InsuResilience is unique in its scale and focus on highly exposed poor and vulnerable people who face falling (back) into poverty traps. By targeting this group with insurance, the initiative aims to spur climate-resilient development. To ensure that efforts contribute to reaching the goal of the initiative and that activities are effectively applied in a wider resilience context, a study conducted by MCII analysed 18 existing climate risk insurance schemes, the results of which form the basis of this report. The study aims to distil lessons that the G7 as well as other actors in the field of climate risk insurance can learn from.

This report specifically supports the preparation and implementation process of InsuResilience and contributes to the global discussion on addressing climate change risks for the poor and extreme poor by:

- **Providing the theoretical and normative background** for InsuResilience by outlining the relationship between resilience, poverty and insurance and thereby revealing how the overall objective defined in the Leaders' Declaration G7 Summit can be reached.
- **Outlining relevant principles** that can guide InsuResilience in effectively targeting and reaching poor and vulnerable people, while at the same time improving their resilience and alleviating poverty.
- **Formulating recommendations** for InsuResilience based on lessons learned from existing insurance schemes. It explores what new thinking and action is needed for InsuResilience to meet its ambitious goal to reach 400 million additional people with direct and indirect insurance by 2020 and how the findings of this study can be used for monitoring and evaluating the success of the initiative.
- Furthermore, we aim to **identify gaps and research needs** that are important to work on to support the implementation process of InsuResilience.

By presenting top-line results from MCII research in a way that makes them valuable for the further development and implementation of the G7 InsuResilience Initiative, the report shall serve as a basis for discussion with relevant G7 actors, including but not limited to the German Federal Ministry for Economic Cooperation and Development (BMZ), the GIZ development organization, the KfW development bank and other actors from the private sector, civil society and academia.

Key questions

In the Annex of the Leaders' Declaration G7 Summit, it is clearly stated that the overall objective is 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” (G7, 2015b). As part of a means to achieve this, we are interested in the following questions:

1. How can the InsuResilience target group be defined?

- Who is the InsuResilience target group?
- How can the extreme poor, the poor and the vulnerable be defined in the context of InsuResilience?

2. How can InsuResilience effectively reach the poor and vulnerable with climate risk insurance and what are the principles that InsuResilience should follow in doing so?

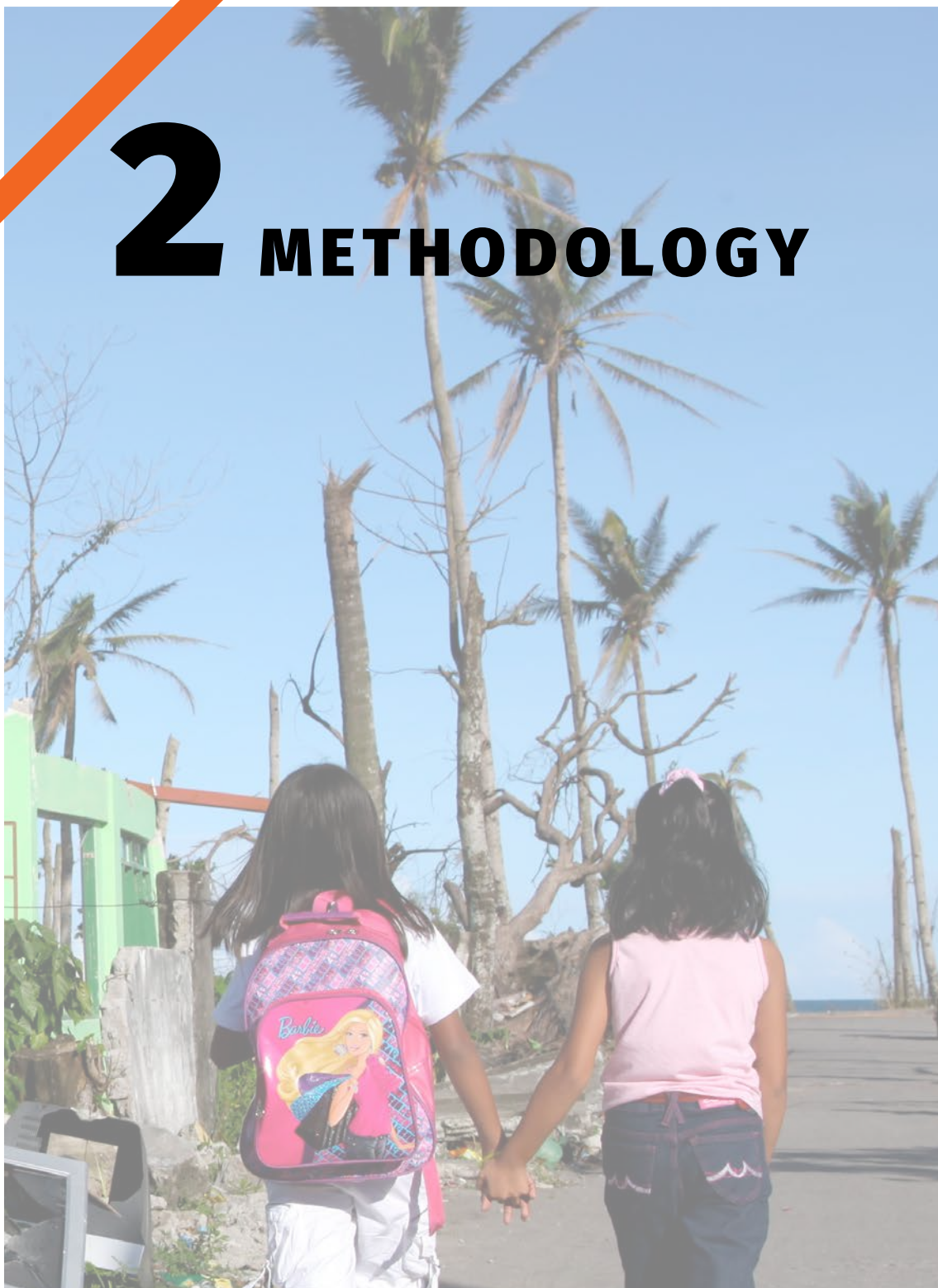
- How can InsuResilience stimulate effective climate risk insurance solutions and markets?
- How can InsuResilience ensure that it effectively reaches its target group and poor and vulnerable people benefit from direct or indirect insurance?
- What principles can help create a product that is valuable for poor and vulnerable clients?
- What are the enabling environment factors to support a climate risk insurance scheme in developing countries?

3. How can InsuResilience effectively contribute to building the resilience of its target group?

- How can insurance-related resilience-building be defined?
- What factors enable the poor to build resilience to climate risks?
- How can climate risk insurance contribute to building resilience and alleviating poverty?
- What counts as “insurance-related resilience-building” for InsuResilience’s target population of up to 400 million additional people?

The report is structured as follows. Chapter 2 gives an overview of the research methodology taken, the case selection and the analysed insurance schemes. Chapter 3 provides the theoretical framework behind this study, giving context to the broader themes of poverty, climate risk insurance and resilience and how these interact with one another in the context of climate change. Using information from the 18 climate risk insurance schemes, we analysed if and how these schemes contributed to increasing the resilience of the poor and vulnerable. Chapters 4 and 5 both present results based on the analysis of these schemes, literature analysis and interviews with experts from the fields of insurance, climate change adaptation, disaster risk reduction and climate risk management. Chapter 4 outlines the different ways in which insurance, if embedded into a wider risk management approach, can effectively support the resilience-building process of the poor and vulnerable. Chapter 5 identifies key lessons learned derived from research on the specific success factors, enabling environment factors and challenges of using climate risk insurance to target the poor. Building on the findings described in the previous two chapters, chapter 6 presents the *Pro-Poor Principles for Climate Risk Insurance*. Finally, chapter 7 provides recommendations to InsuResilience based on our findings.

2 METHODOLOGY



This chapter provides an explanation of the primary and secondary research methods used for this study. Following an outline of the steps taken for the research, the criteria upon which we selected climate risk insurance schemes is given. A table of analysed schemes is presented that provides information regarding the respective country/region, type of insurance, type of peril, type of coverage and the number of people insured. Finally, the limitations of this study are considered.

2.1 Primary and secondary research

The G7 stated that to increase the number of people benefiting from insurance that covers the negative impacts of climate-change-induced hazards in low and middle-income countries, we will need to learn from existing direct and indirect insurance schemes (G7, 2015a). To support this process, this study analysed 18 climate risk insurance schemes, specifically looking for answers to the following five questions for each selected scheme:

1. Does the insurance product target poor and vulnerable people? If yes, did the insurance scheme have positive impacts on the resilience of the poor and vulnerable?
2. What were important elements in the design of the insurance product that helped in reaching the poor and vulnerable?
3. What were challenges in reaching the poor and vulnerable with the insurance product?
4. What were success factors for the insurance product in reaching the poor and vulnerable?
5. What kind of enabling environment supported the success of the product and the reaching of the poor and vulnerable?

The research applied a mix of qualitative scientific methods, mainly using expert interviews as a research tool. The following paragraphs outline the steps we took for our research:

STEP 1: We conducted desk research on the topic of climate risk insurance, poverty, vulnerability and resilience. This was followed by the development of a guiding questionnaire (see Annex 2), which was used to conduct in-depth structured interviews with thought leaders and innovators from primary and reinsurance companies, pioneers using risk transfer to reshape humanitarian assistance and practitioners at the vanguard of risk management and adaptation. This process collected views of relevant actors in the field on good practice, success factors and challenges in all aspects of climate risk insurance for the poor. Initial results were outlined in a factsheet which was presented during a side event at the Conference of the Parties (COP) 21 in Paris.

STEP 2: We selected 18 schemes to analyse based on particular selection criteria, as outlined below in sub-chapter 2.2. A combination of desk research and email interviews with representatives and partners of selected schemes was used to further explore the lessons learned from existing climate risk insurance schemes. Please see Annex 2 for a full list of interviewees. “The initiative intends to make use of synergies with related international policy frameworks such as the UNFCCC [United Nations Framework Convention on Climate Change] and the Sendai Framework for Disaster Risk Reduction” (G7, 2015b), and in this vein our study supports a comprehensive approach that recognizes the interrelatedness between climate risk insurance and other disaster risk management measures worldwide.

STEP 3: The responses from the aforementioned five questions posed to the interviewees via email and the results of the desk research were collated into a table of results (see Annex 1), and were subsequently analysed to parse out categories for resilience indicators, success factors, challenges and enabling environment factors. A parallel literature review was conducted to complement the findings from the interviews. Chapters 4 and 5 present these findings in depth, providing examples from the analysed schemes supported by literature on the subject. Navigating within a broad topic of insurance for the poor, we chose to narrow in on two key areas:

1. Effective climate risk insurance for the poor: Challenges, success factors and an enabling environment.
2. The role of insurance in poverty alleviation and resilience-building: Can insurance help people to anticipate, absorb, adapt, transform?

STEP 4: We used our findings from step three to develop the Pro-Poor Principles for Climate Risk Insurance, and identified important steps to be taken to put these principles into practice. Recommendations were formulated for the InsuResilience Initiative as well as for other relevant actors, e.g. practitioners that work on design and implementation; governments, their agencies and donors; researchers; and other international decision makers.

2.2 Case selection

We selected climate risk insurance schemes that met the following selection criteria:

Category	Selection criteria
Countries	Developing countries, in particular InsuResilience target regions <ul style="list-style-type: none"> • Africa • Asia • Pacific • Latin America and the Caribbean
Insured peril	The selected insurance scheme is targeted at weather-related risks that affect the ability of poor and vulnerable households to deal with climate change risk. The weather-related perils are: <ul style="list-style-type: none"> • Storms • Tropical cyclone (including hurricane/typhoon) • Drought • Rainfall • Temperature • Flood

Type of scheme	<ul style="list-style-type: none"> • Agricultural insurance • Disaster microinsurance • Sovereign disaster risk transfer
Target group of schemes	Target group must include poor and vulnerable segment of the population
Status	Schemes that have been implemented (fully operational or as pilots) and ideally have had at least one payout
Levels	<ul style="list-style-type: none"> • Micro • Meso • Macro (including sovereign insurance pools and multinational risk pools)

The selection process was guided by the following criteria:

1. Balance between different levels (micro, meso, macro).
2. Balance between different regions.
3. Preferably schemes that have innovative product lines and use innovative distribution channels.
4. If possible, schemes that particularly target the poor.

2.3 List of analysed schemes

The table below summarizes the details of the analysed schemes. For in-depth information, please see Annex 1.

Table 1: List of analysed insurance schemes

Level	Scheme (+ Abbreviation)	Country/ Region	Type of Insurance	Type of Peril	Type of coverage	No. of insured (cumulative unless otherwise stated)
Micro	Index-Based Livestock Insurance Program (IBLIP)	Mongolia	Livestock Index-based insurance	Extreme weather conditions	Livestock Mortality	14,000 Herders (Mongolian nomadic herders) (as of 2009)
	Modified National Agricultural Insurance Scheme (MNAIS)	India	Agricultural Index-based insurance	Cyclones	Crops	1,794,259 farmers (Rabi and Kharif seasons in 2014-15)
	Philippine Crop Insurance	Philippines	Government Agriculture Insurance	Typhoon, flood, drought, volcanic eruption, and earthquake	Multi-Risk Cover; nat. dis./ pests/ disease	389,056 farmers (in 2013)
	SANASA Agricultural insurance	Sri Lanka	Index-based crop Insurance	Drought, excess rain	Crops	14,514 farmers (in 2014), 46,456 (cumulative)
	PepsiCo	India	Agricultural index insurance	Late Blight Disease (Caused by rain, dew, irrigation or high humidity + moderate temps)	Potato crop	~10,000 (in 2008)
	R4 Initiative (R4)	Ethiopia, Senegal, Malawi, Zambia	Index-based Insurance	Extreme weather events/climate related shocks	Assets	37,058 farmers (as of 2016)
	MicroEnsure (MicroEnsure)	Rwanda	Index-based Insurance	Dry spells and excess rainfall	Crops	35,134 farmers from 2011 to 2014; policy discontinued
	Agriculture and Climate Risk Enterprise (ACRE Africa)	Kenya Rwanda Tanzania	Index-based Insurance	Drought, excess rain and storms, risks associated with accidental death and pregnancy losses for calving cows	Maize, beans, wheat, sorghum, coffee, potatoes, livestock	394,426 farmers (in 2015) (Kenya: 145,757; Rwanda: 222,505; Tanzania: 26,164)
	Index-based livestock insurance (IBLI)	Kenya, Ethiopia	Livestock Index-based Insurance	Drought related asset losses	Livestock Mortality	10,067 farmers (as of 2015)
	Microinsurance Catastrophe Risk Organisation (MiCRO-HAITI)	Haiti	Natural catastrophe and weather index insurance	Rainfall, wind, seismic activity	Protection of entrepreneurs against nat. catastrophes	~60,000 women-owned micro-enterprises (as of 2012), policy discontinued in 2013
Meso	La Positiva Seguros (La Positiva)	Peru	Agricultural Catastrophic Crop Insurance	Drought, low/high temps, hail, flooding, freezing, winds, plagues, diseases, humidity	Crops	8000 (as of 2013)
	Livelihood Protection Policy (LPP)	Latin America & Caribbean	parametric index micro insurance policy	High wind speed and excessive rainfall	Damage resulting from Peril	~ 1000 (as of 2016)
Macro	PlaNet Guarantee	Mali, Burkina Faso	Index-based Insurance	Drought	Maize and cotton	Benin: 1,099 (2014), Burkina Faso: 8,281(2014),Mali: 17,481 (2014),Senegal: 4,035 (2014)
	Index-based Flood Insurance Project (IBFIP)	Bangladesh	Index-based flood insurance scheme	Flood	Cash relief in event of catastrophic flood.	1660 poor and vulnerable households (2014)
	Caribbean Catastrophe Risk Insurance Facility (CCRIF SPC)	Caribbean	Multi-country risk pool regional catastrophe fund	Earthquake, cyclones, excess rainfall	Damage resulting from Peril	16 countries (2016)
	African Risk Capacity (ARC)	Africa	Pan-African risk pooling disaster response system	Droughts, floods and cyclones	Damage resulting from Peril	16 MOU Countries (2016)
Macro	National Disasters Fund (FONDEN) & AGROASEMEX	Mexico	Index-based National Catastrophe Fund	Extreme weather events	Damage on public buildings and infrastructure	State of Mexico
	Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI)	Pacific	market based sovereign risk insurance scheme	Tropical cyclones and earthquakes/tsunamis.	Damage resulting from Peril	15 countries (2016)

2.4 Limitations of the study

The study and its methods should be treated as points of departure for further research into climate risk insurance for the poor. This research report is based mainly on interviews, a research tool which has several limitations in itself, such as:

- Reactive effects may occur (e.g. interviewees may try to show only what is socially desirable).
- Investigator effects may occur (e.g. mutual trust is needed, especially regarding confidential information; personal biases between interviewer and interviewee are possible).
- Relevant interviewees may not always be available.
- Interviewees may not recall important processes, interviewees may not accurately remember details and interviewers cannot easily validate the accuracy of the information given.
- Interpretations between what the interviewee communicates and what the interviewer understands may differ, and vice versa.
- Information provided by interviewees is based on personal impressions and thus is subjective; the analysis is strongly based on interviews with project supporting or implementing partners and, thus, perspectives might be biased and limit the results to a certain extent.
- Moreover, we only spoke with or wrote to a particular segment of society, e.g. people from insurance companies, government agencies, non-governmental organizations (NGOs), etc., and did not engage with local-level stakeholders or policyholders to receive first-hand impressions of the impact of insurance.

Limitations of the analysis of schemes:

- The analysed insurance schemes are relatively new interventions and few impact assessment evaluations have been performed to assess their viability. Where these evaluations do exist however, they tend to base their statements on a limited number of households.
- Accurate attribution of specific causalities to the intervention in question, such as insurance, is not always conclusive. Evaluations that reveal positive impacts on resilience are linked to other risk reduction measures, making it unclear as to the direct influence of or correlation with insurance.
- Finding suitable research methods is challenging. An appropriate mechanism of assessing the impact involves conducting two studies of the same person, once with the insurance and once without, over time. As this is difficult to achieve, researchers use several other techniques, such as using uninsured comparison groups to assess the impact of not having insurance. The choice of these comparison groups poses significant

difficulties, as conducting a simple comparative study may disregard characteristics that influence the insurance purchasing decisions as well as the final outcomes of the people in question. Creating control groups, such as through randomized controlled trials, is considered a rigorous approach (Radermacher et al., 2013). Yet this method, which randomly allocates study subjects to receive insurance or not, is also complex, costly and brings ethics into question.

- Impact assessments may also be susceptible to bias or to the over- or underestimation of the actual effects of an intervention if they fail to take into consideration self-selection. The majority of microinsurance impact assessments contrast the results of study subjects without undertaking a correction for self-selection bias. Despite using regression analysis to account for mitigating factors such as gender, race and income, the information produced is susceptible to bias and has to be considered with caution.
- Finally, the explanatory power of the findings is limited by the scope of studied schemes.

3 **CLIMATE RISK INSURANCE – WHAT, HOW AND FOR WHOM?**



This chapter provides the theoretical framework behind this study, giving context to the broader themes of poverty, vulnerability and climate change and how these interact with one another in the context of climate risk insurance. Building on this, options for identifying the target group(s) of InsuResilience are explored. An explanation of climate risk insurance as an instrument and its role in responding to this issue is outlined, followed by considerations on existing gaps and challenges.

3.1 Setting the scene: Climate change, poverty and vulnerability

Worldwide, the poorest people bear a disproportionate burden of climate stress, yet they have contributed least to the drivers of climate change: “Climate change threatens the objective of sustainably eradicating poverty” (Hallegatte et al., 2016, p. 1). The impacts of climate change on poverty are already evident, and while efforts to limit warming to below 2 degrees are crucial, threshold risks³ such as the increase in hunger are nonetheless projected to increase (World Bank, 2012b).

Extreme poor and poor people are hit harder by climate change because they have a higher exposure to climate change impacts, are more vulnerable and have fewer coping capacities. The stress of climate change acts in conjunction with other stressors, compounding risks and undermining the resilience of the poor by enforcing poverty cycles and impeding development. We can already see that climate change will not only worsen poverty but also affect the dynamics of poverty, particularly by causing people to fall into or back into poverty (Hallegatte et al., 2016). The United Nations Office for Disaster Risk Reduction estimates that between 1995 and 2015 climate-related natural disasters globally caused losses worth \$1.89 billion and claimed approximately 606,000 lives (UNISDR, 2015). Data from 1980 onwards reveal that in the past quarter century over 80 per cent of deaths from natural disasters occurred in developing countries and direct overall losses from natural catastrophes amounted to \$190 billion on average for the last 10 years (Munich Re, 2014). In relation to national income, direct economic losses were more than double in low-income countries than in high-income countries (Munich Re, 2013), proving that countries with “lower per capita income generally suffer more than countries with higher per capita income in terms of economic losses as a percentage of GDP” (Ghesquiere and Mahul, 2010).

The G7 InsuResilience Initiative has committed itself to “support vulnerable countries’ own efforts to manage climate change related disaster risks” and aims “to increase by up to 400 million the number of people in the most vulnerable developing countries who have access to [...] insurance” (G7, 2015a). In the Annex of the Leaders’ Declaration G7 Summit, it is specified that the overall objective is 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” (G7, 2015b). Furthermore, the subsequent Background Paper on this subject stipulates that the initiative should focus on the extreme poor and the poor who are at risk of “fall[ing] into extreme poverty when disasters occur” (GIZ and BMZ, 2015). In order for the initiative to effectively reach its objective, there needs to be clarity around the specific target group of the initiative. In other words, who are at risk due to climate impacts and, of those people, who might benefit from insurance? The process of reaching a definition of these target groups involves first

³ We understand risk as “the combination of the probability of an event and its negative consequences” (UNISDR, 2016).

identifying those people most at risk in developing countries. With a categorization of groups based on income, this sub-chapter aims to provide clarity to the aforementioned questions. Furthermore, recommendations for defining the target group are outlined in section 3.1.5.

The measurement of poverty and vulnerability is inherently difficult due to its multidimensional and highly context- and country-specific nature. International income-based poverty lines are widely used to proxy poverty and to enable cross-country comparisons. The extreme poor are currently defined as earning below \$1.90/day based on the 2011 purchasing power parity (PPP), and the moderate poor as earning below \$3.10/day based on the 2011 PPP.⁴ However, international poverty lines serve only as a rough proxy for poverty and, in particular for middle-income countries, may not be able to sufficiently capture the poor.

Defining vulnerability is also complex. The IPCC defines vulnerability as “the propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt” (IPCC, 2014d). There are many factors that can lead to vulnerability, including: economic; education; health and nutrition; housing and environment; social capital; and social inclusion. While some of the evident direct impacts of climate change is damage to housing and the physical environment, other existing vulnerabilities are also made worse by climate stressors. It is important to recognize the interrelatedness between these factors and how they influence vulnerability and why it is difficult in most cases to draw a straight line of causality to climate change. Nonetheless, it is evident that overall climate change is exacerbating existing vulnerabilities and factors that contribute to people becoming trapped in poverty or slipping into poverty (Hallegatte et al., 2016).

It is operationally more feasible to define poverty and vulnerability based on income as a deviation from international poverty lines. Hence, we use income as the measurement for vulnerability and poverty, being aware that this does not necessarily reflect all vulnerable individuals.

Below, we will show that there are three groups (the extreme poor, the moderate poor and the non-poor but climate-vulnerable) particularly vulnerable to climate change as they:

- Have a higher exposure to extreme weather events.
- Are least able to prevent, cope with and adapt to extreme weather events.
- Lose more in relative terms in the event of an extreme weather event.
- Have a higher risk of falling (back) into poverty due to extreme weather events.

⁴ These poverty lines are based on national income levels in the 15 poorest countries and only rough proxies for different levels of income poverty. In contrast, national poverty lines differ between \$0.63/day and \$9.06/day, based on the 2005 PPP in developing countries (Ravallion, 2010).

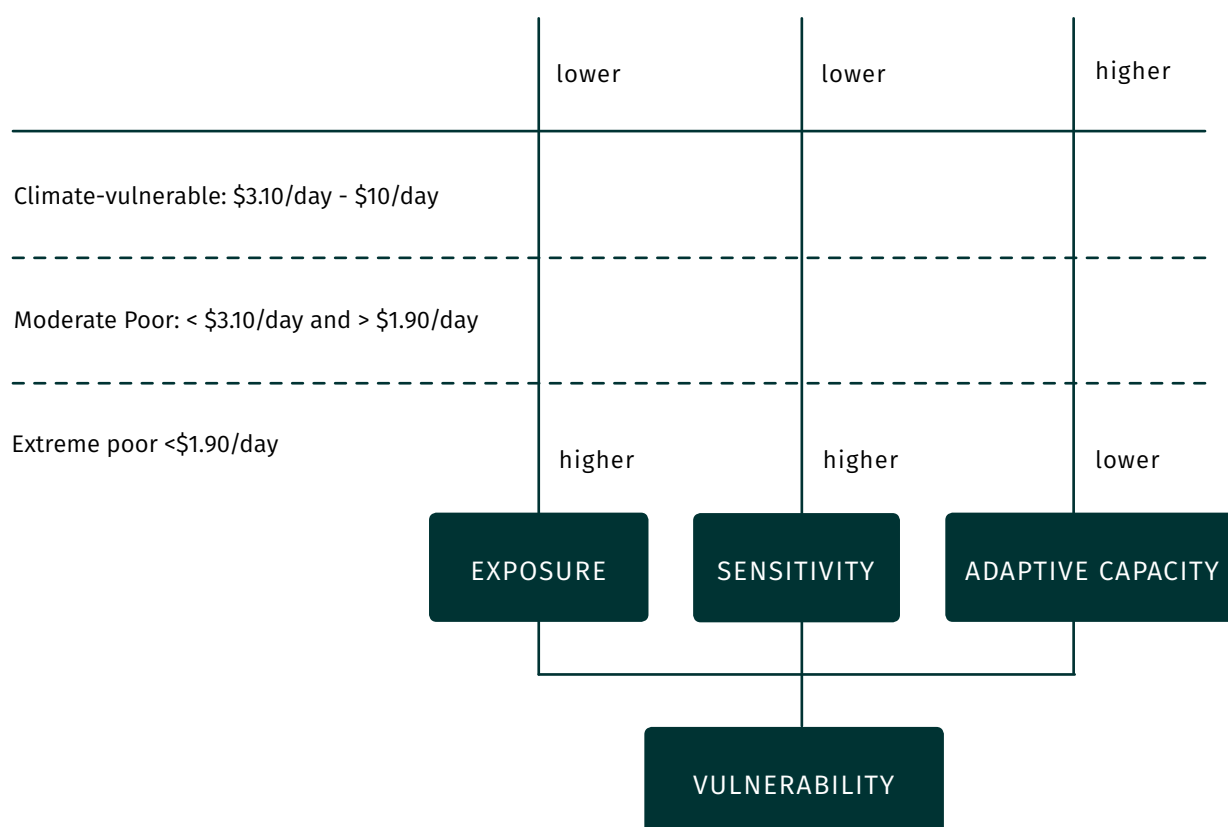


Figure 2: The climate vulnerability threshold

Source: Own graphic.

3.1.1 The extreme poor and poor have a higher exposure to extreme weather events

Extreme poor and poor people are more exposed to extreme weather events as they work in sectors that are most affected by natural hazards. Around the world, agriculture in particular is critical for poor people's food security and nearly two thirds of the extreme poor are employed in this sector (ILO, 2016, p. 143). A recent World Bank study on the nature of poverty determined that poverty is concentrated in rural areas and the poor are most likely to earn agricultural income (Olinto et al., 2013). The major impact of climate-change-related extreme weather on the agricultural sector is already evident (particularly in sub-Saharan Africa and South Asia), affecting people's health and nutrition, livelihoods, means of income and more. Moreover, modelling for the future suggests that "climate change could result in global crop yield losses as large as five percent in 2030 and 30 percent in 2080" (Hallegatte et al., 2016). It is thus unsurprising that many of the existing insurance schemes to date aiming to protect the poor from extreme weather events focus on insuring agriculture. Another factor contributing to high exposure is that the poor and vulnerable often settle and live in areas more exposed and at risk to natural hazards due to affordability, marginalization and economic opportunities offered by these areas or simply a lack of information about the level of risk (World Bank, 2013a). Hertel et al. (2010) find that

climate-related price adjustments could increase poverty rates for households by 20-30 per cent in 15 developing countries by 2030. Ahmed et al. (2009) also show that the number of poor urban labourers in the most vulnerable countries could be doubled by a once-in-30-years climate extreme.

3.1.2 The poor and vulnerable are least able to prevent, cope with and adapt to extreme weather events

Due to a lack of resources, access to information, financial services and financial support from the family and community, the extreme poor and poor have fewer coping and adaptation capacities compared to the non-poor (Hallegatte et al., 2016). Not having access to any formal protection schemes (Deblon and Loewe, 2012), when a crisis occurs the poor often resort to a variety of coping strategies that might, applied on their own, impede sustainable development and even further trap them in poverty. Examples of coping strategies include consumption smoothing, which destabilizes their consumption (food, education, health) in order to protect and maintain productive assets (e.g. livestock), and asset smoothing, which happens when people sell productive assets (livestock, seeds, land) to protect consumption (Carter et al., 2014; Hoddinott, 2006; Churchill, 2006). Other strategies that might exacerbate dependence and insecurity in the long run include borrowing money from family or friends, microfinance institutions (MFIs) or moneylenders, relying on savings and taking out loans (Churchill, 2006; Deblon and Loewe, 2012). Moreover, there is evidence that suggests that poor households also adjust their ex-ante risk management strategies, anticipating that a shock might occur, primarily trying to avoid risks to limit their exposure. For example, they may choose activities with lower risk, yet also lower returns (Cole et al., 2012; Mobarak and Rosenzweig, 2012; Bandyopadhyay and Skoufias, 2013). Dercon (1996) observed in Tanzania that poorer farmers grew more sweet potatoes (which is a low-risk, low-return crop) than richer farmers – resulting in a reduction of up to 25 per cent average earnings. Moreover, the poor tend to diversify their activities, assets or choice of crop to spread financial and human resources across several income-generating activities or accumulate precautionary savings to be prepared in case of a shock. While this is certainly a sensible measure to decrease risk, it can also lead to a loss of profits as people cannot afford to specialize in the more profitable options. If possible, poor people also tend to accumulate savings (cash or assets) that can be accessed if a risk event occurs: “As a result, their savings yield only limited returns, which are too small to enable them to build a better life and escape poverty” (Deblon and Loewe, 2012). In general, these informal strategies to manage climate risk usually cover only a small portion of the loss, so “the poor have to patch together support from various sources” (Churchill, 2006) when an event occurs.

It is not only the poorest who apply such coping strategies in the event of a shock. Several analyses show that households which hold modest asset stocks also smooth consumption. Hoddinott (2006) found that during a drought in Zimbabwe (1994-1995), richer households sold livestock to maintain consumption while poorer households reduced consumption.

And evidence from Burkina Faso revealed that richer households tend to draw down assets to protect their consumption from weather shocks. A World Bank study in Kenya found “that it is both the vulnerable and the destitute (defined as those with less than 8 or 9 units of livestock in this pastoral economy) who severely cut current consumption in the wake of a climatic shock” (Carter, 2015).

At the macro level, governments also face challenges in managing their risks in an effective way. Due to limited tax bases, high indebtedness and low or no insurance cover, many highly exposed developing countries cannot fully recover from disaster shocks by simply relying on limited external donor aid. Based on 40 years of historical data for Latin America, the Inter-American Development Bank concluded that on average a country can expect international assistance to cover only about 8.6 per cent of direct disaster losses (Andersen et al., 2011). In turn, external investors are wary of the risk of catastrophic infrastructure losses, and thus small firms and farmers cannot receive the credit necessary for investing in higher-return, higher-risk activities.

The following figure depicts how risk management options can assist in leading a trajectory out of poverty for people and countries that currently follow a zigzag route. Inclines reflect times of asset building and income growth; declines are the result of shocks and economic stresses that often push expenditure beyond current income.

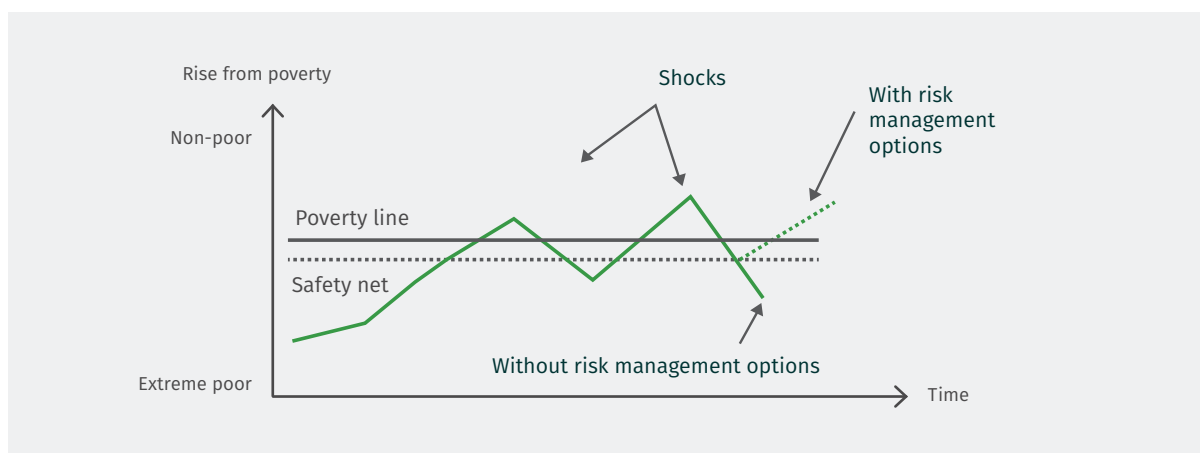


Figure 3: Managing the impacts of shocks

Source: Modified by MCII based on: Cohen and Sebstad (2006).

Impoverished communities are especially vulnerable to the macroeconomic impacts of disasters such as the loss of government assets and the disruption of basic government services. The diversification of government spending on response efforts post-disaster often neglects poor communities or addresses them as a lower priority (Wilkinson and Peters, 2015). It is therefore essential to derive policy formulations and modalities that seek to enhance the capabilities of the poor to respond to climate change in a more resilient manner, and insurance is one tool that can be used to do so.

3.1.3 The poor and vulnerable lose more in relative terms in the occurrence of an extreme weather event

While the rich may lose more in absolute terms, the impacts of climate change have been most severe on those living below the poverty line. The immediate impacts include the loss of life, homes, livelihoods, earning capacities and crops (Wilkinson and Peters, 2015). Some long-term impacts include an increase in the price of food, decreased food security, malnourishment and stunted growth, long-term illness as well as the consequent inability to attain education (ibid). Moreover, the loss of territory, including sacred sites, can contribute to a number of non-economic losses including mental health, heritage and identity. The IPCC states that indigenous communities, especially those located in highly vulnerable locations along ocean and river shorelines, are already facing significant impacts on their health and well-being, and this is projected to increase (IPCC, 2014c).

Only limited evidence is available on the impact of extreme weather events on income levels. We find two examples that provide valuable evidence. In an analysis of the impact of a flood disaster in India in 2005, the World Bank found that households with a per capita income of more than \$3.30 PPP/day and less than \$10 PPP/day suffered relatively higher losses (Patankar, 2016). The average loss caused by flooding was 80 per cent of a household's annual per capita income. This loss is 2.5 times higher than in households with a per capita income ranging from \$10 PPP/day to less than \$20 PPP/day, which suffered a relative loss of 32 per cent of annual per capita income. Comparing the income loss to the average per capita income we find that affected persons with a per capita income up to \$10/day before the flood fell back to poverty and to below \$2/day due to the flood (see Table 2 below).

Table 2: Income effects of a flood catastrophe in Mumbai 2005

Source: Patankar (2016), conversion from Rs. into USD by the German Development Bank (KfW).

Per-capita income/ month	Per-capita income/ day	Average loss due to flood	Loss in % of annual income	Resulting per-capita income/day after flood ⁵
in USD (PPP 2011)	in USD (PPP 2011)	in USD (PPP 2011)	in %	in USD (PPP 2011)
> 100 USD	< 3.3 USD	740	62%	< 1.3 USD
> 100 - 300 USD	> 3.3 - 9.9 USD	960	80%	> 0.7 - 2.0 USD
> 300 - 600 USD	> 9.9 - 20 USD	1.140	32%	> 6.7 - 13 USD
> 600 USD	> 20 USD	1.380	19%	> 16 USD

⁵ Calculation: Reduction of daily per capita income by % loss for the respective income group. As there are different proportions of losses per income group, the lower and upper boundaries of the new income groups fall apart.

In the Middle East and North Africa, a recent survey of five countries found that the bottom three wealth quintiles are more exposed to weather shocks than the top two, especially in terms of income losses (Adoho and Wodon, 2014). In addition, a regression analysis by Wodon et al. (2014) led to the conclusion that “households in the top quintile of wealth were 20 percentage points more likely to recover from weather shocks than households in the bottom quintile”.

Table 3: Economic impacts of climate change in the MENA region

Source: Adoho and Wodon (2014).

	Quintiles					
	Poorest	Q2	Q3	Q4	Richest	All
Lost Income (%)	46.37	44.14	43.21	29.25	20.72	36.59
Lost Crops (%)	58.12	61.96	62.13	49.42	42.10	54.62
Lost Livestock or Cattle (%)	23.81	25.19	30.11	23.17	15.23	23.43
Less fish caught (%)	9.51	10.27	8.90	9.65	4.69	8.60

3.1.4 Extreme weather events can cause people to fall (back) into poverty

Data from around the world indicate that people move in and out of poverty and that trajectories out of poverty are not a one-way transition (Baulch, 2011; Dang and Lanjouw, 2014). For example, Krishna (2006) could show for India that over the past 25 years, while 14 per cent of households in 36 villages of three districts in Adhra Pradesh escaped from poverty, 12 per cent of these households fell into poverty during the same time (for similar findings see Dang et al., 2014; Pritchett et al., 2000; Kanbur and Lustig, 2000). In Ethiopia, Dercon (1999) gathered evidence that “despite poverty reduction [...] more than a third of the non-poor in 1989 had fallen in poverty by 1995 (15 out of 39)”.

However, there is still very limited evidence regarding the impact of climate change and extreme weather events on the probability of descending (back) into poverty. To identify potential beneficiaries for InsuResilience who are particularly vulnerable to the impacts of climate change but are not considered poor, an indicator with which their vulnerability can be measured is needed. Income can be a useful indicator of high exposure and sensitivity and low adaptive capacity (see section 3.1.5 for an elaboration on all three suggested target groups). Evidence suggests that in the event of an extreme weather event people with

below \$10 PPP/day suffer higher losses and have a high probability of falling back into poverty (Stampini et al., 2015).

López-Calva and Ortiz-Juarez (2014) use a regression-based approach to determine the amount of income associated with the probability level of slipping back into poverty in the event of a shock – using income as the dimension onto which vulnerability to poverty is mapped. They suggest setting the income threshold for vulnerability at 10 per cent probability of descending into poverty in a five-year interval, given that 10 per cent of people falling into poverty has been the average in Latin American countries over fifteen years. Based on their findings for three countries (Chile, Mexico and Peru), they calculate the vulnerability threshold at \$10/day at 2005 PPP levels.

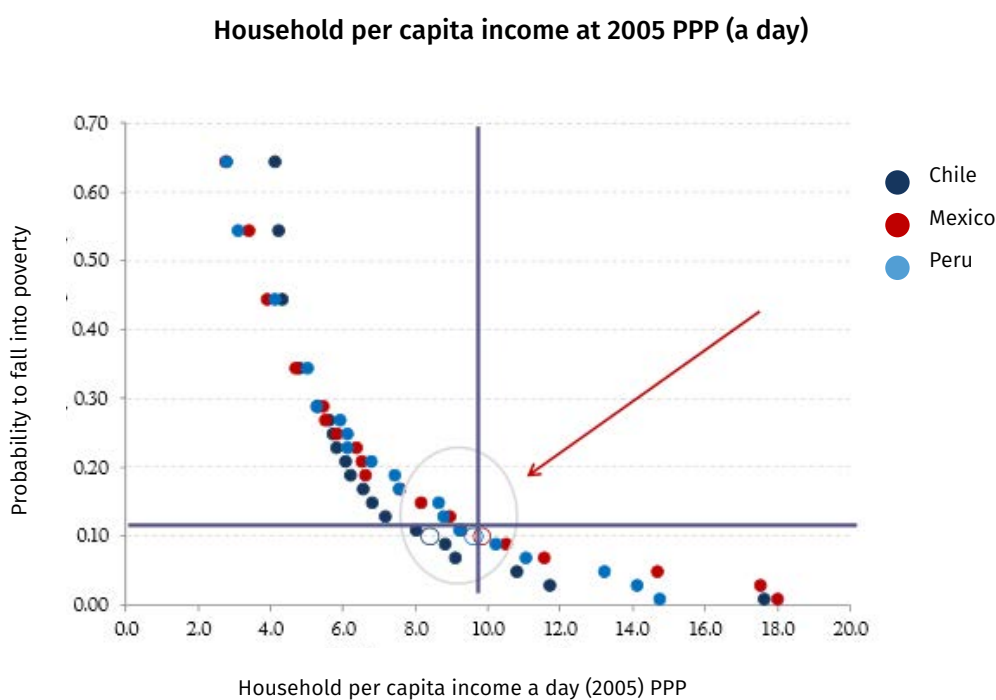


Figure 4: Vulnerability to poverty

Source: López-Calva and Ortiz-Juarez (2014).

The vulnerability approach by López-Calva and Ortiz-Juarez (2014) has been used by different actors to describe vulnerability to poverty. For example, Edward and Sumner (2014) propose four consumption layers for global society. Above the poverty threshold of \$2/day at the 2005 PPP, they identify a global insecure layer, ranging from \$2/day to \$10/day. Based on López-Calva and Ortiz-Juarez (2014) they define the \$10/day threshold as an approximate safety from falling into poverty. Moreover, the World Bank uses \$10/day as an approximate threshold for measuring vulnerability to poverty: “[...] those living below \$10 a day are vulnerable to poverty, in the sense that they face the possibility of remaining in poverty or easily entering into poverty” (World Bank, 2013a).

The vulnerability threshold of \$10/day is supported by further evidence. Stampini et al. (2015) find that 65 per cent of those with a daily income between \$4 and \$10 experienced poverty at least once over a 10-year period. Birdsall (2010) suggests \$10 a day (in 2005 PPP) as the absolute minimum income required for a person to have economic security. She argues that above \$10 a day, households are able to save for the future and have aspirations for a better life for themselves as well as their children because they feel reasonably economically secure.

These examples demonstrate that vulnerability itself is dynamic and related to exposure as well as to assets and poverty. Although non-poor in economic terms, many households may still suffer from a lack of important elements (health, education, sufficient assets), which in the event of a shock might bring them back into poverty, especially in the absence of comprehensive risk management mechanisms and safety nets (World Bank, 2013a; Baulch and Hoddinott, 2000).

3.1.5 Defining the InsuResilience target group

Research provides clear evidence that extreme poor (< \$1.90 PPP/day based on the 2011 PPP) and poor (< \$3.10 PPP/day) people are disproportionately affected by climate change due to higher exposure, higher vulnerability and fewer coping capacities (Hallegatte et al., 2016). However, climate change will not only worsen conditions for poor people but also the dynamics of poverty, causing people to fall (back) into poverty (Patankar, 2016). An income threshold used by many scientists to proxy vulnerable people at risk of falling (back) into poverty is \$10/day (López-Calva and Ortiz-Juarez, 2011; Birdsall et al., 2014; de la Fuente et al., 2015). As Stampini et al. (2015) show, compared to people beyond the threshold of \$10 PPP/day, those below suffer relatively higher losses in cases of extreme weather events and have a higher probability of falling (back) into poverty due to these events. Thus, we suggest using \$10/day as the income threshold for a group of people vulnerable to climate impacts at risk of falling into or back into poverty.

We suggest defining the target groups of InsuResilience as follows:

1. Extreme poor, hereafter defined as people earning below \$1.90 PPP/day.
2. Moderate poor, hereafter defined as people earning below \$3.10 PPP/day and above \$1.90 PPP/day.
3. People vulnerable to climate risk with the risk of slipping (back) into poverty, hereafter defined as people particularly exposed to extreme weather events earning below \$10 PPP/day and above \$3.10 PPP/day.

For the following reasons we suggest defining target groups (1) and (2) as the key target groups of the initiative: a) worldwide, the extreme poor and poor bear a disproportionate burden of climate stress, yet have contributed the least to the drivers of anthropogenic climate change; b) the Background Paper of the initiative (GIZ and BMZ, 2015) notes that the initiative should focus on the extreme poor and poor. With the ultimate objective of ensuring the pro-poor focus of the initiative, we recommend the use of a “burden of proof” for climate vulnerability for insurance schemes when crossing the threshold between target groups (1) + (2) and target group (3); this means providing evidence that the potential beneficiaries in group (3) are actually highly exposed or sensitive to extreme weather events and that an insurance approach could help to cushion their impacts.

A “burden of proof” can be understood as a duty that is placed on the body responsible for selecting (or counting) the beneficiaries of a scheme. To clarify, the proof would need to be given that the individuals who (based on income) fall under category (3) are indeed particularly impacted by extreme weather events and that insurance could help improve their situation. For a micro scheme, the burden would be on the body issuing the policy, and for a meso or macro scheme the insurance provider or the body responsible for the dissemination of the payouts, e.g., a government, would need to prove that the people receiving money (or services) who fall under category (3) are particularly vulnerable to climate risks.

How would this work in practice? A burden of proof may work as follows. All direct and indirect insurance schemes supported by InsuResilience must provide evidence to the InsuResilience Secretariat that policyholders or beneficiaries earning below \$10 PPP/day and above \$3.10 PPP/day are particularly vulnerable to climate risks, by proving that they, e.g.

- (a) reside in a high-risk area (information may be based on satellite data); and/or
- (b) have an income that is based on a sector that is heavily impacted by extreme weather events.

Justification in written form to the InsuResilience Secretariat could be based on formal

recognitions from local authorities or an assessment to determine and prove that a particular group of beneficiaries is vulnerable to climate change.

Ultimately, applying such a burden of proof would facilitate the transparency and accountability of a scheme and ensure that the people benefiting from the InsuResilience Initiative are those who need it most.

The following figure gives an overview of the proportions of the population in those groups in potential target regions of InsuResilience. The numbers on top of the bars represent the total number of people in the respective region that fall under the categories of extreme poor, poor and vulnerable.

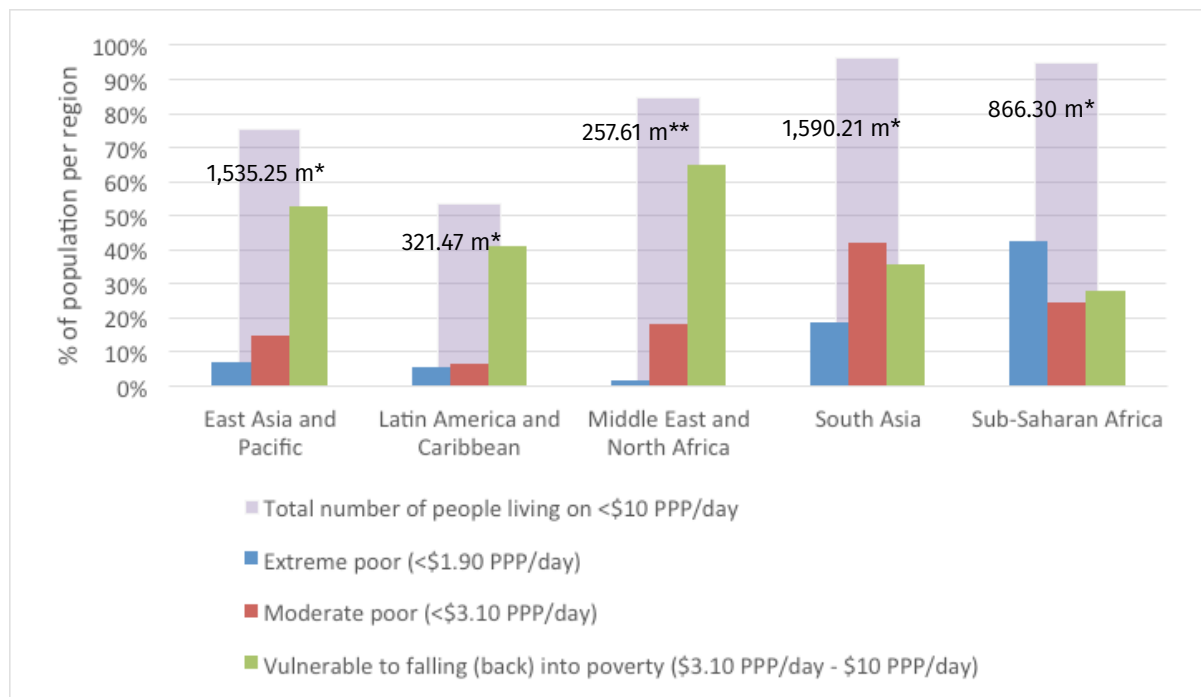


Figure5: Share of population living in extreme and moderate poverty or vulnerable to falling (back) into poverty
Source: Own graphic. Data from World Bank PovcalNet, data from 2012. * Total numbers in million from 2012 **Total numbers in million from 2008.

3.2 Explaining the instrument: Climate risk insurance

3.2.1 What is climate risk insurance?

Climate risk insurance is a facilitative mechanism which provides security against the loss of assets, livelihoods and lives due to climate-related risks by ensuring effective and expeditious post-disaster relief on an individual, community, national and regional level (GIZ and BMZ, 2015). We understand climate risk insurance as insurance products that cover losses caused by extreme weather events, which are intensified and increased in frequency by climate change.

When implemented successfully, climate risk insurance can mitigate the debilitating effects of disasters on the economy by instituting incentives for preventive measures. It can also provide a form of risk assurance for private and public investment affected by changing weather patterns, ease disaster-related poverty and spur economic growth and development (ibid). Insurance schemes allow for the assessment of potential economic loss and damage, which in turn can help facilitate the identification of needs and priorities within policy development at national and global levels.

Climate risk insurance schemes may be both direct and indirect in their targeting of poor and vulnerable communities. We define direct and indirect insurance as follows:

Direct insurance approaches are those in which the insured benefits directly from transferring risk to a risk-taking entity (such as an insurer). In the event the insurance agreement is triggered the insured beneficiary receives the insurance payout (direct transfer).

Indirect insurance approaches are those where the final intended target group benefits indirectly from payments intermediated by an insured government or from being a member of an institution that has insurance.

The advantage of indirect insurance is its ability to reach a large number of people within a short period of time. Indirect sovereign risk insurance programmes can channel funds to the poorest of the poor, e.g. by using existing social protection programmes. Governments of countries are usually the most knowledgeable about the demographics within different regions of their countries and the impact of the extreme weather event on poor and vulnerable communities. Indirect insurance provides beneficiaries (e.g. governments) with the prior information regarding how much they would receive and how quickly they can expect a payout, allowing them to plan their post-disaster response and relief efforts accordingly. The expeditious indemnity payments allow governments to avoid having to redistribute budgets and hence can limit post-disaster impacts on the economy. The pooling of risks over a wide geographical area allows for risk diversification and the consequent reduction of premiums, making the insurance scheme more affordable and accessible to a greater number of countries. Disadvantages include that it is difficult to ensure that the product reaches and ultimately benefits the marginalized and poor people due to the intermediary party/parties. Transparency and accountability are crucial to avoid corruption and misuse of funds.

Direct insurance targets individual policyholders who receive payouts directly from the insurance providers. Direct risk insurance at a micro level (see description below), though yet to show widespread positive results for scaling up, is perceived as promising in its potential to reach the most vulnerable and address their specific needs in a timely manner.

Direct insurance schemes have been designed to work through community and individual participation.

Climate risk insurance can be implemented at three levels:

Micro level (direct): Policyholders are individuals, e.g. farmers, market vendors or fishers, who hold policies and receive payouts directly. These policies are often sold at the local level and retailed through a variety of channels, including microfinance institutions, farmers' cooperatives, banks, NGOs and local insurance companies. Premiums are either paid in full by clients or subsidized (or both).

Meso level (indirect): Policyholders are risk aggregators such as associations, cooperatives, mutuals, credit unions or NGOs, whereby a (re)insurer makes payments to the risk aggregators, which then provide services to individuals.

Macro level (indirect): Policies are held by governments or other national agencies, within the international/regional reinsurance market. Payouts can be used to manage liquidity gaps, maintain governmental services or finance post-disaster programmes and relief efforts for predefined target groups. Beneficiaries of these programmes can be individuals. These schemes can be operationalized through regional risk pools.

There are different insurance product types that correspond to the levels presented above, the two main types being indemnity-based insurance and index insurance. Indemnity-based insurance is insurance in which the claim is calculated by measuring the percentage of damage after it occurs and providing payouts based on this loss assessment. Index insurance is a form of insurance in which payouts are paid directly after an index has been triggered by exceeding a predefined threshold. Index insurance can be designed as a weather-based, satellite-based or yield-based product, referring to the trigger used to determine the insurance payout. Another type of insurance is revenue insurance, which involves multiplying the yield by the price (e.g. crop yield times, crop price) to calculate the revenue; the insurance is based on the deviation from the farmer's mean revenue. The following table provides an overview of existing climate risk insurance products, including their advantages and disadvantages.

According to insurance theory, climate risk insurance works by replacing “the uncertain prospect of losses with the certainty of making small, regular premium payments” (Churchill, 2006). Financial protection by insurance occurs both ex-post and ex-ante – ex-post when insurance protects households from the economic implications of actualized risks and ex-ante where insurance allows for the reallocation of resources to more effective and

Table 4: Overview of insurance product types

Source: Modified from Sandmark et al. (2013).

Product type	Pros	Cons
Indemnity-based	Indemnity = actual loss (no basis risk) Can be multi-peril insurance	Potentially high loss assessment costs Slow claim settlement Historical data often unavailable Prone to moral hazard Challenging to make sure payouts match losses (e.g. from complicated claims processes, biased estimates of damage by adjusters or flawed estimates)
Revenue-based	Covers all risk entailing financial losses, including price risk	Complex to design, price and understand May be linked to the financial markets Historical data often unavailable Prone to moral hazard Potentially slow claims process
Index insurance		
Weather-based index	Faster claim settlement Lower loss assessment costs (reduces administrative costs, and thus the premium) Objective (no moral hazard)	Basis risk Requires a good network of weather stations Complex to understand Requires studies and expensive expertise to design Named-peril insurance
Satellite-based index	Indisputable and transparent Faster claim settlement Lower loss assessment costs (reduces administrative costs, thus the premium) Product available in large areas (whole countries) Objective (no moral hazard)	Basis risk Complex to understand Requires studies and expensive expertise to design Satellite imagery expertise and information is costly to acquire Named-peril insurance
Area yield index	No basis risk from modelling Easy to understand Multi-peril insurance Limited ability of individual farmers to influence the index (limited moral hazard)	Challenge of historical data which is needed for pricing Slow claim settlement Spatial basis risk as areas may be vast

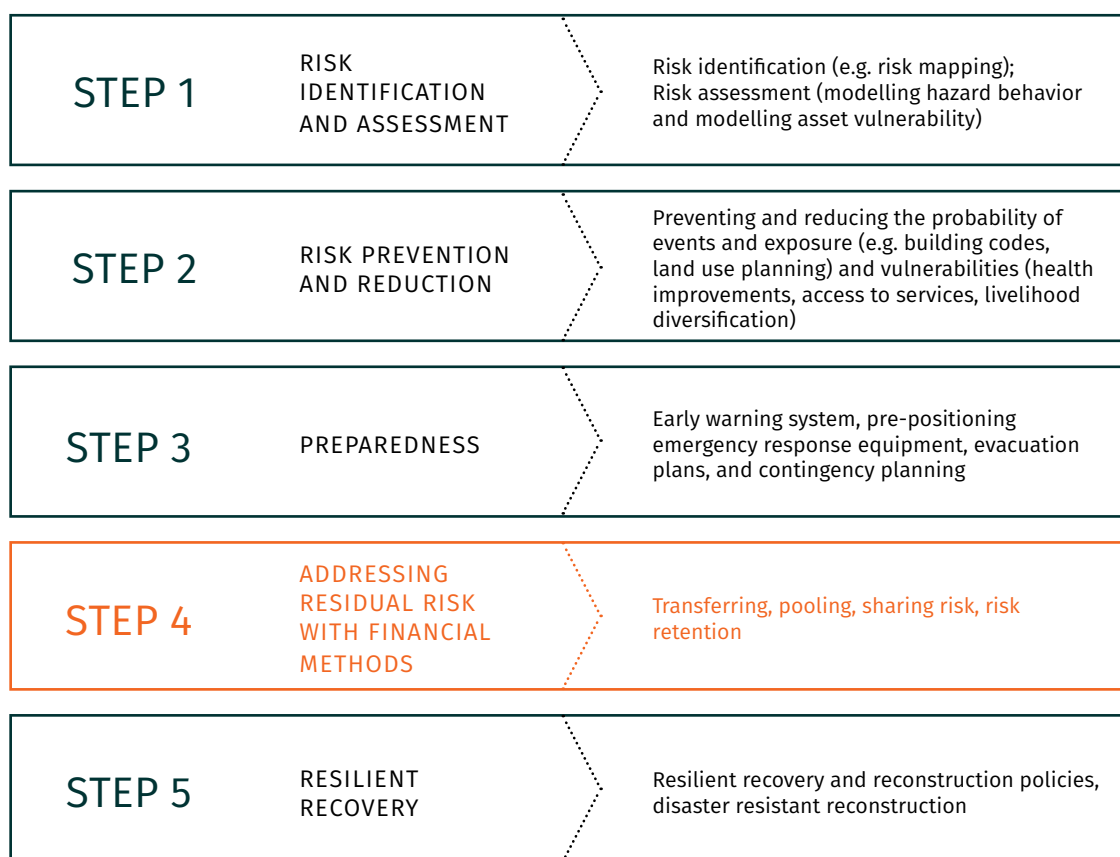
profitable uses (Radermacher et al., 2013). It must be emphasized, however, that insurance is not a universal remedy for all types of losses and damages resulting from climate change. Additionally, insurance options can support adaptation and risk resilience for extreme weather, but are not appropriate for many, usually slower-onset, climate-induced impacts.

3.2.2 What is the role of insurance in comprehensive climate risk management?

Transferring risks in a cost-efficient way through insurance or other tools is a key financial approach for addressing residual risk – but is only one step in a systematic process. To enable climate-resilient development, effective risk management should involve a portfolio of actions aimed at improving the understanding of disaster risks, to reduce and transfer risk and to respond to events and disasters, as well as measures to continually improve disaster preparedness, response and recovery – as opposed to a singular focus on any one action or type of action (IPCC, 2012, p. 35). The figure below highlights the key steps in a comprehensive risk management approach:

Table 5: Insurance in the process of comprehensive climate risk management

Source: Modified from World Bank (2015c).



Once risks have been prevented or reduced as far as economically possible, the residual portion of risks needs to be addressed. There is a broad range of financial instruments available to do so, and they range from micro (individual) to meso (intermediary) and macro (government) level (see above).

To suit the risk profile, innovative financial instruments are now available and several instruments can be blended to meet the needs of the poor and vulnerable. The following table provides an overview of different instruments within these categories, comparing their speed of disbursement. We differentiate between instruments for risk transfer/sharing/pooling, risk retention and risk financing.

It is important to note that insurance is only one among many other options to address risks. Examples of instruments not included in the table below are: budget reallocation; catastrophe bonds; cat swaps; post-disaster government assistance and government guarantees; government bailouts; post-disaster credit; and social protection.

Table 6: Instruments for disaster risk financing

Source: Modified and complemented from Poundrik (2011).

TYPE OF INSTRUMENT	INSTRUMENT	SPEED OF DISBURSEMENT	EXAMPLES/COMMENTS
RISK RETENTION	Reserve funds	Fast	National Disaster Fund (FONDEN), Mexico National Calamity Fund, Philippines.
	Budgetary reallocation	Moderate	Used by most countries to get funds from other budget heads. Procedures, level of approval, and time required varies.
	Tax increase	Slow	Difficult tool, as it adversely affects much-needed investment and is not popular. Difficult to assess to what degree this instrument is used as a resource.
	Donor assistance	Slow	Normally available only in high severity disasters with international exposure and not for low severity-high frequency disasters, slow to come, sometimes with conditions attached. Hence does not solve immediate liquidity needs.
RISK FINANCING	Contingent credit line	Fast	Catastrophic Risk Deferred Drawdown Option (Cat DDO) from the World Bank.
	Loans	Slow	Normally slow to come and useful mainly for reconstruction.

TYPE OF INSTRUMENT	INSTRUMENT	SPEED OF DISBURSEMENT	EXAMPLES/COMMENTS
RISK TRANSFER, SHARING, POOLING	Multi-country/ Regional risk pool	Fast*	Examples: CCRIF SPC, ARC, PCRAFI *Speed of payment depends on the product type (index or indemnity)
	National sovereign insurance pool	Fast*	Example: Turkish Catastrophe Insurance Pool *Speed of payment depends on the product type (index or indemnity)
	Micro-insurance	Index: Fast Indemnity: Moderate - Fast	Indemnity based examples: IBLIP, mNAIS Index scheme examples: R4, ACRE Africa
	Alternative risk transfer instruments	-	Natural catastrophe and weather index insurance

Knowing when and how to apply insurance within comprehensive risk management can be guided by a cost–benefit ratio and risk layering, for example.

Cost–benefit ratio

The various financial tools to address residual risks have different cost–benefit ratios. Before applying insurance as a tool, its costs and benefits should be assessed thoroughly. High premium prices are major obstacles responsible for low insurance penetration in developing countries, and lead to many schemes not reaching scale. In other words, financial sustainability is a major challenge for climate risk insurance schemes.

Risk layering

There are different layers of risks that risk management measures need to respond to. An efficient risk management scheme involves assigning an instrument or set of instruments to each layer, consistent with the selected strategy (reduction, retention or transfer). Financial instruments, in combination with risk prevention and reduction measures, should be selected on the basis of frequency and severity of disasters. This suggests that for weather-related risks which happen often (high frequency) but which are less serious (low severity), preventative and risk reduction activities may be the most cost-effective. The more severe and less frequent risks could be transferred to private and public insurance markets. However, it is important to note that despite adaptation strategies, climate change may bring some residual risks which cannot be transferred to the insurance market cost-efficiently (Warner et al., 2012). Governments also need to adopt approaches to address these residual risks, “the loss and damage that remains once all feasible measures (especially adaptation and mitigation) have been implemented” (UNFCCC, 2012). The following figure illustrates a risk-layering strategy on the basis of the frequency and severity of the event.

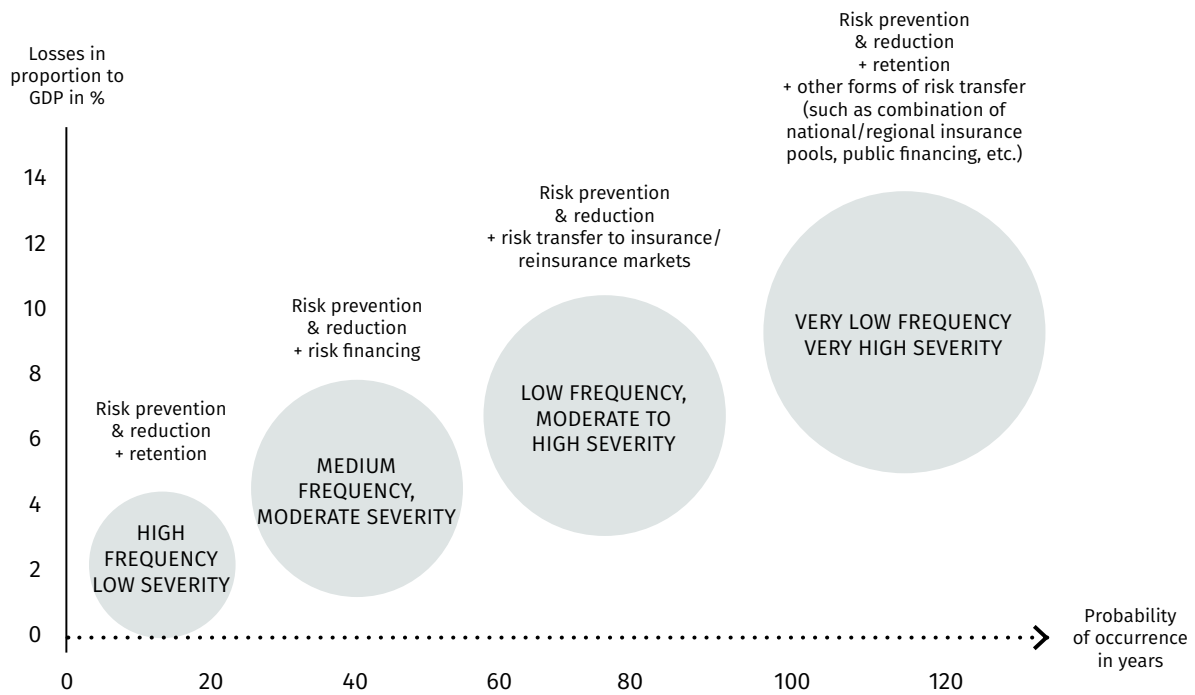


Figure 6: The risk-layering approach

Source: Own figure inspired by Poundrik (2011).

Insurance and social protection

Due to the pro-poor focus of this study, it is important to explore the possible synergies between insurance and social protection mechanisms, “set up by government[s] to cushion the poor and most vulnerable against shocks” (aii, 2014). Disaster risk management and social protection networks can work together to increase people’s resilience to withstand shocks, improve their ability to reduce and manage risk, and ultimately reduce poverty levels (Burton, 2014). The World Bank has found that “countries can respond to natural disasters better and assist victims faster if robust social protection systems are in place” and is working to maximize the benefits from using the same infrastructure for social protection and post-disaster support (World Bank, 2014a).

Poor households have to manage numerous different shocks at the same time – and an insurance product that only targets one type of shock may appear insufficient or problematic (World Bank, 2013a). Having natural risks, such as those posed by climate change, as one shock that is considered in a wider social protection system in which other shocks are addressed may be a more appropriate approach. R4, a rural resilience initiative in Africa, is a good example of how a microinsurance product for the poor can be integrated into a social safety net. When implemented

successfully, the usage of such systems can contribute greatly to reducing transaction costs, as well as making the insurance product easier to communicate and more consistent with other support received by the households. Targeting is a strong suit of social protection schemes, and insurance could capitalize on this when trying to effectively reach their target group. Moreover, social protection principles can guide insurance schemes; they provide a powerful way of thinking about smart subsidies that helps make the clear distinction between market and non-market solutions, which is essential in reaching the poorest.

Insurance can also build upon and strengthen social protection systems / safety nets. Insurers bring important risk assessment skills and can help social systems share the costs of larger shocks. Handling claims and contributory payments are ways in which insurance can improve the efficiency of social protection schemes, particularly in countries with weak governance and public administration (aii, 2014).

Deblon and Loewe (2013) highlight that insurance should be regarded as one type of social protection tool that can be embedded in a country's wider protection framework. The integration of disaster risk contingency planning into productive safety nets can be done through the application of insurance tools to social protection programmes. For example, in 2006 the Productive Safety Net Program of the government of Ethiopia began using disaster risk financing and insurance tools to enhance its capacity during extreme events (World Bank, 2014b). The window of contingent financing made available allowed Ethiopia to increase the number of beneficiaries of food assistance (ibid).

Although weather insurance can be viewed as an innovation to social protection systems, there is little understanding of the extent to which it intersects with “longstanding programs like emergency drought relief” (Hoddinott, 2009). Researchers are begging the question: should governments help integrate insurance for the poor or instead focus on providing a minimum safety net for those in greatest need, “while creating space for private market mechanisms to provide additional insurance for those who would like to purchase it and who are unlikely to receive publicly provided assistance”(ibid)? Findings from the World Bank that suggest that governments provide post-disaster support first to the middle class and the formal economy, before turning toward the poor and the informal economy (Hallegatte et al., 2016), highlighting that the accessibility of insurance to the poor remains a major challenge. While answering these questions goes beyond the scope of this study, we recognize that more research needs to be done to look at this intersection and possible opportunities for innovation and synergies between insurance and social protection.

3.2.3 The insurance gap

Considering these limitations, insurance can be an effective instrument to manage residual risks. However, meaningful insurance coverage is currently not widely available for poor and vulnerable people, particularly in developing countries. Based on a broad estimate, only about 100 million people in Africa, Asia and Latin America are covered by direct and indirect insurance against climate risks (GIZ and BMZ, 2015). Data reveals that between 1980 and 2015, only 2 per cent of losses caused by weather-related natural catastrophes in lower middle and low-income countries were covered by insurance (Munich Re, 2016). This means that about 98 per cent of catastrophe losses have been borne by individuals, firms and governments.

The figure below illustrates this insurance gap in developing countries.

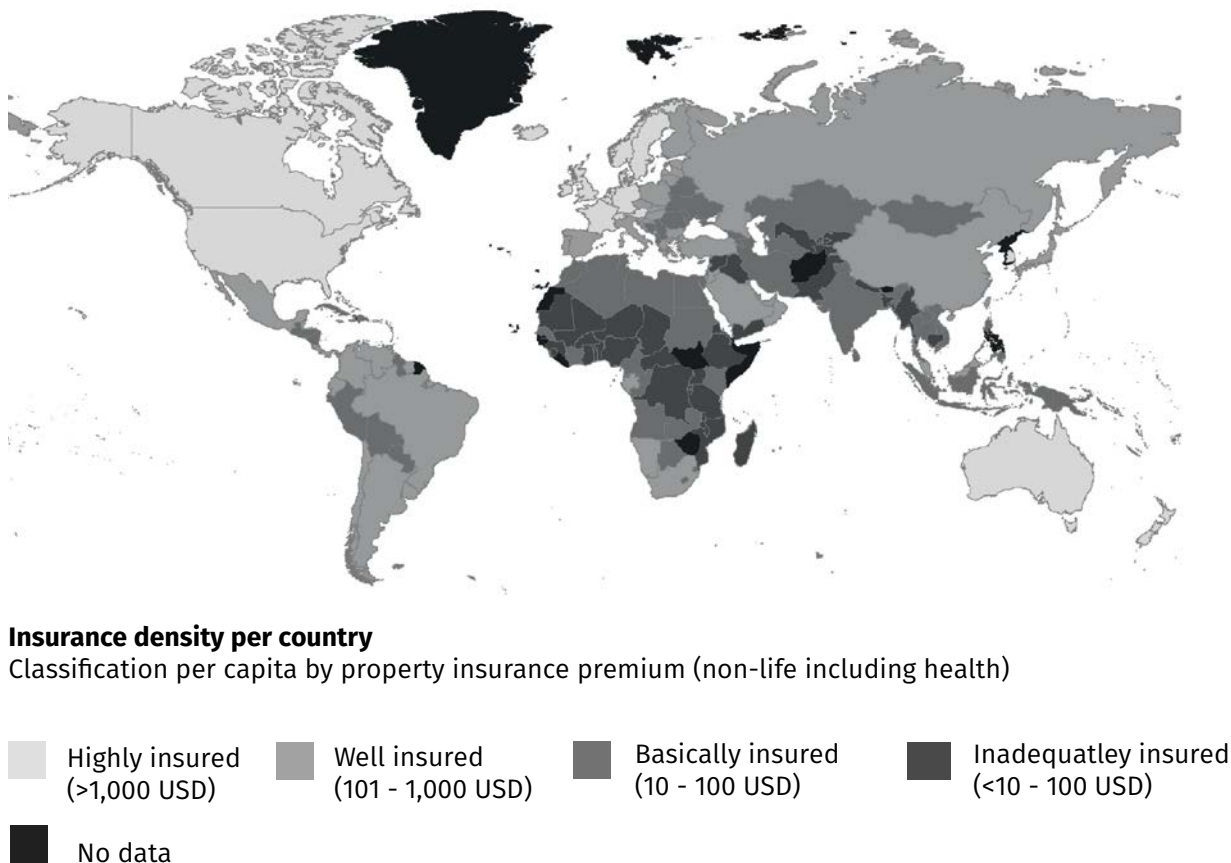


Figure 7: Insurance density worldwide in 2014

Source: Munich Re Economic Research (2016).

There are manifold reasons why the poor and vulnerable have limited access to insurance. In most developing countries there is a lack of an enabling environment for climate risk insurance, which can be understood as the factors that support the sustainable functioning of a scheme, such as the regulatory set-up. There may be a very small or in some cases non-existent market for insurance, and therefore there are few or insufficiently developed structures to support it. At the individual level, many people are unaware of what insurance is, how it works, and what the benefits may be. In some cases people are aware of insurance products but lack trust in the process. A combined effort of building an enabling environment and market alongside increasing awareness, knowledge and trust among the target group will be necessary to increase access to insurance for the poor and vulnerable in developing countries.

3.2.4 Challenges to reaching the InsuResilience target group

Although this research primarily investigates the ways in which climate risk insurance can increase the resilience of the poor and vulnerable, it is important to draw attention to some of the limits, trade-offs and costs of the proposed approaches when trying to reach the poor and vulnerable.

Insurance for the poor needs strong political support

When targeting poor and vulnerable people, climate risk insurance competes with other forms of insurance that might have a greater economic rationale (e.g. health, life insurance) and for scarce resources. Improving access to insurance for this group therefore requires strong political will coupled with great policy support backed by financial and technical means.

Cost-efficiency can be a problem

Insurance tools like microinsurance, national sovereign insurance funds and multi-country/ regional insurance pools are important tools to transfer and pool risks, although they may not always be the most cost-efficient approach. High transaction costs and high prices for premiums are major obstacles responsible for low insurance penetration in developing countries, and are responsible for many schemes not reaching scale. In other words, financial sustainability is a major challenge for climate risk insurance schemes. **Evidence suggests insurance may not be cost-efficient for the poorest of the poor.** Kovacevic and Pflug (2010) found that for households with capital above but near the critical asset threshold, “the probability of collapse to a low level equilibrium increases with the introduction of insurance since the premium payments reduce the ability to create growth”. Similarly, Janzen et al. (2012) use stochastic dynamic programming methods to show that “market-valued insurance uptake by vulnerable households holding assets near a critical threshold will be low, because the opportunity cost of insurance to them is particularly high”. When

premiums have to be covered by beneficiaries, insurance can exacerbate inequality as only the wealthier can afford the premiums. Murphy (2011) found that in Uguumur, Mongolia often only wealthy and very wealthy farmers purchased IBLIP insurance. Similarly, Bertram-Hümmer and Krähnert (2015) show that in western Mongolia only 14 per cent of herders with less than 200 livestock bought insurance, while 32 per cent of herders with more than 350 livestock purchased the cover. Based on these findings, one can conclude that the impact of insurance depends on certain characteristics of households and that successful insurance approaches, particularly at the micro level, need to include measures to lift beneficiaries beyond that critical threshold, e.g. by complementing insurance with asset accumulation programmes. Moreover, asset accumulation programmes (as an example), which may include targeted asset transfer programmes, as well as enabling access to credit and support with risk mitigation, are all suggestions that can complement insurance and cover the proportion of risk that insurance does not.

Insurance is not an appropriate measure for some kinds of risks

It must be emphasized that insurance is not a universal remedy for all types of loss and damage resulting from climate change. Insurance options can be viable tools to address the risk of extreme weather, but are not appropriate or generally feasible for slowly developing and foreseeable events or processes that happen with high certainty, such as glacier melt or sea level rise. Even for disastrous weather-related events that occur with very high frequency, such as recurrent flooding, insurance would be an ill-advised solution (MCII, 2016a). Resilience-building and the prevention of loss and damage in such instances may be alternative cost-effective ways to address these risks. Also, as climate change will increase the intensity and frequency of extreme weather events, there may come a time that some risks become so severe that they are uninsurable.

Insurance cannot cover all losses

Insurance can only cover a percentage of losses, and even when policies are in place to offer coverage, basis risk can result in farmers being less protected than they expected to be, ultimately lowering trust in the insurance product and the provider. Basis risk can be understood as the risk that insurance claims do not adequately reflect the losses incurred; in other words, an individual suffers a loss and does not receive a payment for it because the insurance threshold was not triggered. Even households that are fully insured end up bearing a significant amount of uninsured risk. This is particularly a problem for weather index insurance products (which currently make up the bulk of climate risk insurance schemes) as they pay based on the measure of weather or area yields. Moreover, **insurance cannot address non-economic loss and damage**, context-dependent types of losses that cannot be easily given a monetary value (Serdeczny et al., 2016). For example, there is no payout that could compensate for the loss of life, identity or spiritual well-being, all of which may be results of climate change events.

Climate change may make some risks uninsurable

As climate change will increase the intensity and frequency of extreme weather events, there may come a time when some risks become so severe that they are uninsurable. Slow onset events such as sea level rise and desertification are already uninsurable and will need to be addressed by other risk prevention measures. An increased risk for other currently insurable perils, such as crops and livestock, will lead to higher premiums, ultimately making the product too expensive for the poor and the actors who pay premiums on behalf of the poor.

Only by understanding the limitations and challenges that exist in climate risk insurance approaches can we begin to find appropriate ways to respond to them. Understanding the important role that politics plays in fostering successful schemes can help direct efforts to engage relevant actors and garner political support. Recognizing issues related to cost-efficiency can promote more informed decision-making and planning to avoid poor allocation of resources. Narrowing back in on the pro-poor focus, the following chapters 4 and 5 provide an in-depth analysis of the various elements that are crucial for reaching the target group with effective climate risk insurance.

A young girl with her hair in a bun is wading through shallow water, carrying a baby on her back. She is wearing a white shirt and a patterned skirt. To her left is a large, gnarled tree root. The background is a soft-focus landscape with greenery and a body of water.

4 FINDINGS: THE IMPACT OF CLIMATE RISK INSURANCE ON RESILIENCE

Using 18 selected climate risk insurance schemes, we analysed if and how insurance schemes contributed to increasing the resilience of the poor and vulnerable. The analyses provide evidence that insurance, if embedded into a wider risk management approach, can effectively support resilience-building processes. We found that insurance can contribute to improving key capacities that are imperative for making people more resilient, namely anticipatory, absorptive and adaptive capacities. We also found that insurance can play a role in transforming behaviour and practices towards resilience.

4.1 Summary of key findings

In addressing the combined challenges of poverty and climate change, the resilience of individuals and societies most vulnerable to climate change risks needs to be increased: “Capacity at the local level shapes how impacts of extremes play out and affect patterns of poverty. By building the anticipatory, absorptive and adaptive capacities of those communities and societies most vulnerable to increasing climate risks, we can minimize the impact of climate extremes on poverty levels and the poor” (ODI, 2015). There is growing acknowledgement within the climate policy arena, as well as within the private insurance sector, that insurance can be an effective risk management tool that can increase the resilience of people and countries. However, limited information is available on how insurance can actually do this.

The determinants of resilience – the 3As

Resilience can be understood in many different ways, and has been assigned various definitions in the literature. For this report, however, we understand the term as “the ability to anticipate, avoid, plan for, cope with, recover from and adapt to shocks and stresses” (ODI, 2015). With their 3As approach, the Overseas Development Institute breaks down resilience into the three clearly distinctive categories of anticipation, absorption and adaptation, which we will use for this report. We assume that measures that increase the capacity of individuals to anticipate, absorb and adapt will simultaneously increase their resilience, and therefore use these 3As as determinants of resilience. The definitions are as follows:

Determinants of resilience

Anticipate

Ability to estimate the impact of weather events on individuals and countries and the response measures and costs required to adequately address the impacts.

Absorb

Ability to cope with the impacts of an extreme weather event and absorb the effects of the event.

Adapt

Ability to adjust to actual or expected extreme weather events and its effects. Adaptation seeks to moderate or avoid harm or exploit beneficial opportunities.

A growing consensus in academic literature argues that due to the scale of climate change, building resilient societies can generate a transformational change in the way risks are managed. Economies, societies and livelihoods will have to change drastically to achieve zero emissions and to cope with the increasing impacts of climate change. Thus, the concepts of transformation or paradigm shift increasingly become cornerstones in climate policy and debates. With regard to climate-resilient development, one key component of

transformation is reshaping the risk management strategy from ex-post crisis management to ex-ante risk management. This transformation helps develop a culture of prevention, ultimately improving preparedness for future climate change impacts. Our analysis will therefore also consider the role of climate risk insurance in transforming the ways in which risks are managed and how societies adapt to, anticipate and absorb shocks.

Measuring impacts on resilience

Using the aforementioned determinants of resilience – anticipate, absorb, adapt – we will assess if the analysed insurance schemes had an impact on the resilience-building of beneficiaries. We will also analyse the transformative potential of climate risk insurance. In this chapter, we will focus on the following questions:

- Does climate risk insurance improve the ability of people to anticipate climate impacts?
- Does insurance enable beneficiaries to absorb climate impacts?
- Does insurance enable beneficiaries to adapt to climate impacts?
- Does insurance transform the way in which risks are managed?

An impact includes changes that climate risk insurance makes to the economic or social circumstances of insured governments or insured people and/or their households, enterprises and communities. This impact can be positive or negative and occur ex-ante or ex-post insured events (Radermacher et al., 2013). We will measure impacts at three levels:

- Micro level: Individuals, policyholders.
- Meso level: Intermediaries.
- Macro level: Governments.

It must be noted that although climate risk insurance can play a powerful role in building the resilience of the poor and vulnerable, other factors such as education, health services and infrastructure are preconditions to be able to build anticipatory, absorptive and adaptive capacities. This is in line with the Paris Agreement Art. 8.1, which recognizes the role of sustainable development in reducing the risk of loss and damage. The analysis and subsequent findings presented in this chapter only consider the role of insurance in reducing these capacities.

Findings

Our analysis provides evidence that suggests that – if embedded into a wider risk management approach – climate risk insurance can contribute to improving key capacities that are imperative for reducing poverty and making poor and vulnerable people more resilient. These capacities include anticipatory, absorptive and adaptive capacities. This study showed that insurance can contribute to increasing these key capacities in four ways,

both ex-ante and ex-post, namely by⁷ :

1. Protecting against climate shocks.
2. Promoting growth by unlocking opportunities.
3. Catalysing other elements in the process of comprehensive risk management that are necessary to build resilience.
4. Spurring transformation by incentivizing risk reduction behaviour and fostering a culture of prevention-focused risk management.

The following figure broadly depicts our findings.

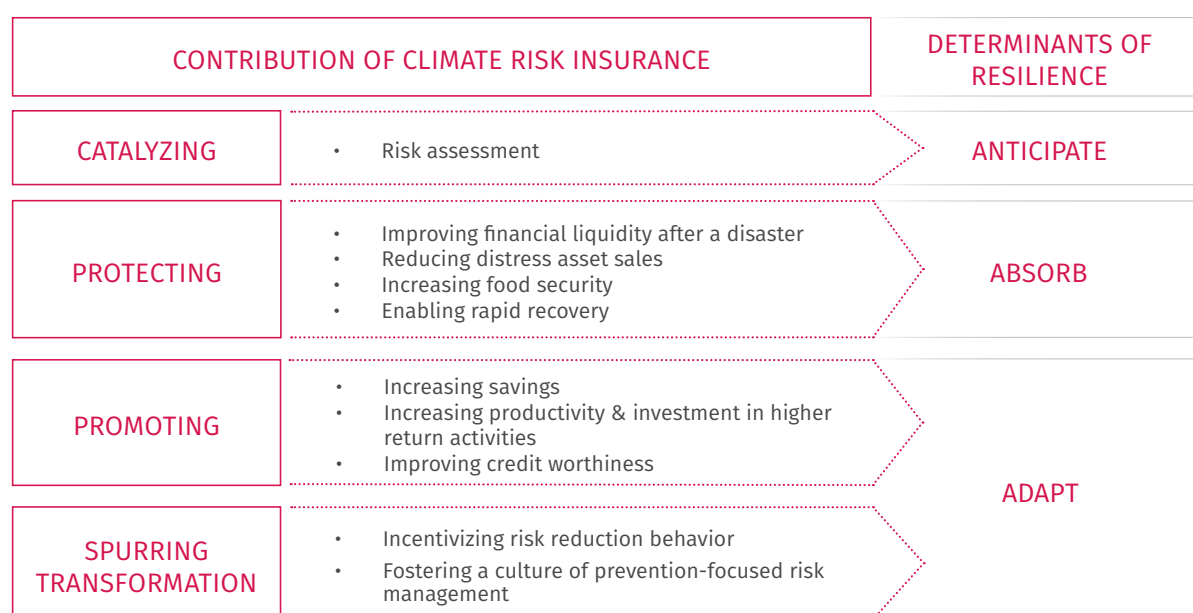


Figure 8: Findings on the contribution of climate risk insurance to resilience-building

Source: Own graphic.⁸

The following table provides a detailed overview of findings for each of the analysed schemes. Impacts are depicted according to the following legend:

- ⊕ Positive impact (strong evidence based on proper impact evaluation)
- ⊕ Positive impact (medium evidence based on personal assessment of experts)
- / Information on this aspect is unavailable, impact could not be analysed

We purposefully did not attribute “no” or “negative impacts” of insurance on resilience for

⁷ These poverty lines are based on national income levels in the 15 poorest countries and only rough proxies for different levels of income poverty. In contrast, national poverty lines differ between \$0.63/day and \$9.06/day, based on the 2005 PPP in developing countries (Ravallion, 2010).

⁸ The protect, promote, transform framework was inspired by a similar concept on social protection from Devereaux and Sabates-Wheeler (2004) and language used in MCII (2009). Protect and promote have already been used as impact categories in the insurance context by Hess and Hazel (2009) and aii (2014).

the following reasons:

- Comparability issue: The analysis builds on existing impact evaluations, which did not use the same methods or cover the same list of issues, making it difficult to compare results.
- Lack of information: Impact evaluations did not exist for all analysed schemes and existing impact evaluations or analyses of interviews did not provide information for all the points that we analysed.

Therefore, the cases where no positive impact is noted do not necessarily indicate the absence of an impact or a negative impact of the respective scheme, but rather means that based on the existing information (impact evaluations and expert interviews), no impact could be assessed so far.

Table 7: The contribution of climate risk insurance to resilience-building

Source: Own table.

Level	Scheme	ANTICIPATE	ABSORB		ADAPT				
		CATALYZING	PROTECTING		PROMOTING			TRANSFORMING	
		Catalysed risk assessment	Reduction of distress asset sales	Increased food security	Increased savings	Increased investment in higher-return activities	Improved credit-worthiness	Incentivize risk reduction behaviour	Culture of prevention-focused risk management
Micro	IBLIP	+	⊕	/	/	/	⊕	/	/
	mNAIS	+	/	/	/	/	/	⊕	/
	PCIC	+	/	/	/	/	+	/	/
	SANASA	+	/	/	/	/	/	/	/
	PepsiCo	⊕	/	/	⊕	/	⊕	/	/
	R4	⊕	/	⊕	⊕	⊕	⊕	+	/
	Micro Ensure	+	/	/	/	⊕	+	/	/
	ACRE Africa	+	/	/	/	+	⊕	/	/
	IBLI	+	⊕	⊕	/	⊕	/	/	/
	MiCRO-HAITI	+	/	⊕	⊕	+	/	/	/
	La Positiva	+	/	/	/	/	/	/	/
	LPP	⊕	/	/	/	/	/	/	/
Meso	PlaNet Guarantee	+	/	/	+	/	/	/	/
	IBFI	+	+	/	/	+	/	/	/
Macro	CCRIF SPC	⊕	/	/	/	/	/	/	/
	ARC	⊕	/	/	/	/	/	/	+
	FONDEN/AGROADE MEX	+	/	/	/	/	/	/	/
	PCRAFI	⊕	/	/	/	/	/	/	/

4.2 Anticipate: Insurance as a tool to anticipate potential loss and damage

Anticipatory capacity is the ability of individuals, communities, societies or organizations to estimate the impact of weather events on individuals and countries and find the response measures required to address the impact (UNEP, 2009). Individuals and systems display anticipatory capacity when they can forecast particular shocks based on information (e.g. early warning systems) and can apply risk management measures (Adger, 2003). In the analysed schemes we found one concrete way in which insurance can strengthen anticipatory capacity – by catalysing risk assessment which analyses the potential loss and damage and builds an understanding of how climate risks are affecting households, communities, businesses and governments.

4.2.1 What is the problem?

Risk assessment frequently serves to bring attention to the hazard potential, the exposure and vulnerability, and in this way it can raise awareness and reveal new options for managing the risks. Publicly collected and open-source data and risk assessments, as well as open-source hazard modelling, can contribute meaningfully to regional, national and local risk management and investment decisions. Risk assessment is key to improve anticipatory capacity as a proactive action before a foreseen event to avoid upheaval, thereby helping individuals and countries better plan for issues like financial needs (for adaptation and managing loss and damage). However, risk assessments are often not performed in developing countries (Collier et al., 2009). And for many parts of the world good and dense hazard and weather data are lacking.

4.2.2 What is the role of insurance?

Insurance can catalyse risk assessment

Risk assessment is a vital part of insurance as it is the precondition for calculating premium levels for policyholders. Accordingly, insurance can facilitate regional and international data analysis, such as establishing data standards, methods and data repositories, and therefore can be a catalyst for risk assessment. Assessing the risk of loss and damage is a prerequisite for identifying needs and policy priorities. Moreover, “public awareness of risk can have a major effect in reducing the impacts of extreme weather events: risk awareness encourages risk-reducing behaviour and increases the demand for insurance coverage” (Warner et al., 2012).

Insurance can act as a catalyst for risk assessment both at micro and macro levels:

Increasing farmers' sensitivity to changing rainfall patterns

In addition to satellite rainfall data, R4 also gathered rainfall information by distributing plastic rain gauges to selected farmers participating in the programme. The initiative organized training on how to collect rainfall data, so as to monitor the actual rainfall situation on the ground, helping to increase farmers' sensitivity to changing rainfall patterns (Sharoff et al., 2015). Moreover, by installing automatic rain gauges for validating the satellite-based rainfall information, the database of the Ethiopian National Meteorological Agency is improved.

PepsiCo installed weather stations on suppliers' farms. The weather stations provide information on temperature, rainfall and sunshine levels as well as forecasts. Surveys by Weather Risk Management Services in India showed that farmers developed a better understanding of the likely impact of weather on yields (Hellmuth et al., 2009).

Helping countries to better understand, model and assess their risks

The Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) produced detailed probabilistic hazard models for all 15 countries, to help countries better understand, model and assess their exposure to natural disasters. This information allowed a detailed quantitative assessment of the potential costs of natural disasters (e.g. tropical cyclones, storm surges, earthquakes and tsunamis) to the national budget and facilitated the development of sovereign disaster risk financing instruments and the development of specific technical and financial solutions (or applications) to reduce or mitigate the effect of these risks (World Bank, 2012).

The African Risk Capacity's (ARC) risk modelling and early warning software platform, Africa RiskView, uses satellite-based data to estimate the impact of weather events on vulnerable populations – and the response costs required to assist them – before a hazard season begins, and as it progresses. This instrument provides the hard triggers for ARC's insurance mechanism but also “allows countries to monitor and analyse rainfall throughout the continent in near-real time and estimate the impact of weather developments on vulnerable populations in-season, thus providing ARC Member States and Partners with an innovative early warning tool” (ARC 2015).

4.3 Absorb: Insurance as a buffer and safety net

Absorptive capacity describes the ability of an individual or community to cope with the impacts of a shock and absorb the effects of the event (Bahadur et al., 2015). It is a “functional persistence [...], the ability of a system to buffer, bear and endure the impacts of climate extremes in the short term and avoid collapse” (ibid). Absorptive capacity manifests during or after a shock. Examples are provided below of how insurance can provide timely finance that improves financial liquidity after a disaster, helping beneficiaries to cope with and absorb the impacts of a shock. Further examples from our research are given that provide evidence that insurance enables rapid recovery, helps to reduce distress asset sales and improves food security.

4.3.1 What is the problem?

When a crisis occurs, the poor often resort to a variety of coping strategies that might, applied on their own, impede sustainable development and trap people in cycles of poverty. Such strategies may include reducing expenditures on food, education and health or selling productive assets, such as livestock, seeds and land (Carter et al., 2014). Other strategies such as borrowing money from family or friends, MFIs or moneylenders, relying on savings and taking out loans might exacerbate dependence and insecurity in the long run (Deblon and Loewe, 2013).

At the macro level, governments can also face challenges in managing their risks in an effective way: due to limited tax bases, high indebtedness and low or no insurance cover, many highly exposed developing countries often cannot fully recover from disaster shocks by simply relying on limited external donor aid. On average a country can expect international assistance to cover only about 9 per cent of direct disaster losses (Andersen et al., 2011). In turn, external investors are wary of the risk of catastrophic infrastructure losses, and small firms and farmers cannot receive the credit necessary for investing in higher-return, higher-risk activities.

4.3.2 What is the role of insurance?

By providing timely finance that improves financial liquidity shortly after a disaster, insurance can play a role as a safety net and buffer for people, businesses and countries shortly after an event. Insurance can help the insured to better absorb shocks, as they may not have to resort to negative coping strategies. In this way, it can also help prevent people from slipping (back) into poverty (e.g. insurance can help to reduce distress asset sales and help to increase food security, both enabling faster recovery after a shock). Timely and reliable payouts enable households to protect their livelihoods when a disaster strikes and engage in more effective risk coping strategies. At the meso level insurance can help medium and small enterprises to recover more quickly and avoid business interruptions. At a macro level, timely finance after a disaster can help governments maintain their services

and avoid fiscal deficits and costly post-disaster loans.

Insurance can provide timely finance that improves financial liquidity after a disaster

Compared to other post-disaster financing options (such as aid, loans and family assistance), insurance can be more timely and reliable as the insured clients have a “right” to a post-disaster payout. Index-based insurance is particularly quick, as it does not require lengthy loss adjustments as precondition for payouts:

In any index-based insurance product, the claim settlement process is very simple and fast. The indices used in loss computation makes the process transparent, with lower operational costs, and it consumes much less time as compared to indemnity base schemes, where farm-level loss assessment takes time and invites errors in the system. The moment the index is triggered, the farmer is entitled for a payout. The insurance company calculates the amount for the farmers of a particular region and sends the claim cheques to the designated bank in that particular area, and the bank deposits the amount into the bank account of the beneficiaries (Microsave, 2013).

Early financing from ARC

ARC’s index-based insurance payouts, based on Africa RiskView data, are triggered at or before harvest time in the event of drought. Compared to humanitarian aid, this type of response provides faster liquidity to governments. This early financing, “linked to predefined national contingency plans, is key to improving the efficiency of disaster response, and to building the capacity of countries to lead their own responses and reduce their reliance on the international appeals process for assistance” (ARC, 2015). In traditional emergency response, affected countries assess yield losses, appeal for funding and receive aid well after the crisis. ARC plans to deliver payouts to governments within two to four weeks of the end of the season, so that relief can be distributed to vulnerable people on the ground within 120 days. When a drought hit Niger, Mauritania and Senegal in 2015, the ARC payout of more than \$26 million arrived “while a UN aid appeal was still being formulated” (Okonjo-Iweala and Thunell, 2015). An internal analysis showed that due to reduced response time and risk pooling, the costs of running ARC are outweighed 4.4 times by the benefits of it compared to traditional emergency appeals (ARC, 2015).

Quick payouts from CCRIF SPC and PCRAFI

Following the 2010 earthquake in Haiti, the CCRIF SPC funds – which were received two weeks after the event and were the first form of liquidity to be received – were used to cover the salaries of key emergency personnel, thereby “keeping the wheels of government turning” and “assisting those individuals most in need of critical health services” (Anthony, Isaac. Email Interview. 19 April 2016). The World Bank states that the financial vulnerability of the CCRIF SPC Caribbean countries was reduced through the establishment of the initiative, proven by, among other factors, the ability to offer rapid infusion of liquidity into budgets for countries in times of need (World Bank, 2013b). For CCRIF SPC, payouts can be calculated and made very quickly because loss adjusters do not have to be relied upon to estimate damage after a catastrophe event (which can take months or years). The customary waiting period for CCRIF payouts is 14 days after a triggering event. In 2010, “following the passage of tropical cyclone Tomas [...] CCRIF released to each country [Barbados, Saint Lucia and St. Vincent] 50% of their payouts [...] seven days after the storm’s passage” (CCRIF SPC, 2010).

PCRAFI is another example at the macro level of how quick payouts lead to immediate financial liquidity. PCRAFI had two payouts for an aggregated amount of \$3.2 million, which were submitted to the countries in each case within 10 days of the disaster: “The payouts were the first injections of cash received in the immediate aftermath of the disaster. Vanuatu received its payout within 7 days of being affected by the tropical cyclone, and Tonga received its payout within 10 days. These events demonstrated the pilot fulfilling its purpose: to provide governments with a quick, but limited, cash injection in the aftermath of a major disaster to finance immediate expenditures” (Carter, 2015).

Timely finance after a disaster helps beneficiaries not to resort to negative coping strategies and enables rapid recovery

Timely and reliable payouts enable households to protect their livelihoods when a disaster strikes. Insurance “payouts can be set up to occur as soon as the loss-causing event is detected, which helps smallholder farmers stabilize their incomes and recover more quickly from climate-related shocks” (Greatex et al., 2015). In this way, insurance can act as a safety net that prevents people from applying destructive coping strategies and from slipping into poverty or falling deeper into poverty. Timely finance after a disaster can

help individuals to cover losses and damages, stabilize their income, purchase food and other necessities and avoid costly asset depletion, ultimately allowing people to choose alternative means of coping with negative shocks (Dercon et al., 2005; Barrett et al., 2007; Skees and Collier, 2008). It can also help governments avoid fiscal deficits and costly post-disaster loans.

First-hand accounts of how insurance allows for opportunities to employ more effective risk coping strategies

“Insurance is like an aunt, when your mother is not around”, stated a farmer enrolled in the R4 programme, thereby illustrating very well the potential safety net function (aunt) of insurance. Sophia Belay, R4 manager, adds: “Although insurance does not cover all the losses that farmers face when the rains fail, it still limits the financial losses and helps them not to resort to negative coping strategies” (Belay, Sophia. Email Interview. 15 April 2016).

Nimna Diayite, president of a maize producers cooperative and enrolled in the PlaNet Guarantee insurance scheme, states: “Our partnership with PlaNet Guarantee since 2012 has been really positive and we hope to strengthen it in the upcoming years. We have been for a long time in search of a way to protect ourselves against the risk of bad harvest due to climate hazard, and PlaNet Guarantee brought us the index insurance solution. This compensation has been really useful; it allowed us to repay the credit to the bank and save some money that will serve for other useful purposes. We hope this initiative will be extended to farmers that couldn’t benefit from it this year” (Kara, Anaar. Email Interview. 15 April 2016).

By spreading losses among people and across time, insurance can reduce the catastrophic impact of disasters, and can enable a timely recovery. Studies have shown that the earlier relief arrives after a shock, the greater its effectiveness in cushioning adverse welfare impacts, avoiding the distress sale of assets and speeding up recovery (Dercon et al., 2005).

Evidence at the micro level that insurance led to quicker recovery

Many analysed schemes were described, in interviews and in the literature, as promoting rapid recovery. Weijing Wang (Email Interview. 21 April 2016) states that the quick payout by the Livelihood Protection Policy (LPP) 14 days after the impact led to a quicker recovery. Bertram-Huemmer and Kraehnert (2015) find that pastoralist households purchasing IBLIP before the shock recover faster

from shock-induced asset losses than comparable non-insured households. Results show a significant and positive effect of IBLIP indemnity payments on households' recovery in livestock holdings in the first and second year following the 2009/10 winter disaster. Two years after the disaster, insured households owned between 22 and 27 per cent more livestock, which is the key indicator for welfare in rural Mongolia (ibid). Moreover, PCIC is described as a "safety net that enables agricultural producers, and particularly the transient poor, to recover quicker from shocks" (Reyes et al., 2015). In a recent study, Swiderek and Wipf (2015) analysed the effectiveness of microinsurance providers' responses to typhoon Haiyann in the Philippines (the PCIC is one of those microinsurance providers). They found that "funds were spent restarting livelihoods and repairing homes. Microinsurance filled the gap especially in cases where assistance wasn't provided by the government, NGOs or international organizations to repair homes" (Swiderek and Wipf, 2015).

However, we also found cases in which rapid recovery was not a result of insurance. Evidence shows that compared to other microfinance programmes, people who enrolled in the SANASA programme took longest to recover from shocks (nearly 10 months compared to an average of seven months) (Czura, 2010). In such cases, the cost-benefit ratio of insurance as a tool needs to be assessed and the design of the insurance product needs to be improved to better respond to the needs of the insured and provide reliable coverage. Otherwise, a poorly designed insurance product that neither covers a sufficient amount of the damage nor provides incentives for risk reduction behaviour might lead to perverse incentives and increases the risk of people slipping (back) into poverty or staying poor (see chapter 5 for more on needs-based and well-designed products).

Insurance can help to reduce distress asset sales

Selling productive assets (e.g. livestock) to protect consumption can undermine income-generating capacity and can push households into poverty traps difficult to escape from. Studies have shown that the earlier relief arrives after a shock, the greater its effectiveness in cushioning adverse welfare impacts, such as avoiding the distress sale of assets and speeding up recovery (Dercon et al., 2005). In the analysed schemes we found three strong examples – from IBLI, IBLIP and IBFIP – where insurance demonstrably contributed to reducing distress asset sales through quick payouts.

Examples of how insurance reduced distress asset sales through quick payouts

Research has shown that IBLI coverage had significant effects on coping strategies that households used during the final month of a catastrophic drought in the Horn of Africa. In Marsabit, IBLI coverage led to a “36% reduction in likelihood of distress livestock sales, improving their chances of recovery” (Mude, Andrew. Email Interview. 05 April 2016; Jensen et al. 2016). Evidence gathered by Bertram-Huemmer (2015) on the IBLIP scheme suggests that indemnity payments by IBLIP help herders to avoid selling and slaughtering animals and smooth their productive asset base.

It was found that the payout amount of the IBFIP, “is helping the affected household[s] to meet their immediate liquidity/funding gap. Therefore they do not need to go for distressed sales of the labor or productive assets” (Akhter, M.B. Email Interview. 13 April 2016). Programme Manager Akhter stated that they found that “the affected communities who have received the payout are using the amount with their own means for undertaking the repair of damaged houses, farming, vegetable cultivation and also for poultry, which provided them with extra income, thus adding new dimensions in their resilience” (ibid).

Insurance can help to increase food security (reduced asset smoothing)

Protecting productive assets by reducing consumption is a coping strategy applied by the poor in the event of a shock that can drive them into even more severe poverty. The reduction of consumption can lead to irreversible losses in the health of children and grown-ups, resulting in diminished work capacity and strength and increased susceptibility to disease, ultimately reproducing poverty over generations. The Access to Insurance Initiative states that “insurance also has the potential to change behaviour by reducing uncertainty and putting a price on risk. For example, traditionally farmers might have planted three or four different crop varieties to guard against the risk of adverse weather or disease affecting their entire crop; now with the security of insurance; farmers can instead focus on just one crop and benefit from economies of scale. Overall, small farmers and small and medium enterprises that are able to better manage their risks are better able to contribute to food security of the population” (aai, 2015).

Evidence that suggests that insurance has an impact on increased food security

We find strong evidence suggesting that IBLI has a positive impact on the food security of its beneficiaries. After a catastrophic drought in Marsabit, Kenya, insured households were 25-36 per cent less likely to reduce their food consumption as a coping strategy. This impact is stronger for livestock-poor households, who are most likely to reduce their consumption after a shock (Janzen and Carter, 2013). Additionally, evidence suggests that by improving food security during a drought, insured households are 42-50 per cent less dependent on food aid and up to 26 per cent less reliant on other forms of assistance (ibid).

MiCRO-Haiti found that in terms of food security, only 3 per cent of clients were food secure upon entering the programme; of those that had been in the programme for 3 years or more, 58 per cent were food secure (Hastings, Anne and James Kurs. Email Interview. 14 April 2016).

Despite two consecutive bad harvests, R4 farmers in Senegal were able to maintain their level of food security, in contrast to non-R4 farmers living in the same area and exposed to the same shocks: “The decrease in Food Consumption score for R4 farmers was limited to -4.7 per cent while it showed -49.1 per cent for non R4 farmers. Furthermore, the degradation of food security conditions resulted in an increase of the Coping Strategy Index for the entire population, with a higher change for non-participants: 18.6% increase for participants and 102.5% increase for non-participants” (Belay, Sophia. Email Interview. 15 April 2016).

While the above examples assert that insurance has a positive impact on food security, this data is not necessarily conclusive and evidence is primarily anecdotal. As with other positive impacts, this effect cannot be solely ascribed to insurance. Positive impacts are apparent when insurance is integrated into a comprehensive risk management strategy, in most cases with a food security component. For example, R4 farmers have the option to pay insurance premiums either in cash or through the insurance for assets (IFA) scheme, which engages them in risk reduction activities. IFA schemes are built into government safety net programmes or World Food Programme food assistance for assets (FFA) initiatives. FFA plays a double role; as a safety net it provides food and/or cash transfers to meet the immediate food needs of the most vulnerable households, and as a tool for disaster risk reduction, natural resource rehabilitation and agricultural development, it builds assets that reduce the impacts of extreme weather events, restore ecosystems and enhance agricultural production (R4, 2015). The increased food security for R4 hence stems from

the comprehensive approach R4 applies, and in this case by embedding insurance in food assistance programmes.

See chapter 5 for more on comprehensive approaches that stress the importance of embedding insurance into other risk management strategies to improve resilience.

4.4 Adapt: Insurance unlocks opportunities, helping people to grow

Adaptive capacity is “the ability of systems, institutions, humans and other organizations to adjust to potential damage, to take advantage of opportunities or to respond to consequences” (IPCC, 2014d). It includes the ability to “react to evolving hazards and stresses [well in advance] so as to reduce the likelihood of the occurrence and/or the magnitude of harmful outcomes resulting from climate-related hazards” (Malone, 2009, p. 6). It also includes the ability to exploit beneficial opportunities arising from disturbances and to “build or bounce back better” (Manyena et al., 2011) and to learn from shocks and stresses (Smit et al., 2001). Adaptive capacity is “usually made apparent and strengthened during non-emergency periods” (Bahadur et al., 2015).

4.4.1 What is the problem?

To limit their exposure, poor households often try to avoid risks. Therefore, they choose activities with lower risk, but also lower returns, and forego income opportunities (Cole et al., 2012). Researchers observed in Tanzania that poorer farmers grew more sweet potatoes (which is a lower-risk, lower-return crop) than richer farmers – resulting in a reduction of up to 25 per cent average earnings (Dercon, 1996). To be prepared in the event of a shock, the poor also tend to diversify their income-generating activities, assets or choice of crop or accumulate precautionary savings. While this is certainly a sensible measure to decrease risk, it can also lead to a loss of profits as people cannot afford to specialize in the more profitable options. In general, these informal strategies to manage climate risk usually cover only a small portion of the loss, so “the poor have to patch together support from various sources” (Churchill, 2006).

4.4.2 What is the role of insurance?

Research suggests that, at the micro level, insurance could help to “unlock opportunities that increase productivity in the non-pay-out years, which might allow [affected people] to escape from poverty traps or from the threat of them” (Greatrex et al., 2015: 6). This means that the certainty, in turn, can help create an environment more conducive to climate-resilient investments in sectors such as tourism and agriculture (typically heavily exposed to climatic stressors). Such opportunities could pave ways to prosperity as farmers might earn more.

Moreover, at the macro level, research suggests that insurance can contribute to increasing economic growth after a disaster.

In the analysed schemes, we found evidence of how insurance can increase the ability to exploit beneficial opportunities by: 1) helping to increase savings, 2) improving creditworthiness and 3) increasing investments in higher-risk, higher-return activities.

Insurance can help increase savings

Insurance can help reduce the financial repercussions of volatility and create a space of certainty within which planning can be undertaken.

Examples of how insurance helps people save individually and collectively

An impact evaluation of the R4 programme in Tigray, Ethiopia provides evidence that insured farmers “increased the amount of savings by 123% more than did the uninsured” (Madajewicz et al., 2013). These farmers “tripled their savings from an average amount of 465 birr in 2009” (ibid). As highlighted above with absorptive capacities, the examples of positive impacts cannot be solely attributed to insurance. For example, R4’s comprehensive approach includes a savings component; through community savings groups, participants create small-scale reserves, which can act as a buffer against short-term shocks (R4, 2015).

For MiCRO-Haiti, “69% of those who received a payout used the proceeds to invest in their businesses or to save. Without an insurance payout, many clients might have had to sell assets or borrow money at high interest rates instead” (Hastings, Anne and James Kurs. Email Interview. 14 April 2016).

In Senegal, PlaNet Guarantee may have increased beneficiaries’ savings, although no impact evaluation provides evidence for this. Seynabou Ndao, a groundnut producer who is insured by PlaNet Guarantee, pays 25,000 CFA to the cooperative per year for inputs and insurance. Instead of spending the 15,000 CFA per farmer payout the cooperative received for lost harvest last year, the money was saved collectively to cover this year’s costs at the start of the season (ibid). Seynabou Ndao says, “we were wise to save money. It would have been hard at this time if we didn’t have the saved money from the insurance. The farmers that did not join the program last year, now they see the benefit and they also want to join” (ibid).

Insurance can improve creditworthiness

For this section we differentiate between two categories of products:

- 1) Products where access to credit is bundled with insurance offered as part of a comprehensive programme. These include R4, ACRE Africa and PepsiCo. These programmes improve credit only in the realm of the programme and the results do not provide evidence that the beneficiaries would have better access to credit in the free market without the (mandatory) component.
- 2) Products that do not have a (mandatory) credit component and where evidence suggests that beneficiaries have improved access to credit in a free market.

Examples of improved access to credit

1) We find that, presumably due to the loan component of the programme, enrolment in R4 has resulted in an improved use of credit “in Saesi Tsaedaemba for farmers, since farmers’ most common comment about the benefits of insurance is that it gives them the confidence to take loans because a payout enables them to repay loans” (Madajewicz et al., 2013). A few farmers mention that insurance does help them to obtain credit from their neighbours or wealthy individuals since these individuals are more confident that they will be repaid if the borrower is insured.

ACRE Africa notices increased access to finance for their target group: “Ninety seven percent of the farmers insured by ACRE in 2013 received loans linked to the insurance: 177,782 farms received \$8.4 million in financing in part due to the index insurance product” (Kariuki, Rahab. Email Interview. 19 April 2016).

2) Findings from MicroEnsure show that the insurance scheme can “[unlock] access to finance and loans for smallholder farmers: The product had positive impacts on the resilience of the poor and vulnerable by providing a cash payment following adverse weather conditions”. The product facilitated access to finance by making lending institutions more willing to provide loans to smallholder farmers that rely on rainfall for a successful crop (Dorey, David. Email Interview. 15 April 2016). Insurance has also increased agricultural bank portfolios for MicroEnsure: “Weather index insurance enabled the Kenya Commercial Bank to increase its agricultural portfolio in Rwanda (IFC, 2016).”

For IBLIP, banks seem to have more confidence in herders covered by the index livestock insurance. Since the project started, banks have offered herders loans at decreased interest rates (Luxbacher and Goodland, 2010).

Insurance can support people by increasing investment in higher-return activities

The volatility in economies and social systems caused by weather extremes is a challenge for social and economic development. Vulnerability reduces people's readiness to extend their economic activities and improve their socioeconomic well-being: "People who are vulnerable to risks such as illness or unemployment are reluctant to invest any excess income in productive capital or education. This would help them to increase their income but also imply some additional risks" (Deblon and Loewe, 2012). Insurance can help reduce financial repercussions of volatility and create a space of certainty within which investments and planning can be undertaken. In this way it can incentivize "positive risk taking" (Hallegatte et al., 2015), which is essential for innovation and growth. Index insurance has the potential to "help farmers to adapt to climate change by making better use of good years and providing protection in bad" (Sharoff et al., 2015).

Below, we list examples where insurance helped people to invest in higher-return activities and/or increased their well-being. However, the extent to which these impacts can be attributed to insurance or to other measures that led to the positive outcome remains unclear. In many cases it was not insurance alone but the interplay of insurance with other risk management activities and social protection tools that improved opportunities. Without this relationship, supporting investment in higher-risk activities might also lead to mal-adaptation by encouraging people to undertake activities that should be avoided when considering longer-term climatic impacts. This "false sense of security" (Surminski and Oramas-Dorta, 2013) might reduce the urgency for risk prevention and reduction, and thereby increase vulnerability to extreme events.

Unlocking opportunities at the micro level

Households with index-based livestock insurance (IBLI) coverage increased investments in livestock veterinary and vaccination services, and reduced their herd size (most likely reflecting a reduction in precautionary savings in response to an insurance alternative). The project team observed that these changes to production strategies led to an increase in milk productivity of livestock and the total value of milk produced (Jensen et al., 2015). IBLI also

had an impact on greater household income per adult equivalent and led to improvements in mid-upper arm circumference, which is an indicator of child malnutrition (Mude, Andrew. Email Interview. 5 April 2016). IBLI improves purchasers' well-being even when droughts or indemnity payments do not occur, by "providing improved peace of mind about drought risk exposure" (Jensen et al., 2015).

MicroEnsure has an impact in the form of "increased investment and changed investment behaviour: Investment in Irish potatoes by insured farmers generally provide higher returns than maize and rice. The sum insured for this crop increased from \$16,000 in 2012 to \$254,000 in 2013" (IFC, 2016).

And in Haiti, 69% of those who received a payout from MiCRO-Haiti used the proceeds to invest in their businesses or to save. Without an insurance payout, many clients might have had to sell assets or borrow money at high interest rates instead (Hastings, Anne and James Kurs. Email Interview. 14 April 2016).

Likewise, the mNAIS scheme states that the insurance opportunity that is provided through the scheme offers farmers the option of adopting progressive farming practices and making use of better technology to enhance their overall output (World Bank and GFDRR, 2011).

For ACRE Africa, insured farmers invested 19% more and earned 16% more than their neighbouring uninsured counterparts (Kariuki, Rahab. Email Interview. 19 April 2016).

Unlocking opportunities at the meso level

At the meso level, in Bangladesh, where floods severely affect the lives of people living in the flood-prone areas of the Sirajganj district every year, the flood insurance for river people in Bangladesh (IBFIP) helps them to "cope with the economic fallout due to lack of livelihood options. The villagers spend the money to repair their homes, [and] invest in seeds or fertilizers to grow more crops and enhance yields" (Islam, 2015).

Similar findings in the literature support the assertion that insurance can help increase well-being and/or investment in higher-return activities:



- Elabed and Carter (2014) found that offering insurance to a group of cotton cooperatives in Mali resulted in a "15% increase in the area in cotton, and a 14% increase in the expenditure on seeds per h[ectare]".

- Mobarak and Rosenzweig (2012) found that farmers in India with access to insurance shift into riskier, but higher-yielding, rice production.
- Cai et al. (2014) found that “promoting greater adoption of insurance significantly increases farmers’ tendency to raise sows, and the short-run effect of sow insurance on sow production seems to persist in the longer run.” Sow production in China is considered a risky production activity with potentially large returns. More evidence is provided by Cai (2012), who finds that tobacco insurance in China increased the land tobacco farmers devoted to risky tobacco production by 20 per cent.
- Cole et al. (2012) found that higher liquidity and income levels available to the household were found to be positively associated with the take-up of index-based microinsurance.
- de Nicola (2012) found that “weather insurance has the potential to provide large welfare gains, equivalent to a permanent increase in consumption by almost 17%. Moreover, it can allow for the adoption of riskier but more productive seeds, further enhancing welfare. The low take-up that is often empirically observed is likely to be due to high insurance premium, basis risk, and the interplay with other uninsured risks.”

4.4.3 Can insurance boost economic growth?

In a literature review of relevant research, most of which has been carried out in the past few years. Lester (2014) demonstrates that the insurance sector contributes at a basic level to inclusive economic growth and the effectiveness of the credit function. These findings are consistent with a study by the Bank of International Settlements on the macroeconomic consequences of natural catastrophes, which analyses the extent to which risk transfer to insurance markets facilitates economic recovery. The researchers looked at nearly 2,500 natural catastrophes that occurred between 1960 and 2011 in over 203 countries. The study concluded that “there is little evidence that countries rebound from natural catastrophes when uninsured” – hence, countries with high insurance penetration recover faster from catastrophic events than less-insured countries as their indirect costs as well as the overall economic impact due to the event is lower (Peter et al., 2012). Moreover, “well insured catastrophes, by contrast, can be inconsequential or positive for growth over the medium term as insurance payouts help fund reconstruction efforts” (ibid). Likewise, the rating agency Standard & Poor’s (2015) highlights that economies with higher insurance coverage are able to recover more quickly and suffer from lower cumulative GDP damage than those without insurance coverage (S&P, 2015): “For a sample of 48 countries and a hypothetical natural disaster shock equivalent to 5% of a country’s capital stock, S&P estimates that credit ratings would on average decline between two and three notches if there was no insurance protection at all. This compares to a decline of only about one notch, if 50% of the damage was insured” (ibid). The following table shows how high insurance market penetration can have a positive impact on GDP development in countries.

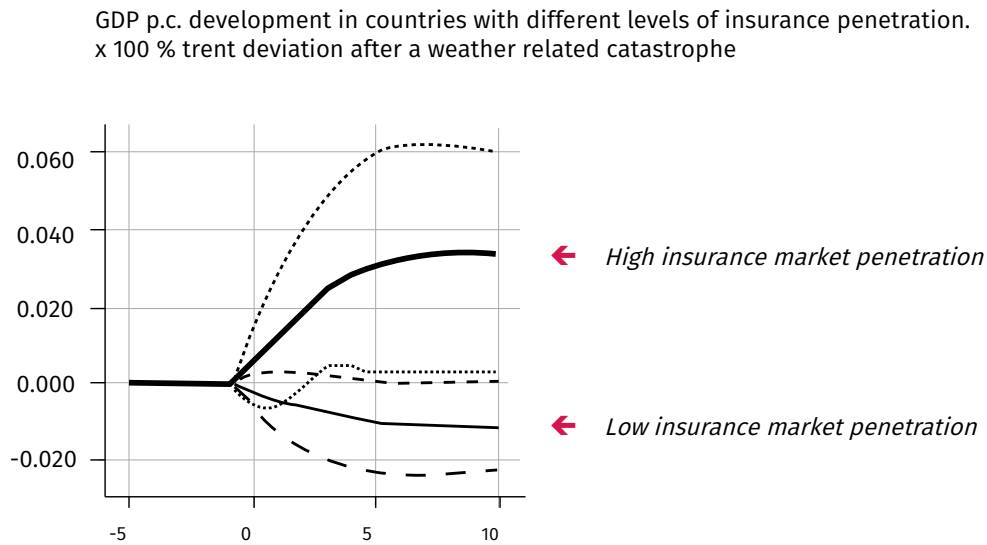


Figure 9: Insurance and GDP development

Source: Modified from Melecky and Raddatz (2011).

4.5 Spurring transformation in how risks are managed

Transformation entails changes at the personal level (individual and collective beliefs, values, world views), political level (economic, political, legal, social, cultural and technological systems) as well as at the practical level (changes in behaviour, management practices, the introduction of new technologies and socio-technical and cultural innovation) (O'Brien and Sygna, 2013). Based on Kates et al. (2012) and Lonsdale et al. (2015) a measure or process classifies as transformative if it is:

- Truly new to a particular region or resource system.
- Applied at a much larger scale.
- Applied at a much greater intensity.

We will use these criteria to identify a transformational impact of climate risk insurance. While there was no information available on how insurance changes individuals' values and views regarding risk management, we do find indications that insurance might foster transformation at the political level by changing the process of disaster relief programmes and at the practical level by incentivizing risk reduction behaviour. In general, one must note that transformation needs time, and most insurance schemes are still in an early stage. An assessment in the future might shed a different light on these findings.

4.5.1 What is the problem?

Economies, societies and livelihoods will have to change drastically to achieve zero emissions and to cope with the increasing impacts of climate change. Thus, the concepts of

transformation or paradigm shift increasingly become cornerstones in climate policy and debates. This means that disruptions can be used as opportunities for innovation, ultimately creating new pathways that improve a system's ability to adapt to large shocks (Folke, 2006; see also Pelling, 2010). In this way, a transformation “alter[s] the fundamental attributes of a system (including value systems; regulatory, legislative, or bureaucratic regimes; financial institutions; and technological or biological systems)” (IPCC, 2012) to evolve into more desirable configurations that are improved and more prepared for future climate change impacts. With regard to climate-resilient development, one key component of transformation is reshaping the risk management strategy from ex-post crisis management to prevention-focused risk management. This transformation helps develop a culture of prevention, ultimately improving preparedness for future climate change impacts.

4.5.2 What is the role of insurance?

Insurance spurs transformation by helping countries reshape the way risks are managed. It does so by encouraging risk reduction, catalysing risk assessment and driving more structured decision-making around ex-ante risk. At the political level, we see that requesting contingency planning as an eligibility criteria for insurance has changed the process of disaster relief programmes in relevant countries. Insurance can encourage countries to develop a culture of data-driven, prevention-focused risk management. It can incentivize risk reduction behaviour, e.g. by making it a prerequisite for reducing premiums or providing the option for people to work for their insurance cover by engaging in community-identified projects to reduce risk and build climate resilience. In this way, insurance can contribute to preventing losses and damages. However, only a few already existing schemes show an operational link between risk transfer and risk reduction (also found by Surminski and Oramas-Dorta, 2013).

We note though that evidence from the analysed schemes with regard to the impact of insurance on transformation is scarce, as most schemes are still in their early stages of implementation and it may be too early to identify a positive transformative impact. In the R4 impact evaluation, almost all farmers and village leaders agree that the programme is not yet improving livelihoods in a transformative way. Despite the benefits of the payouts, farmers for the most part report that the payouts will not change their lives very much. Ultimately, they need good harvests in order to improve their livelihoods. It is too early to determine if the product reduces poverty levels and increases resilience (Madajewicz et al., 2013). Constant analysis and long-term monitoring and evaluation of project outcomes will be crucial to track potentially transformative impacts of insurance in the years to come (see also, Hess and Hazell, 2016).

Insurance can help to reshape ex-ante risk management

At the political level we find indications that insurance could help countries to reshape the ways in which risks are managed ex-ante. It can foster the selection of nationally appropriate risk reduction priorities, and help develop a culture of prevention and resilience.

Fostering a culture of prevention-focused risk management through contingency planning

Requesting contingency planning as eligibility criteria for ARC has changed the process of disaster relief programmes in the relevant countries, shifting paradigms away from crisis to risk management. ARC member states “currently pay insurance premiums through national budget processes and receive payouts for pre-approved contingency plans. Through insurance and its in-country capacity-building programme, ARC provides expertise to and incentives for governments to invest in their emergency planning and response capacities. The payment of premiums from the national budget is simply the last step in a process of building both financial and political ownership and accountability” (ARC, 2015). By providing incentives for governments to invest in their emergency planning and response capacities, ARC could contribute to shaping a culture of prevention-focused risk management in their member countries.

Can insurance foster risk reduction behaviour?

Risk-reducing behaviour is a key component of a resilient individual and society. Surminski and Oramas-Dorta (2011) list four ways in which insurance can foster risk reduction:

- Risk-awareness-raising initiatives, such as the provision of risk-relevant information and knowledge transfer to educate policyholders and the public about preventive measures.
- Capacity-building through knowledge transfer and educational elements.
- Explicit incentive structures for risk reduction, such as risk-based pricing, where premiums reflect risk such as charging according to local flood risk levels.
- Compulsory risk reduction, such as requiring policyholders to take certain preventive measures as a condition for cover.

In an analysis of 27 flood insurance schemes in developing countries, Surminski and Oramas-Dorta (2013) found that the potential for utilizing risk transfer for risk reduction is far from exhausted, with very few schemes showing an operational link between risk transfer and

risk reduction, while the effectiveness and implementation on the ground remains unclear.

Incentivising risk reduction behaviour at the micro level

The modified National Agricultural Insurance Scheme (mNAIS) features a premium structure including a discount provision if all farmers in a unit area adopt better water conservation and sustainable farming practices for better risk mitigation (Surminski and Oramas-Dorta, 2011). It thereby encourages risk reduction behaviour and the application of progressive farming practices.

Another good example of how insurance can actively encourage risk reduction behaviour is the R4 initiative, where cash-poor farmers have the option to work for their insurance cover by engaging in community-identified projects such as improved irrigation or soil management to reduce risk and build climate resilience. Moreover, R4 makes people identify critically needed risk reduction activities for their community, such as small-scale water harvesting, increasing soil moisture retention through improved agronomic practices and other agricultural methods to improve crop production (Oxfam, 2011).

4.6 Limitations and other considerations

The analysis of schemes from this study showed that well-designed climate risk insurance, embedded into comprehensive risk management, can contribute to alleviating poverty and building resilience for poor and vulnerable people. However, this study also identified challenges to reaching the poor with insurance.


These challenges are related to the integration of insurance solutions into the local context, respecting and responding to existing structures in order to not increase inequalities or destroy existing local risk management mechanisms or safety nets.

When premiums have to be covered by the insured, insurance can exacerbate inequality as only the wealthier can afford the premiums. In the cases where insurance unlocked opportunities, it was not insurance alone but the interplay of insurance with other risk management activities and social protection tools that improved opportunities.

Moreover, there might be certain household characteristics determining if insurance is a valuable tool or not. Successful insurance approaches at the micro level might need to include measures to lift the insured beyond a critical threshold that makes insurance useful for them, e.g. by complementing insurance with asset accumulation programmes. Research

on IBLI concluded that the scheme is “not well suited for the poorest, who already slowly collapse toward destitution over time, as the premium payment tends to further speed up such herd decumulation during good seasons. By contrast, IBLI is most valuable for the vulnerable non-poor, for whom insurance can stem collapses onto a trajectory of herd decumulation following predictable shocks” (Chantarat et al., 2016). In this case, the assets of the poor are too small relative to the critical thresholds that would be needed to benefit from insurance, and thus the kind of insurance schemes that may be more beneficial are those that operate as a social protection intervention.

These challenges highlight the need for clear guidance on how to apply climate risk insurance most effectively to benefit the poor and vulnerable. This guidance should be based on good practice and policy, and learn from the successes of existing insurance schemes – key evidence-based examples of which are to be found in the following chapters.



5 LESSONS LEARNED: HOW TO MAKE INSURANCE WORK FOR THE POOR AND VULNERABLE

This chapter focuses on key lessons learned, which were derived from research on the specific success factors, enabling environment factors and challenges of using climate risk insurance to target the poor. The research was based on the analysis of 18 climate risk insurance schemes, literature analysis and interviews with experts from the fields of insurance, climate change adaptation, disaster risk reduction and climate risk management. This chapter will present the important elements that climate risk insurance initiatives should consider, as well as which pitfalls to look out for, in aspiring to reach the poor and vulnerable with this type of insurance. The lessons learned presented in this chapter also correspond to the principles outlined in chapter 6.

5.1 Comprehensive needs-based solutions

Lesson learned: Successful solutions to protect the poor from extreme weather events must be tailored to local needs and conditions. It is imperative to embed insurance in comprehensive risk management strategies that improve resilience.

The poor and vulnerable face multiple risks that get in the way of opportunities to reduce poverty. The key to success for many of the analysed insurance schemes has been offering comprehensive solutions to mitigate weather risks. The analyses helped to identify three important factors: (1) implementing risk, needs, demand and context assessments, (2) linking insurance to ex-ante climate risk management, and (3) fostering locally driven and owned schemes. These factors are explained in detail below.

Conducting risk, needs, demand and context assessments

Successful products on all levels started with a risk and a context analysis/assessment to identify segments of clients, their most pressing risks and their needs. There are many important local-context aspects to understand, such as the demand for insurance products, existing coping strategies as well as the financial and budget constraints of the potential clients. Once this information is known, an analysis can be conducted on where an insurance product might fill gaps and offer value to the clients. An initial cost-benefit analysis is also important to make sure that insurance is in fact the right tool for the target group.

Assessing risks and needs

Understanding the needs of potential insurance holders was central to the design of the R4 Initiative. They conducted farmer-led design processes with a design team established in each village, which was regularly consulted. Moreover, R4 “carried out experimental economic risk simulations (‘games’) with the farmers to understand their preferences for key parts of the insurance contract, such as coverage and frequency of payout” (Norton et al., 2014).

Insurance is not a panacea and insurance schemes should be closely linked with ex-ante climate risk management strategies that place priority on preventing losses

Transferring risk through insurance should be viewed as only one step in a systematic

process, and can only be successful if it is used alongside other risk management measures. Prior to transferring risk, measures towards risk identification and assessment, risk prevention and reduction, and preparation for responding to future events need to be taken. Subsequently, insurance can play a key role as a financial instrument to address the residual risk that remains after these other measures have been taken.

Comprehensive risk management with R4

The R4 initiative currently reaches more than 37,000 farmers with four integrated risk management strategies: risk transfer, risk reduction, prudent risk-taking and risk reserves (R4, 2015).

- **Risk transfer:** R4 enables the poorest farmers to purchase weather index insurance against drought.
- **Risk reduction:** Farmers can pay insurance premiums in cash or through insurance for assets (IFA) schemes that engage them in risk reduction activities. IFA schemes are built into government safety net programmes or World Food Programme food assistance for assets initiatives.
- **Prudent risk-taking:** With a stronger asset base, R4 farmers can increase their savings and stocks, using them along with insurance to obtain credit. They can use the money for investing in productive assets such as seeds, fertilizers and new technologies that increase productivity.
- **Risk reserves:** Individual or group savings enable farmers to build a financial base. Providing a self-insurance for communities, group savings can be loaned to individual members with particular needs.

Risk layering and ex-ante strategies

IBLIP takes a holistic risk management approach by risk layering: combining self-insurance, market-based insurance and a social safety net. Herders only bear the costs of small losses that do not affect the viability of their business, and larger losses are transferred to the private insurance industry. The final layer of catastrophic loss is borne by the government of Mongolia. Moreover, IBLIP plans mutually supportive interventions across a number of areas – including disaster risk preparedness, reduction and response, financial intermediation, and supporting infrastructure and social safety nets – all of which are needed to address the interlocking forms of vulnerability (Hellmuth et al., 2009).

Foster locally driven and owned schemes that are tailor-made to the local context and linked to traditional risk management approaches

Insurance solutions should be integrated into essential livelihood activities and linked to traditional risk management and social cohesion approaches. Decisions regarding the design and implementation of insurance solutions should be made as close as possible to their point of application and where the need is manifest.

Tailoring products to the local context

IBLI offers an insurance policy for Islamic herders that conforms to the Islamic concept of *takaful*, an ancient Islamic form of insurance that involves sharing risk among a group of participants. The practice involves a contract called *tabbaru* (donation), similar to traditional insurance, in which participants make contributions to a shared or pooled risk fund (Macmillan, 2014). Participants can receive a payment if they are affected by drought. For the first pilot payment, the company distributed approximately \$5,800 to the 101 farmers (*ibid*).

For primarily wealthier members who can more easily afford premiums, insurance might be a source of withdrawal from existing informal risk pooling mechanisms such as savings or credit associations (Murphy, 2011). This may result in exacerbating existing inequalities and may leave the lower-income community members even more insecure. This highlights the need to develop products that are available to and supportive of not only the wealthy segments of the population. See client value and affordability below for more details.

5.2 Client value

Lesson learned: Providing reliable coverage that is valuable to the insured is crucial for the take-up of insurance products.

Client value is comprised of the following three components.

1. The expected value that clients receive

Insurance can improve purchasers' well-being, by giving the insured peace of mind, even when no disaster event occurs or no payment is made. It can also help reduce the reliance on costly risk management strategies that may impede sustainable development.

Example of improved well-being and peace of mind

Research around IBLI has shown that the product improved purchasers' well-being even when droughts or indemnity payments do not occur "by reducing their reliance on costly ex-ante risk reducing strategies or just providing improved peace of mind about drought risk exposure. These positive effects of IBLI coverage are large enough to overcome an observed and statistically significant negative impact of buyer's remorse due to having spent money on insurance that did not pay off and thus, in retrospect, was an unnecessary expense" (Jensen et al., 2015).

2. The reliability of a product

The **catastrophic performance ratio** measures what an insured farmer receives back relative to the premium paid when the insured experiences catastrophic losses. This depends on the comprehensiveness of the product and if it covers losses that are very relevant to the insured. Lowering the coverage can be seen as one tool to increase affordability, but in doing so it is important to ensure that critical risks are not under-insured. The poor and vulnerable face multiple sources of risk and might face losses from perils that are not included in the insurance product. That means a person might be insured against flood risks and this product might perform perfectly in the event of a flood. However, the very same person might also face drought risks and suffers losses during droughts. Multi-peril insurance or hybrid products combining weather and area yield indices seem promising to solve such problems (Morsink et al., 2016). Measures towards making the product affordable (see next sub-chapter) need to consider the value of the insurance to the client. If not, the insurance designers might remove the coverage that the clients want and need in an attempt to reduce the price.

The **probability of catastrophic basis risk** is the probability of a policyholder not receiving a payout after suffering catastrophic losses, in the case of index insurance depending on the ability of the index to capture losses caused by the insured peril. Most schemes identified the well-known issue of basis risk as a central challenge for index products. Basis risk can be understood as the risk that insurance payouts do not adequately reflect the losses incurred. Where there is an imperfect correlation the insurance may not pay out when losses occur, so that insured households end up bearing a significant amount of uninsured losses (Morsink et al., 2016). Sandmark et al. (2013) divide basis risk into three categories:

1. Spatial basis risk: Local variation in occurrence of peril in the area surrounding a weather station.
2. Temporal basis risk: Annual variations in seasonal crop phases.
3. Loss-specific basis risk: The index may be ill-correlated to the real yield, not

capturing all factors affecting crop loss. Basis risk may lead to mistrust and harm the reputation of the insurance scheme for a long time.

While it is impossible to fully eliminate basis risk for index insurance products, the analysed schemes showed that there are measures to reduce and minimize it.

Addressing basis risk

For IBLIP in Mongolia, basis risk could be reduced by using the average reported livestock mortality rates instead of using a proxy (e.g. rainfall) to model losses. This was made possible “due to the cultural importance of reporting the correct number of livestock losses, the existing framework in place to do so and the very long nature of the historical data (~100 years)” (Greatrex et al. 2015).

Besides reducing basis risk, it is highlighted by many interviewees that communicating and educating policyholders about basis risk is important. R4 intensively discussed basis risk events with the insured. In Ethiopia, researchers are testing a “gap insurance” to cover basis risk as an add-on to an existing index insurance product (IIII, 2013).

3. The potential additional benefits from product-related services and additional cover

A lot of climate risk insurance schemes bundle the insurance product with other services. In this way, clients are able to access services such as credit, agricultural advisory services and weather data. Cole et al. (2012) found that loans for seeds bundled with weather insurance was taken up more often than sole weather insurance products. Similarly, Leftley (2009) found that the combination of selling weather index products with coverage for pest losses on a yield basis contributed to reducing basis risk in the Philippines (MicroEnsure scheme).

Added client value through bundling with additional services or other insurance cover

The key to the success of ACRE Africa has been “offering a holistic solution to mitigate weather risks, not just insurance” (World Bank and Index Insurance Forum, 2016). This includes bundling their customized insurance products with agricultural advisory services, training, weather data, animal care packages and vaccines, local access to quality inputs, and input credit.

SANASA bundled additional benefits according to customer requirements as

part of their product design to better reflect the relationship between rainfall and yield. They found that offering cover in addition to weather insurance helped to improve product acceptance: “The unique part of the product offered by SANASA is that it is bundled with other covers like accidental death and hospitalization which catered to various needs of the farmers and offered a good coverage for both production and livelihood risks” (Prashad and Herath, 2015).

In addition to insurance, PepsiCo offers farmers technical advice on production practices through a network of agronomists, extension workers and local facilitators (Hellmuth et al., 2009).

5.3 Affordability

Lesson learned: Measures to increase affordability for poor and vulnerable people are paramount to the success of an insurance scheme and also important to satisfy equity concerns. Support should be reliable, flexible and long term, minimally distort incentives and make the client aware of the true risk costs.

Most insurance-related approaches targeting poor and vulnerable people or countries have not been started and performed without some form of financial support, often in the form of premium support. Affording risk-based premiums remains a major challenge for these target groups, and measures to increase the affordability of products are paramount to the success of insurance schemes.

Discussions around affordability need to respond to concerns of equity, aiming at establishing solidarity and human-rights-oriented insurance schemes. Climate change infringes upon basic human rights such as the rights to life, food and shelter. Climate risk insurance can contribute to protecting human rights by improving financial liquidity after disasters, helping people not resort to coping strategies that further endanger their rights, e.g. consumption smoothing. This, however, implies that also the rights-bearer has a responsibility to contribute the realization of the respective rights.

Measures towards making the product affordable need to ensure the financial viability and sustainability of the insurance scheme and consider the value of the insurance to the client. Insurance designers need to be careful to not remove the coverage that the clients

want and need in an attempt to reduce the price.

What do insurance premiums consist of?

Insurance premiums usually consist of two major cost factors: a risk-based part and a markup part.

The **risk-based part** reflects the actual costs (expected average annual loss) of insuring some percentage of the exposure. In climate risk insurance, the risk-based premium is composed of:

- A baseline risk for the geographical area to be insured.
- An add-on risk due to climate change.

The **markup part** (often called loading) includes:

- Implementation costs, i.e. costs for setting up the insurance scheme (e.g. demand studies, product development, and marketing).
- Transaction costs.
- Administration costs.
- Capital/reinsurance costs.

In developing countries, markups are often particularly high because of a lack of necessary data, insufficient risk assessments, underdeveloped capital markets, etc. Because of the many uncertainties it is difficult to attract relevant investments.

All analysed schemes have identified the challenge that poor and vulnerable households or countries have problems paying for insurance premiums. The financial power of the group of the extreme poor and poor is too weak to engage an effectively driven market-based approach if pursued without targeted premium support, accompanied by measures to reduce premiums indirectly. At the national level, countries are faced with yearly fiscal and budgetary constraints, making it difficult to make decisions regarding the allocation of funds to premiums: “CCRIF believes that adequate coverage would be 20 to 25 per cent of the overall government exposure to hurricane, excess rainfall and earthquake risk and many countries do not have adequate coverage. Countries purchase the coverage for which they can afford the premiums. Being able to afford adequate coverage remains a challenge” (Anthony, Isaac. Email Interview. 19 April 2016). Moreover, the sustainability of funding is a concern, particularly when part of the finance comes from donors. For example, adequate and predictable funding and the ability of the scheme to provide this for a number of years is a concern for the R4 initiative (Madajewicz et al. 2013).

We found three different ways in which premiums were supported directly and indirectly:

1. **Full premium subsidies:** Full coverage of both the risk-based and the markup part of an insurance premium.
2. **Partial premium subsidies:** Coverage of only one part of the premium, either the risk-based part or the markup part. As the insured has to cover the other part of the premium costs, partial premium subsidies can set a price signal which makes the client aware of the risk cost. This type of subsidy can therefore help minimize incentive distortion.
3. **Investments in measures that reduce premiums indirectly:** These investments can target the costs that are needed in the process of setting up an insurance system. They can also target framework conditions to accommodate insurance products for the poor and vulnerable as well as the reduction of the risk itself by incentivizing and applying prevention measures. They include:
 - Investments in infrastructure and technology (data, weather stations, risk modelling).
 - Investments in awareness-raising and information campaigns, educational programmes and capacity-building efforts to address financial and insurance illiteracy (a lot of schemes report a lack of funding for information campaigns or capacity-building efforts, such as IBLIP, PCIC and PlaNet Guarantee).
 - Providing incentives for the insurance industry (e.g. tax waivers on index/microinsurance products).
 - Fostering regulation and policy frameworks.
 - Investing in and providing incentives for risk reduction and loss prevention, resilience-building and adaptation through for example legal frameworks, flood protection, irrigation, contingency plans to facilitate additional channels of assistance or the provision of services.

How innovative measures can increase affordability

IBLIP created a loan product to pay for premiums and provided an option for herders to only insure a percentage of their livestock value (hence lowering the premium).

R4 offers an insurance-for-work option, allowing cash-poor farmers to use their ability to work to pay for weather index insurance. Because the programme allows vulnerable farmers to pay their premiums through risk-reducing labour, farmers and their communities benefit even when there is no payout; the risk reduction measures pay dividends even during the wet years.

A key means to increasing the affordability of products is to expand the risk community – i.e. to put the risk on as many shoulders as possible and by this lower the premium levels. ARC and CCRIF SPC estimate that premiums for member countries are half that of commercially available insurance for weather-related extreme cover, which is partly due to risk pooling and partly due to the availability of capital. Moreover, bundling (see also sub-chapter 5.2), through providing loans for farmers, for example to purchase more productive seeds, can increase the affordability of a product and is a way to help farmers earn more money and thus become more incentivized and able to purchase insurance (Osgood, Dan. Phone Interview. 30 October 2015).

The following table provides an overview of types of financial support used in the analysed schemes. It is not meant to be exhaustive as it was particularly difficult to identify investments in measures that reduce premiums indirectly.

Table 8: Financial support in the analysed insurance schemes

Source: Own table based on interviews with project managers and literature about the schemes.

Name of the scheme	Type of financial support
IBLIP	Investment in product development, insurance data and reinsurance: Mortality rates exceeding the BIP exhaustion point of 30 per cent are covered by the government, which has access to a contingent credit line from the World Bank.
PCIC	Premium subsidies: Full government support, such as the government premium subsidy offering 100 per cent free insurance. The government's share accounts for a substantial proportion of the total insurance premium; >60 per cent if low risk, >50 per cent if medium risk, ~50 per cent if high risk.
mNAIS	Premium subsidies: Premium paid by the farmer is subsidized by the government. The Agriculture Insurance Company of India is responsible for managing the liability of mNAIS through risk transfer to private reinsurance markets and risk retention through its reserves.
R4	Investment in product development, infrastructure and technology, insurance literacy, premium subsidies: For the programme in Senegal the WFP pays 50 per cent of the premiums budget, while the other 50 per cent is subsidized by the Senegalese government (this was not the case for the other R4 Initiative programmes).

IBLI	Premium subsidies: A 40 per cent premium subsidy has been provided the UK's Department for International development (DFID), the European Union and the Australian Agency for International Development to cushion pastoralists until market forces push the premium prices down.
MICRO-HAITI	Premium subsidies: The average premium cost is 5.3 per cent of value of a microloan. Fonkoze (a microfinance institution) is covering up to 50 per cent of premium costs.
CCRIF SPC	Premium subsidies and capitalization: Contributions to a multi-donor trust fund by the governments of Canada, United Kingdom, France, Ireland and Bermuda, the European Union, the World Bank and the Caribbean Development Bank as well as through membership fees paid by participating governments supported CCRIF's establishment and operations by reimbursing it for major operational expenses, reinsurance costs, and claims paid within its risk retention during its first four years.
ARC	Capitalization of insurance entity: Premiums are paid by ARC member states. Grant funding for product development. Capitalization of insurance entity from external donors and investors (DFID and the German Development Bank [KfW] on behalf of the German Ministry for Economic Cooperation and Development). Funds to be returned without interest by 2034.
FONDEN/ AGROASEMEX	Capitalization: Resources allocated through the federal budget with the Program for Reconstruction as primary budget account. It channels resources to the FONDEN Trust and the Emergency Relief Fund, which in turn create specific financial accounts for each reconstruction programme. By law, FONDEN and its related funds must receive no less than 0.4 per cent of the annual budget including any uncommitted funds in the Trust from the previous fiscal year.
PCRAFI	Premium subsidies and technical assistance: The provision of premium subsidies and technical assistance greatly support the scheme. The Pacific Island countries (PICs) called upon the World Bank and donor partners to support PCRAFI during the 2015 Forum Economic Ministers Meeting. In direct response to this request, the World Bank is currently working with donor partners to secure funds and to establish the PCRAFI Multi-Donor Trust Fund. Thus far there have been significant premium subsidies by donors. Under the Pacific Resilience Program, premium financing for the PICs has been secured until October 2018.

Success factors for smart support

In order to find out how subsidies can better reach the targeted population, we have identified five success factors for smart support:

- Non-incentive distorting, making the client aware of the true risk cost.
- Well-designed targeting.
- Reliability.
- Flexibility.
- An inclusive and sustainable approach.

The factors are based on an MCII expert workshop as well as a literature review and are described in detail below.

Non-incentive distorting, making the client aware of the true risk cost

Smart subsidies, as defined by Hill et al., are designed to promote equitable coverage by providing maximum social benefits while “minimizing distortions in the market and mistargeting of clients” (Hill et al., 2014). Mahul and Stutley (2010) stress that subsidizing premiums must reflect underlying risk. The value of premium subsidies as a percentage of the unsubscribed premium may result in perverse behavioural incentives due to the immediate consequence of the greatest risk-takers receiving the most in government subsidies (Barnett, 2003). Subsidies must therefore be focused on the market failure layer, as extending these subsidies to other layers would generate perverse behavioural incentives resulting in a greater exposure to income shocks and a marked increase in vulnerability (Barnett et al., 2008). While addressing questions of increasing affordability through donor or government support will be necessary to get schemes up and running, efforts need to be made to make sure that support strategies do not negatively affect risk behaviour. Ideally, that includes premium support for only parts of the premium in a first step – for example, covering only the markup part while the beneficiary pays most of the risk-based part of the premium. However, an insurance product might not be affordable without addressing the risk-based part of the premium. Existing examples show that innovative payment measures that are consistent with a disaster risk management framework can help to make the risk-adequate premium affordable. One example are insurance-for-work programmes in which the insured pay part of the premium through their labour. They can work for risk reduction projects, which in return have positive effects on decreasing the needed risk premium.

Well-designed targeting

Studies have looked at the benefits and challenges of both universal premium support and targeted premium support. Findings have shown that universal subsidies may benefit the rich instead of the poor, and that some form of targeting may be necessary for subsidies to enable access for the poor (Hill et al., 2014). Targeting may have the potential to be more effective in ensuring equity, “provided that targeting strategies are well designed and tested before implementation” (ibid). Hill et al. (2014) state that “given that we know that richer households tend to purchase insurance, it is likely that universal subsidies will differentially benefit richer households”. Challenges involved in targeting subsidies include the need to identify those who should be targeted and putting a good targeting mechanism in place. One example of a well-targeted schemes with proven success is the R4 Initiative in Ethiopia.

In cases where targeting is difficult, and if a large share of the population is being targeted, it may be better to provide universal subsidies. Mahul and Stutley (2010) underline reasons why in some contexts universal subsidies, though providing more benefits to the rich, may nonetheless be a better option: “A universal subsidy is a regressive public investment, with more benefits accruing to wealthier than to poorer households; but the degree of mis-targeting caused by doing this may outweigh the administrative costs of identifying who should receive the subsidy, and the ethical and welfare costs of under-coverage. In addition, if the subsidy is large enough, all targeting can result in perverse incentives that arise from trying to qualify for it” (Mahul and Stutley, 2010). If universal subsidies are used, Mahul and Stutley (2010) suggest implementing a “cap on the amount of insurance that can be bought at the subsidized price”, in order to limit the amount of subsidy going to the wealthier population (Mahul and Stutley, 2010). Ultimately, reasons for choosing universal coverage or targeted support – or in some cases a combination of the two – will remain contextual. An in-depth assessment of the most appropriate solution(s) among the range of possibilities, applied to particular contexts, is therefore recommended.

Reliability

Reliable external support that ensures a long-term perspective for the insurance product is a precondition for the engagement of private sector actors in the market development for the very poor segment of society in vulnerable countries. Moreover, providing reliable support to those with little adaptive capacity and disproportionately affected by climate change is key in responding to issues of equity and responsibility.

Flexibility

Premium support needs to be adjustable to factors that determine affordability of the insurance product for the beneficiary, in particular changing income levels, resilience or hazard exposure. Effectively implemented product management plans can help to adjust premium support to the factors listed, decreasing or increasing it accordingly, phasing it out when the insured are in a position to cover premiums themselves. Hill et al. (2014) stress that it is important to have a clear and well-documented purpose, including an exit strategy that takes long-term financing into account as well as the importance of a good monitoring and evaluation system for the success of any subsidized insurance scheme in order to track the performance of subsidies. Targeting mechanisms are recognized as “crucial to the success of a subsidized scheme” in order to ensure that benefits reach those who are in greatest need.

Inclusive and sustainable approach

It is important to bear in mind that premium subsidies must be complemented with other initiatives beyond financial support. These may take the form of communication campaigns and support for registration processes, which could be facilitated by both governments and/or donors (Hill et al., 2014). Hill et al. stress that “premium subsidies will be more effective at increasing coverage among low-income populations if combined with other strategies to overcome barriers to insurance purchase” (ibid). Strategies in the literature that can be put in place to support premium subsidies include:

- Improving insurance literacy or at a minimum providing good information about subsidies that is available to the poor (Noubiap J.J.N. et al., 2013).
- Introducing measures to minimize transaction costs, such as using vouchers to pay for travel costs (proven positive results in Cambodia) (Hill et al., 2014) or investment in digital technologies - reducing transaction costs and increasing access to more remote areas.

The following points summarize the lessons learned from our research on affordability.

1. Smart support is essential for making climate risk insurance accessible for the extreme poor and poor

The poorest and most vulnerable people cannot afford insurance at market prices. Insurance-related approaches specifically targeted towards the extreme poor and poor

(<\$3.10 PPP/day) will likely need some form of premium support. In providing smart premium support for viable products, considering concerns of equity, donors and governments should take the following points into account:

- There are consequences to applying direct premium support that need to be actively managed. Therefore, support should be “smart”, understood as reliable and flexible, minimizing incentive distortions and making the client aware of the true risk cost.
- Premium support needs to be designed with extreme cautiousness, absolutely transparent criteria and a good communication strategy in order to avoid envy, mistrust, frustration and a lack of trust in the in the scheme.
- Indirectly reducing premiums through investing in risk reduction measures and an enabling environment should complement direct premium support to make insurance accessible for poor and vulnerable people in developing countries (see lesson learned 3).
- Smart subsidies, linked to social protection programmes and other innovative mechanisms, can be blended to ensure people receive the cover they need at a cost they can afford – which is sometimes zero, in cash terms.
- Public support for insurance products can tie in on different levels, channelling funding (e.g. loans or grants) either directly to the insured (subsidy for the premium), to the insurer (subsidy to lower the premium for the insured and making the product affordable) or to governments and organizations (financial means for disaster risk reduction measures and enabling environment conditions). Different forms of support have specific advantages and disadvantages.
- From a cost-benefit perspective, insurance might not always be the best solution to address climate risks for the extreme poor and poor. Donors and governments should only provide premium support for insurance products that are needs-based, adjusted to the local context and embedded into holistic risk management and resilience-building strategies.

2. Indirectly reducing premiums through investing in risk reduction measures and an enabling environment has long-term co-benefits for building a comprehensive disaster risk management framework

Measures to reduce premiums indirectly can also provide long-term co-benefits by contributing to the creation and strengthening of an enabling environment for insurance solutions as well as increasing the resilience of beneficiaries. Therefore, donors and governments should:

- Generally support the set-up and implementation of climate risk insurance schemes in developing countries and in this way reduce premiums indirectly, and primarily apply direct premium support to make insurance solutions accessible for the poorest segment of the population (<\$3.10 PPP/day).
- Gear investments into items that reduce premiums indirectly towards the development of risk management frameworks and actively work on linking the insurance products to those frameworks.

5.4 Accessibility

Lesson learned: Efficient and cost-effective delivery channels that are aligned with the local context are key for reaching scale. To align the insurance scheme with the local context, natural aggregators who have already established successful delivery mechanisms can be used.

Reaching a large client base needs efficient and cost-effective delivery channels that require minimum input but ensure a widespread reach. An ideal delivery channel can be defined as “engaged in financial transactions with the target group; serving large volumes of clients; maintaining trust with clients; representing the interests of clients; being convinced of the value of the product” (Churchill, 2009). Using natural aggregators who are trusted and have already established successful delivery mechanisms (e.g. cooperatives, mutuals, business groups, federated self-help groups and savings and credit groups) can be one cost-efficient way to increase take-up (Barnett and Mahul, 2007; Ruchismita and Varma, 2009). Other formal or informal lenders, mutual-aid associations, input suppliers, output processors and even local governments or disaster relief providers can also be local-level risk aggregators. Very large-scale deployment of insurance is increasingly feasible as part of government programmes that target the same communities and individuals, such as social protection programmes. If regulators permit, premiums can be collected through innovative instruments like mobile banking. Innovative technology can help with client identification and targeting and payment systems to reduce fraud and improve the timeliness of payouts (see section 5.3.4).

Distribution through local-level actors

In the analysed schemes, a variety of natural aggregators were used. For the MiCRO-Haiti scheme, selecting the microfinance institution Fonkoze as its distributor is identified as a principal success factor in reaching the poor and vulnerable.

R4 is a programme that is redesigned to fit contexts as they expand to new regions and/or countries. One way they do this is to work with existing local structures, such as the saving group associations, used as a delivery channel in Senegal, and both MFIs and farmers cooperatives in Ethiopia.

PlaNet Guarantee highlights having a variety of distribution channels – such as MFIs, banks, agro dealers and cooperatives – as a success factor for their scheme in Benin.

The mNAIS scheme has attributed high levels of participation in the scheme to engaging actors through delivering the product at the community level – not only to individual farmers but also to farmers groups and societies, crop growers associations, self-help groups and agricultural NGOs.

Addressing challenges through innovative approaches that meet clients' needs

Considering administration when aligning the delivery of the product with the local context is important. As reaching farmers in remote locations proved difficult, PCIC created a field extension or satellite offices in many areas of the country, helping farmers with their applications for crop insurance and their filing of insurance claims.

ACRE Africa is a well-known example of using innovative technology for effective delivery. The proliferation of mobile money platforms has been significantly facilitative in leveraging technology to distribute insurance products and enable farmers to sign up for them with relative ease. ACRE Africa started a partnership with M-PESA (a mobile phone-based money transfer service), which allows for premiums and payouts to be paid using mobile banking. In addition, the M-PESA system enables easy registration and tracking of clients. This partnership helps ACRE Africa to reach remote farmers with low transaction and delivery costs. This is possible in Kenya, where the area covered by mobile networks is 91 per cent (Safaricom, 2014). For example, the Replanting Guarantee Product allows farmers to sign up by dialling a USSD code on their mobile phone, thus establishing a wider reach that overcomes pre-existing socioeconomic barriers (Kariuki, Rahab. Email Interview. 19 April 2016). This innovative strategy is becoming attractive for other schemes: SANASA found that relying heavily on human resources for their marketing strategy was expensive, and is thus looking into mobile phone technology that can be used for building customer trust and also facilitate transactions such as enrolments, premium collection and claims settlement.

5.5 Participation, transparency & accountability

Lesson learned: Successful insurance schemes are based on the inclusive, meaningful and accountable involvement of (potential) beneficiaries and other relevant local-level stakeholders in the design, implementation and review of insurance product, creating trust and providing a basis for local ownership and political buy-in.

Target group ownership and trust are essential for the effective use of insurance as a risk management tool. It is crucial to include the insured in the design and implementation of insurance solutions and disaster risk reduction activities to ensure products truly work. Participatory approaches to product development can create trust, help with capacity building and make sure that the insurance actually meets the real needs of people at risk, thus creating client value. Using focus groups and workshops as well as frequent interaction based on information dialogues were successfully tested by many of the analysed schemes. It is also important to include potential beneficiaries at the macro level, particularly in the development of contingency plans.

There are multiple avenues to reach beneficiaries, and in cases where reaching individuals directly is not possible, relevant and entrusted local-level stakeholders with established communication channels can be natural aggregators.

Involving farmers in the design process

For R4, involving farmers in designing weather index insurance contracts by incorporating local farmers' feedback directly into the contract design process has also proved crucial to the success of the programme, as farmers own the programme in the true sense of the word. R4 experience shows how "farmers are at the beginning and end of this process of information dissemination. They articulate their climate management needs and constraints through community design teams, facilitated by the Relief Society of Tigray (REST), expressing the specific risks they face. This information is then passed on to other project stakeholders [...], which use the farmers' input to create indices, which are meant to target specific needs of each village. Once the index is created, REST takes it back to the farmers, verifies that it addresses their needs, and provides them with the option to buy the insurance" (Sharoff et al., 2015).

Building trust and increasing participation with innovative solutions

ACRE Africa discovered during the product rollout period that people were reluctant to use any product until they saw that it would pay out (Kariuki, Rahab. Email Interview. 19 April 2016). In order to address this, customers were enabled to purchase as little insurance as they wanted, such as insurance for only one bag of seed, giving them the opportunity to test the product before purchasing more. This type of participation was successful in generating trust in this particular case. Additionally, our contact from ACRE Africa emphasized that insurance products are contingent on establishing trust and that this takes time to cultivate; it is therefore wise to not only consider short-term profitability but to plan for the long term (Kariuki, Rahab. Email Interview. 19 April 2016).

Transparency and accountability should be used as guiding criteria for the design and implementation of the schemes. Inclusively involving beneficiaries in the design, implementation and review of insurance products ultimately improves the transparency and accountability of a scheme. In particular for macro-level schemes, being transparent about how the money that is received in the event of a payout is used to reach and support poor and vulnerable people is essential. One way to do this is to make contingency plans a prerequisite for insured countries.

The analysed schemes also revealed that successful insurance schemes facilitate a comprehensive stakeholder dialogue with other important actors like civil society, development cooperation partners, the private sector and the government. See section 5.7.3 for more information on this aspect.

5.6 Economic, ecological and social sustainability

Lesson learned: Safeguarding economic, social and ecological sustainability is crucial for the long-term success of insurance schemes.

An analysis of the success factors and challenges from the selected schemes revealed that the following aspects should be considered for the sustainability of a scheme:

- Provide a long-term perspective on project planning and financing; introducing insurance schemes is a multi-year effort: A lack of long-term

planning ultimately impacts the sustainability of the schemes. Reliable flows of money accompanied by a long-term perspective helped to create a safe environment for key actors to engage in.

- **Incentivize risk reduction and prevention through the design of the insurance scheme, including risk-based premiums:** By pricing risk, insurance can provide an important price signal to incentivize risk-reducing behaviour of individuals and governments. For example, higher insurance premiums will discourage people from living in high-risk areas. Care should be taken, therefore, to not significantly distort insurance prices or market competition, while addressing affordability and accessibility needs.
- **Safeguard ecological sustainability:** It is important to make sure that insurance schemes do not incentivize practices that are not environmentally sustainable (e.g. high external-input agriculture). As was the case with the U.S. National Flood Insurance Program, “artificially low insurance rates encourage[d] development in ecologically sensitive areas” (Cleetus, 2014). This can lead to an increased risk of flooding and other disasters.
- **Ensure the participation and inclusion of women into climate risk insurance policy and programming:** Literature provides evidence that women and children are more likely than men to die during disasters. Evidence generated from health insurance schemes show that adding family members to insurance cover can be expensive, and consequently women and girls are often left out (Churchill and Matul, 2012). Therefore, these particular vulnerabilities should be addressed by a gender analysis that focuses on the inclusion of women and girls in the cover.

The sustainability of a climate risk insurance scheme is inherently tied to many other principles listed in this study such as client value, affordability and participation. Moreover, without a strong enabling environment that fosters capacity-building, a regulatory framework and supporting data and technology, a scheme cannot be sustainable.

5.7 Enabling environment

Lesson learned: It is vital to actively build an enabling environment that accommodates and fosters pro-poor insurance solutions.

For this study, an enabling environment is defined as the sphere that surrounds an insurance scheme within a pan-national, regional, national or local setting. An enabling environment is a set of interrelated legal, organizational, fiscal, informational, political and cultural conditions that facilitate the successful development and implementation of an insurance scheme. A focus was placed on the particular criteria that provide the surrounding conditions for insurance schemes to target the poor and vulnerable. Examples of enabling environment elements include: national policies, laws, physical infrastructure (roads, electricity, etc.) and other infrastructure (access to education, technology, access to banks, etc.). The criteria for an enabling environment will inevitably be contextual, and thus dependent on the local setting. Implementing insurance products should go hand in hand with fostering adequate legal, institutional and organizational frameworks within which the product can run efficiently.

5.7.1 Capacity building

Lesson learned: Reaching poor and vulnerable people with climate risk insurance requires significant investment in capacity building measures to build and increase financial, insurance and risk management literacy as well as risk awareness for beneficiaries, local insurers, distribution channels and governments.

Reaching poor and vulnerable people with climate risk insurance requires the involvement of actors who are often not familiar with the tools or principles of insurance or financial services in general. Capacity building efforts need to not only target the insured but also local primary insurers, distribution channels and governments, all of whom may have a lack of knowledge about climate risk insurance. The following paragraphs try to highlight the specific capacity-building needs and roles of these four target groups.

Building capacity among (potential) beneficiaries

A good understanding of existing risks and how an insurance product works is an essential prerequisite for designing a needs-based product and building trust among potential beneficiaries. Trust is an important element to consider, particularly because payouts (often) do not follow the premium payment immediately. Understanding of and trust in insurance was described as a challenge, in particular when people are accustomed to a culture of reciprocity and do not always understand why they do not receive their money back if there is no insurance payout.



Literature supports the notion that improving people's understanding of insurance and building their trust is key to increasing demand (Giné, 2009),

and that along with participants' understanding of how insurance works, their trust in the product and the delivery channels is important for scaling up efforts (Cutter et al., 2012). Qureshi and Reinhard (2015) warn that "if there are no, or negligible, payouts in the first few seasons, trust in the product and its perceived value are eroded". For example, following Hurricane Dean, a lack of payouts resulted in bad publicity for CCRIF SPC.

Capacity building is not just about helping people understand insurance. Improving financial literacy, including knowledge of personal financial issues, and improving skills to manage personal finances can increase confidence and enable people to make sound financial decisions, such as building up savings, protecting themselves against risk and investing prudently. Capacity-building should also improve their understanding of risk management. Measures need to be tailor-made for adult learners with low written literacy, facilitating access for vulnerable societies. Efforts toward education and awareness-raising can also help spur demand and overcome the perception among beneficiaries that insurance might be enough to manage their risk (as they should only view it as one tool among many others to address risk).

Creative methods for effective capacity building

Moreover, the use of technology is an important means to reach farmers in remote villages to share information. For the IBLI scheme, advancement in technology, including e-learning and m-learning platforms, helped to reduce the cost of extension and education, while increasing efficiency at the same time (Jensen et al., 2014).

In Saint Lucia, MCII worked with a local partner to promote the LPP through a series of street theatre plays. Shows were performed in the local Creole dialect and held at local fairs and festivities to explain how the product works and what the benefits to clients were. Shows even featured the local primary insurer, who took an active part in the public awareness activities.

Overcoming capacity building challenges

The complexity of index insurance has been acknowledged as a challenge to educating the public. This was the case for the R4 initiative, "as farmers have low financial literacy and index insurance is a complicated subject" (Belay, Sophia. Email Interview. 15 April 2016). To address this challenge, capacity building education sessions are facilitated to ensure farmers understand the terms and conditions of their policies.

Another obstacle can be that impoverished populations may have low written literacy, and thus continuous engagement to build their trust and confidence

in the product is necessary. To address this, the IBLI team has designed instructional guides to help implement training and capacity building activities that are appropriate to the adult learning needs of pastoralists. They strive to improve understanding about IBLI and create a sustainable and positive demand for IBLI in pastoral areas.

SANASA experienced problems with their outreach strategy when using videos to reach their target audience; the videos were found to be less effective than radio programmes, posters and leaflets. This reveals how crucial it is to know both the needs and the local peculiarities of the target group in order to provide effective capacity building – it is equally as important to identify inefficiencies (as SANASA has done in this case) and to modify practices accordingly.

Building capacity among local primary insurers

Local primary insurers may need capacity in catastrophe risk modelling to price risk-adequate premiums. But also building awareness and informing potential clients about insurance in developing countries is a time-consuming and difficult process. Local primary insurers need the skills to access new beneficiary groups and the financial institutions that serve them (microfinance institutions, credit unions, etc.), as well as capacity to manage claims and payments.

Training and hiring knowledge sales agents

SANASA identified the lack of knowledge among sales agents about the target group as a challenge, and thus uncovered the need to equip sales agents and marketing executives with knowledge of agricultural practices in order to convince clients (Prashad et al., 2014). Farmers had many questions about the new concept of index insurance, and thus attempts were made to select agents with knowledge in agriculture and to provide them with basic training on agricultural practices. The recruitment of agriculture science graduates helped improve communication with the farmers on agriculture topics (ibid).

Building capacity of delivery channels

The results of this study reveal that delivery channels benefit from capacity-building that identifies the needs of clients, estimates demand and ensures the effective delivery of risk management services. They also need knowledge in marketing, enrolment and claims

management assistance.

Assisting partner distribution channels to understand the product

PlaNet Guarantee links capacity building products with other training schemes and programmes to help partner distribution channels and their clients (cooperatives, farmers organizations, MFIs) understand the insurance product. This target group may benefit from capacity building that facilitates the identification of client needs, estimations of demand and the effective delivery of risk management services (IFAD and WFP, 2011).

Building capacity of governments

It is necessary for governments to build capacity in producing required data (socioeconomic, losses, exposure, etc.), modelling weather risk, providing operational capacity and expertise, developing financial protection strategies and systematically integrating data into sound policymaking.

Partnerships create awareness and uptake

Through its Technical Assistance Programme, CCRIF SPC has engaged with regional organizations to build capacity to implement initiatives that increase climate and hazard resilience. CCRIF SPC's engagement as a full partner in disaster management in the region has helped to create a greater awareness and appreciation of its insurance products among participating countries – thus facilitating the annual policy renewals and uptake of new products (Anthony, Isaac. Email Interview. 19 April 2016).

Technical assistance for governments

PCRAFI provides technical assistance to help with the public financial management of natural disasters as its second component. This component provides Pacific Island countries with technical assistance to build capacity in the public financial management of natural disasters, specifically post-disaster budget mobilization and execution (World Bank, GFDRR, JICA, 2015).

5.7.2 Supportive legal and regulatory frameworks

Lesson learned: Regulatory and legal frameworks that support the functioning of the scheme are crucial for long-term success. They can help provide legal parameters that guide the policy infrastructure of the scheme and set guidelines for the operations of the stakeholders involved. Successful schemes actively worked with national governments and regulatory agencies to develop and strengthen legal and regulatory frameworks that govern the market, support the effective functioning of the scheme and allow for growth.

Successful climate risk insurance schemes need laws and regulations to accommodate the development and use of the product, providing legal parameters that guide the policy infrastructure of the scheme and set guidelines for the operations of the stakeholders involved. Insurance regulations must also ensure that the scheme is transparent and accountable and that it protects the policyholders' rights. Enforceable contracts that insurers and policyholders can trust as well as guidelines for insurance licensing and operations are imperative for climate risk insurance and are preconditions for the engagement of insurers.

It is important to actively work with national governments and regulatory agencies to develop and strengthen legal and regulatory frameworks that govern the market and support the effective functioning of the product and allow it to grow. In this context it is important to engage with government ministries and national and local regulators, which can provide technical and capacity-building assistance for example in designing contract conditions for insurance products. To accommodate insurance products for the poor and vulnerable in particular, governments can incentivize industry sector participation through tax exemptions on products for poor people. For MicroEnsure, fiscal regulations, e.g. taxes, could have made a difference as the removal of VAT on weather index insurance could have increased affordability for farmers. A regulatory environment can also facilitate and support the role of donors and reinsurance actors, as well as provide a space for important regulation workshops where international actors can convene and share experiences.

Government-led regulation in Mongolia

Depending on the local context, having government-led regulation can prove highly successful for a scheme – especially for scaling up efforts and long-term sustainability. For example, IBLIP worked in close conjunction with national governments to develop supportive legislative frameworks. They found that their success rate increased when the project was implemented

by a strong institution. For IBLIP, the government body was the Ministry of Finance in Mongolia operating under an international credit agreement ratified by the parliament. An enabling legal framework also allowed for them to test innovative ideas.

A regulatory framework should also include policies and measures for risk reduction and adaptation that reduce the exposure to risks, which can in turn indirectly reduce premiums. Governments can strengthen the provision of relevant data, including hazard, asset exposure, agricultural production and market demand assessments.

5.7.3 Strong, long-term partnerships

Lesson learned: Strong, long-term partnerships with a clear allocation of roles are key to sustainable insurance solutions. In particular public–private partnerships can be a key catalyst for success.

Partnerships and networks, particularly between the public and private sector, have been identified as a success factor for the development and operation of schemes. Experts stress the importance of having different partners with expertise who are trusted and have knowledge of the country.

Partnering with already established actors to increase understanding

Strong institutions, organizations and structures that have deep roots within the local community are preferred partners. CCRIF SPC involves stakeholders from critical sectors – the ministries of finance, the disaster management and meteorological agencies and others – to increase the understanding of disaster risk management and how CCRIF SPC insurance products can play a role in government initiatives.

Partnerships that have clear roles and responsibilities are essential for long-term success

For R4, multi-stakeholder partnerships at local, national and global levels were essential to R4's ability to scale up. Beyond public–private partnerships, this initiative involves multi-stakeholder engagement, e.g. with the public

and private sectors, climate experts, civil society, community institutions and local NGOs, MFIs and technical experts. “It is important to work with strong local partners that have a good relationship with communities and have established trust in the region, such as the Relief Society of Tigray and Oxfam America. This has helped the project to scale up and allowed R4 Ethiopia to leverage previous relationships and networks within the communities that often takes time to establish” (Sharoff et al., 2015). R4 identified that having clear agreements on roles and responsibilities of each organization and/or individual partner were ways to mitigate issues and avoid competition between partners.

A multi-stakeholder engagement strategy can facilitate sharing information and planning. Clear agreements on the roles and responsibilities of each organization and/or individual partner are necessary to mitigate issues and avoid competition between partners. Timescales of the stakeholders may be very different. For example, the planning horizons of politicians, insurance managers, community leaders, NGOs, etc. may differ from one another. A clear understanding of the time needed and an agreement on time plans is crucial. Strong, long-term partnerships are key for ensuring the sustainability of insurance products. Some of the key actors in these partnerships are listed below.

(Local) Insurers and reinsurers

The risk management expertise of the private sector, both domestically and internationally, must be utilized to assess risks, design viable insurance products and reach beneficiaries through effective distribution channels. The private sector can contribute the resources required to set up insurance schemes such as risk capital, data service and risk structuring.

Lack of reinsurance participation hinders scalability for PepsiCo

The limited participation of reinsurers was a challenge for PepsiCo, resulting in an inherent constraint on scalability. The reluctance of reinsurers to enter the market can be attributed to the difficulty in making an estimation of the size of the market and the risk of exposure (Hellmuth et al., 2009).

Governments

The involvement of governments and their ministries and environmental agencies is key to political buy-in, ownership and integration of insurance approaches in national planning,

policies and regulations (such as consumer protection). Examples include ministries of finance, development, social protection or agriculture and disaster management and meteorology agencies. Governments moreover play an important role in supporting the insurance scheme through regulation and rule-setting, provision of relevant data, consumer protection by supervision, public finance, risk reduction and support for market infrastructure. They can set incentives that facilitate insurance provision across a range of programmes, including social protection, risk management, education and agriculture. Examples from the analysed schemes show that a “national champion” to implement the project increases the success rate of a product.

Partnerships at national and regional levels generate technical and fiscal support for CCRIF SPC

For example, the recognition by Caribbean governments that catastrophe insurance was needed in the region was a success factor for CCRIF SPC. Governments can also play a key donor role by providing funding for schemes. CCRIF SPC is a good example of how establishing relationships with foreign governments for technical support and funding can greatly benefit a scheme (e.g. technical leadership of the World Bank and grants from the European Union and governments such as Japan, Canada, UK, France, Ireland and Bermuda).

Civil society and other support organizations

Civil society actors can help engage the target group, build capacity through training and education and build trust with financial intermediaries. Organizations and structures that have deep roots within the local context are favourable partners (e.g. civil society organizations, mutuals, local associations and savings groups, and local banks).

Development cooperation partners

Development partners play an important facilitative role by providing technical and financial support with product design and implementation. They can engage in the capacity-building effort and play a vital role in linking on-the-ground experience from NGOs to decision-making at the policy level. Moreover, these partners can provide capitalization for data infrastructure, refinancing for accompanying adaptive investments and support for delivery channels.

Academia and other experts

Experts from academia and other relevant organizations can provide much-needed know-how. Research institutions can help to provide data and weather information to monitor and evaluate scheme governance and implementation. Analyses also found that a complementary research process based on a locally based knowledge hub of experts was a major success factor.

A group of specialists provide expertise for ACRE Africa

A locally based knowledge hub of experts was an important success factor for ACRE Africa. Located in Nairobi, Kenya, ACRE Africa's team of 30 local and international specialists model crop risks, develop crop indices, manage climate data, develop insurance products, educate farmers and create distribution channels for the insurance.

Successful insurance schemes are often built on strong public-private partnerships with a clear allocation of roles between the two actors. These partnerships are particularly important for developing countries where high start-up costs and the unavailability of data make pure market-based solutions infeasible. According to a report conducted by the World Bank (2011: 99), the most efficient way for agricultural insurance to be sustainable "is through a public-private partnership, where the government sets clear rules for the game, ensures good regulation, and supports producers by subsidizing premium rates while private-sector insurers do their job by offering good insurance products to producers and paying indemnities". Public-private partnerships should be guided by the availability and expertise of the two sides and governments must avoid the crowding out of the private sector. While the public sector can support the development of the necessary infrastructure for insurance products, for example by creating a legal and regulatory framework and data infrastructure, the private sector can focus on carrying the risk or part of the risk, designing and implementing good insurance products and delivering payments. It is important that both actors find a balance between commercial and social objectives in order to best reach the target group. Herbold (2010: 15) argues that in order to introduce crop insurance in developing economies and emerging markets, "a system approach is needed incorporating a public-private partnership between the government, the farmers and the insurance industry".

Public-private partnership as a success factor of IBLIP

The Index-Based Livestock Insurance Project (IBLIP) in Mongolia was first introduced in 2006 and provides herders with insurance through partnering

with local private insurance companies. Insurance protects herders from climate-related losses to their livestock. With IBLIP we find a risk-layering approach to holistic risk management, combining self-insurance, market-based insurance and a social safety net. Herders only bear the costs of small losses that do not affect the viability of their business; larger losses are transferred to the private insurance industry and the final layer of catastrophic loss is borne by the government of Mongolia. The combination of the public disaster response product (a social safety net for herders offered by the government) and the private base insurance product (commercial product sold by private companies) proved to be highly successful for IBLIP.

Table 9: Roles in a public-private partnership

Sources: Carter (2014), Mahul (2012) and World Bank (2015b).

PUBLIC SECTOR ROLES	PRIVATE SECTOR ROLES
<p>Providing appropriate frame conditions such as</p> <ul style="list-style-type: none"> • Enabling legal and regulatory framework • Data infrastructure: speed, reliability/quality and transparency • Public information campaigns, education, training and capacity building • Technical support on product design and rating • Oversight over insurance products <p>Outreach: Link to social safety nets; link to credit; awareness building</p> <p>Provision of subsidies if necessary</p> <p>Preventive measures against the risks of catastrophic events will in turn reduce governments' own expenditures for post-disaster relief and reconstruction and may reduce the premium amount.</p> <ul style="list-style-type: none"> • e.g. Investing in supportive infrastructure to reduce the probability and severity of shocks, such as improved, land-use planning, dam construction, and forestation. <p>Public retention of some insurance risk to support the market development of products (government support as a reinsurer)</p>	<ul style="list-style-type: none"> • Carrying the risk or part of the risk • Product development and marketing • Paying out funds • Receiving premiums

5.7.4 Data and technology

Lesson learned: The availability, quality and quantity of freely accessible data and technology as well as hazard/weather monitoring infrastructure are essential for effectively and efficiently designing and implementing as well as ensuring the uptake, distribution and payout of insurance products.

Data and technology is an integral component in the enabling environment. To design insurance products, insurers need accurate data on historical weather events and good geographical data for the areas in which the insurance products should be placed. Beyond that, they also need data on potential policyholders and their needs. A lack of reliable data, high costs of data and poor data quality and quantity were all issues identified by several of the schemes we analysed. Mass-market players will not engage without the assurance of good data on risk for pricing contracts and reliable and timely data on index values in order to settle claims in a timely fashion (Hess and Hazell, 2009).

It is important to help countries understand the risks, possible solutions and the costs of climate change. Therefore, building an infrastructure of weather stations to systematically cover the area of the insurance is crucial. Skills and the proper tools and technology are required to conduct accurate mapping of hazards and to effectively collect and maintain the data and make it available quickly after a loss event. Increasing the capacity of public infrastructure and working with the public sector and other relevant actors (e.g. national meteorological services) is important (IFAD and WFP, 2010).

Data costs, quantity, reliability and quality were listed as challenges for many schemes

A lack of reliable data, high costs of data and poor data quantity and quality were all issues identified by several of the schemes we analysed. SANASA found that poor data quality and quantity can prevent scaling the product up to new geographies and improving coverage. There are very few weather stations in Sri Lanka and they are sometimes too far away to be accurate. This led to a high potential of basis risk, and negatively impacted the scaling up of the product to other areas. Another challenge for SANASA is obtaining reliable rainfall data from the meteorological department of Sri Lanka in order to build trust among farmers regarding the reliability of rainfall data and the speed of claim settlement (Herath, Ravinda. Email Interview. 19 April 2016).

A lack of weather information is also a challenge for PepsiCo: historical data is only available from 550 meteorological department weather stations in India, which are required to cover 150 million hectares of arable land and are consequently ineffective. Moreover, they are rarely located in rural areas inhabited by poor and vulnerable communities. To ensure effective insurance services for farmers, at least 10,000 to 15,000 more weather stations would need to be installed, of which at least 5,000 need to be automated (Hellmuth et al., 2009).

Simple and effective sources of accurate data are also integral to ensuring that the scheme is reliable and trusted by policyholders. With the expansion of IBLI to other areas of Kenya, the International Livestock Research Institute decided to move from mortality contracts, which were based on unreliable livestock mortality data, to forage scarcity contracts, which were based on transformations of NDVI (normalized difference vegetation index) and were easier to explain to pastoralists than predicted mortality (Mude et al., 2015).

Hess and Hazell (2009) remind us that although pilots may be set up without historical weather data or real-time weather data services, mass-market players will not engage without the assurance of “good data on risk for pricing contracts and reliable and timely data on index values in order to settle contracts in a timely fashion”. CCRIF SPC used historical hurricane and earthquake activity records together with scientific inputs to model activity thousands of simulation years into the future. These calculations allowed the creation of country risk profiles, which provided a basis for the indices to be developed (Hellmuth et al., 2009). With the aim of compensating for the lack of historical data, AGROASEMEX has developed a methodology using reanalysis techniques in order to obtain a simulated series of weather variables (IFAD and WFP, 2010).

Greatrex et al. (2015) found that addressing a lack of data is vital for scaling up efforts. They highlight how developing countries lack agronomic and meteorological data for index design, and mention that using remote sensing data is one method being used to overcome this. For example, a proportion of ACRE Africa’s products are based on the output of rainfall estimates from satellites. R4 and IBLI are two more examples of schemes that use satellites. Research examining the feasibility, accuracy and reliability of satellites is ongoing (ibid).

Moreover, access to basic financial services is a key prerequisite for climate risk insurance uptake and effective distribution and payout. Technology plays an important role here through facilitating access services such as bank accounts, ID cards, mobile phone networks and other basic services.

Technology and science can also play an integral role in addressing challenges such as basis risk. Greatrex et al. (2015) found that basing insurance projects on robust scientific output as well as working closely with the scientific community, such as research organizations, allows schemes to use state-of-the-art research and knowledge, such as agro-meteorological research, to quantify basis risk.



6 PRO-POOR PRINCIPLES FOR CLIMATE RISK INSURANCE

Based on the analysis of 18 existing insurance schemes and interviews conducted with experts, from the fields of insurance, climate change adaptation, disaster risk reduction and climate risk management, we distilled Pro-Poor Principles for Climate Risk Insurance that can guide InsuResilience in reaching poor and vulnerable people with effective insurance solutions, while at the same time improving their resilience and alleviating poverty. The principles are a key component for establishing solidarity-oriented insurance schemes and responding to concerns of equity. They can provide the basis for the new thinking and action that is needed for InsuResilience to meet its ambitious goal to reach 400 million additional people with direct and indirect insurance by 2020. We recommend that these principles be used in all processes related to climate risk insurance, namely the phases of design, implementation, monitoring and evaluation.

The lessons learned, outlined in the previous chapter, reveal common success factors for the insurance schemes in targeting and reaching the most vulnerable with climate risk insurance products. We used the factors to formulate Pro-Poor Principles for Climate Risk Insurance. The principles are summarized in the table below, with corresponding recommendations that can guide design, implementation, and evaluation efforts.

Table 10: Pro-Poor Principles for Climate Risk Insurance

Source: Own table.

COMPREHENSIVE NEEDS-BASED SOLUTIONS

Solutions to protect the poor and vulnerable from extreme weather events must be tailored to local needs and conditions. It is imperative to embed insurance in comprehensive risk management strategies that improve resilience.

1

Implement risk, needs and context assessments to identify the real needs of vulnerable communities with regard to climate risk management and where insurance can fill gaps in existing strategies.

Closely link insurance products with ex-ante climate risk management strategies that place priority on preventing and reducing losses and damages.

Foster nationally and locally driven and owned schemes that are tailor-made to the national/local context and linked to traditional risk management approaches.

CLIENT VALUE

Providing reliable coverage that is valuable to the insured is crucial for the take-up of insurance products.

2

Ensure that coverage is reliable and that critical risks are not under-insured.

Bundle the insurance product, where appropriate, with additional services that are valuable to the client

Actively reduce basis risk, which remains a key challenge when parametric insurance based on indices is applied

AFFORDABILITY

Measures to increase the affordability for poor and vulnerable people are paramount to the success of an insurance scheme and also important to satisfy equity concerns.

3

Establish solidarity and human-rights-oriented insurance schemes that respond to concerns of equity by applying measures to increase affordability of insurance for poor and vulnerable people.

Strive to indirectly reduce premiums by investing in risk reduction measures and an enabling environment (see Principle 7). This will create long-term co-benefits for the building of a comprehensive disaster risk management framework.

Provide smart premium support that is reliable, flexible and long term, which distorts incentives as little as possible and makes the client aware of the true risk costs.

ACCESSIBILITY

Efficient and cost-effective delivery channels that are aligned with the local context are key for reaching scale.

4

Build on natural aggregators, such as associations, cooperatives, mutuals, federated self-help groups, and savings and credit groups, which have established successful delivery mechanisms and align the insurance scheme with the local context.

Invest in tech-leveraged secure client identification and targeting and payment systems to reduce fraud and improve the timeliness of payouts.

Utilize social protection programmes, where appropriate, to implement large-scale development of insurance for the poor and vulnerable.

PARTICIPATION, TRANSPARENCY & ACCOUNTABILITY

Successful insurance schemes are based on the inclusive, meaningful and accountable involvement of (potential) beneficiaries and other relevant local level stakeholders in the design, implementation and review of insurance products, creating trust and providing a basis for local ownership and political buy-in.

5

Actively support and build partnerships, networks and communication channels that allow for inclusive and meaningful involvement of the poor and vulnerable. Organizations and structures that have deep roots within the local context are favourable partners.

Ensure that the design and implementation processes are transparent and accountable.

Establish an effective monitoring and evaluation framework that measures outputs, outcomes and impacts to ensure that the insurance schemes actually reach and benefit poor and vulnerable people.

SUSTAINABILITY

Safeguarding economic, social and ecological sustainability is crucial for the long-term success of insurance schemes.

6

Provide a long-term perspective on project planning and financing as setting up insurance schemes is a multi-year effort.

Incentivize risk reduction and prevention through the design of the insurance scheme, including risk-based premiums.

Ensure that insurance schemes do not incentivize practices that are not environmentally sustainable.

Ensure the participation and inclusion of women in climate risk insurance policy and programming.

ENABLING ENVIRONMENT

It is vital to actively build an enabling environment that accommodates and fosters pro-poor insurance solutions.

7

Support capacity-building to improve financial and insurance literacy and risk awareness of the insured, local insurers, distribution channels and governments.

Strengthen regulatory and legal frameworks that govern the market, support the effective functioning of the scheme and allow growth by actively working with national governments and regulatory agencies.

Promote strong, long-term partnerships, in particular public-private partnerships, which foster a clear allocation of roles.

Invest in freely accessible data and technology as well as hazard/weather monitoring infrastructure, which are essential for effective and efficient design and implementation as well as for ensuring the uptake, distribution and payout of insurance products.

The principles can be used for different purposes:

1. They can guide the design process of new insurance schemes that target the poor and vulnerable in particular by following the suggested steps.
2. They can help with the identification of existing insurance schemes to be supported by InsuResilience (and other bodies looking to support existing schemes).
3. Climate risk insurance practitioners can refer to and learn from these principles to assess and/or improve their current operations.

There is a strong coherence between the proposed principles in this report and other principles for climate risk and weather insurance products developed by a range of actors over previous years. Among them are think tanks and other institutions in research and academia, NGOs and actors in development cooperation and insurance sector initiatives.⁹ There is an overarching assertion that there is a need for comprehensive climate risk

management in which insurance should be embedded. Furthermore, components of effectivity, efficiency and sustainability feature prominently in almost all lists of principles. Client value and principles revolving around financial inclusion, equity and solidarity are most strongly highlighted by research institutions, NGOs and actors in development cooperation that focus on targeting the poorest and most vulnerable with their principles. Finally, all of the aforementioned groupings of principles underline the importance of an enabling environment, particularly with regard to policies and frameworks, partnerships and the need for enhanced data and knowledge management in climate risk insurance and in targeting the poor and vulnerable with such products.

⁹ On the private sector side, this includes the elements of Munich Re's sustainable crop insurance systems (SystemAgro) (Can be found at: <https://www.munichre.com/en/systemagro>); and on the think tank side, Results UK provides "Pro-Poor Principles for Climate Risk Insurance" based on MCII's principles for weather-related insurance targeted at the most vulnerable (Can be found at: <http://www.results.org.uk/sites/default/files/files/Weathering%20a%20Risky%20Climate.pdf>); Recently, Action Aid published seven "Principles for equitable and effective climate and disaster insurance." (Can be found at: <http://www.actionaid.org/2016/05/ten-concerns-about-climate-and-disaster-insurance-schemes-and-one-rights-based-alternative>). Also, UN agencies like the World Food Programme published "Principles for scale and sustainability in weather index insurance for agriculture and rural livelihoods" in 2010 (Can be found at: IFAD and WFP, 2010, p. 11.). Other well-known principles are the UNEP FI "Principles for Sustainable Insurance", which apply to insurance companies' business more generally and beyond climate risk insurance products (Can be found at: <http://www.unepfi.org/psi/the-principles/>).



7

RECOMMENDATIONS



Climate risk insurance that successfully targets the poor needs strong guidance for planning and implementation. This final chapter offers recommendations for InsuResilience and other relevant actors on how to apply the findings from this study.

Well-designed climate risk insurance, embedded into comprehensive risk management, can contribute to building resilience for poor and vulnerable people

This study showed that insurance, embedded into comprehensive risk management, can contribute to improving capacities that are imperative for making people more resilient to climate change impacts – namely anticipatory, absorptive and adaptive capacities. It can protect people against climate shocks by providing timely finance that improves financial liquidity after a disaster, playing a role as a safety net and buffer for people and countries shortly after a catastrophic event. Insurance can promote opportunities by helping to lessen financial repercussions of volatility and, in the longer term, create a space of certainty within which investments, planning and development activities can be undertaken. In this way, it can help to unlock opportunities which might allow people to escape from poverty traps or from the threat of them. Insurance has the potential to catalyse other elements in the process of comprehensive risk management that are also necessary to build resilience – risk assessment in particular. Moreover, insurance can spur transformation by incentivizing risk reduction behaviour and fostering a culture of prevention-focused risk management. However, thorough assessments should be conducted to assess applicability, and other (complementing) options should be explored. Generally, insurance should only be applied for medium to high-severity events with low frequency. Insurance options can support adaptation and risk resilience, but are not appropriate for the many gradually manifesting climate-induced impacts.

The relevance of insurance as a tool within comprehensive climate risk management has been recognized by relevant policymakers and practitioners around the world. However, insurance for the poor – microinsurance, climate risk insurance, etc. – is a relatively new tool. Many pilots exist; some are only a few years old, and others have been in operation for over a decade. While many schemes remain in pilot phases and others scale up, the need is greater than ever for stakeholders from all sectors to come together and share insights and experiences. This will help to ensure that climate risk insurance efforts effectively contribute to supporting poor and vulnerable people in finding climate-resilient development pathways.

The Pro-Poor Principles provide an evidence-based guide to reaching and benefiting the poor and vulnerable with climate risk insurance

The research from this study revealed distinct factors for success and an enabling environment as well as challenges in reaching poor and vulnerable populations with climate risk insurance. For pro-poor oriented climate risk insurance schemes to be successful, the following points were identified as crucial.

1. **Comprehensive-needs based solutions:** Solutions to protect the poor from extreme weather events must be tailored to local needs and conditions. It is imperative to embed insurance in comprehensive risk management

strategies that improve resilience.

2. **Client value:** Providing reliable coverage that is valuable to the insured is crucial for the take-up of insurance products.
3. **Affordability:** Measures to increase affordability for poor and vulnerable people are paramount to the success of an insurance scheme and also important to satisfy equity concerns.
4. **Accessibility:** Efficient and cost-effective delivery channels that are aligned with the local context are key for reaching scale.
5. **Participation, Transparency & Accountability:** Successful insurance schemes are based on the inclusive, meaningful and accountable involvement of (potential) beneficiaries and other relevant local-level stakeholders in the design, implementation and review of insurance products, creating trust and providing a basis for local ownership and political buy-in.
6. **Sustainability:** Safeguarding economic, social and ecological sustainability is crucial for the long-term success of insurance schemes.
7. **Enabling environment:** It is vital to actively build an enabling environment that accommodates and fosters pro-poor insurance solutions.

7.1 Recommendations for InsuResilience

The InsuResilience Initiative is unique in its scale and focus on highly exposed poor and vulnerable people. This report supports the preparation and implementation process of InsuResilience in the following ways:

- **Providing the theoretical and normative background** for InsuResilience by outlining the relationship between resilience, poverty and insurance and thereby revealing how the overall objective defined in the Leaders' Declaration G7 Summit can be reached.
- **Defining the target groups of the initiative**
- **Outlining relevant principles** that can guide InsuResilience in effectively targeting and reaching poor and vulnerable people, while at the same time improving their **resilience**.
- **Formulating recommendations** for InsuResilience based on the Pro-Poor Principles. The study explores what new thinking and action is needed for InsuResilience to meet its ambitious goal of reaching 400 million additional people with direct and indirect insurance by 2020 and how the findings of this study can be used for monitoring and evaluating the success of the initiative.
- Furthermore, the report **identifies gaps and research needs** that are important to work on to support the implementation process of InsuResilience.

Three overarching ways in which the findings of this report can be used for the further development and implementation of the InsuResilience Initiative are described below.

1. How can the findings of this study be applied to define a target group?

We recommend defining the target groups of InsuResilience as follows:

1. Extreme poor, hereafter defined as people earning below \$1.90 PPP/day.
2. Moderate poor, hereafter defined as people earning below \$3.10 PPP/day and above \$1.90 PPP/day.
3. People vulnerable to climate risk with the risk of slipping (back) into poverty, hereafter defined as people particularly exposed to extreme weather events earning below \$10 PPP/day and above \$3.10 PPP/day.

In order to secure the pro-poor focus of the initiative, we recommend the use of a “burden of proof”, providing evidence that the potential beneficiaries in group (3) are actually highly exposed or sensitive to extreme weather events and that an insurance approach could help to cushion their impacts.

A “burden of proof” can be understood as a duty that is placed on the body responsible for selecting (or counting) the beneficiaries of a scheme. To clarify, the proof would need to be given that the individuals who (based on income) fall under category (3) are indeed particularly impacted by extreme weather events and that insurance could help improve their situation. For a micro scheme, the burden would be on the body issuing the policy, and for a meso or macro scheme the insurance provider or the body responsible for the dissemination of the payouts, e.g. a government, would need to prove that the people receiving money (or services) who fall under category (3) are particularly vulnerable to climate risks.

How would this work in practice? A burden of proof may work as follows. All direct and indirect insurance schemes supported by InsuResilience must provide evidence to the InsuResilience Secretariat that policyholders or beneficiaries earning below \$10 PPP/day and above \$3.10 PPP/day are particularly vulnerable to climate risks, e.g. by proofing that they

- (a) reside in a high-risk area (information may be based on satellite data);
- and/or

(b) have an income that is based on a sector that is heavily impacted by extreme weather events.

Justification in written form to the InsuResilience Secretariat could be based on formal recognitions from local authorities or an assessment to determine and prove that a particular group of beneficiaries is vulnerable to climate change.

Ultimately, applying such a burden of proof would facilitate the transparency and accountability of a scheme and ensure that the people benefiting from the InsuResilience Initiative are those who need it most.

2. How can InsuResilience use the Pro-Poor Principles for reaching the poor and vulnerable with climate risk insurance?

We recommend that InsuResilience embed the Pro-Poor Principles (found in Chapter 6) as a core part of its pro-poor strategy, by using them to facilitate direct and indirect insurance schemes when striving to reach up to 400 million additional poor and vulnerable people in developing countries. This could entail selecting, designing and implementing, as well as providing financial means for, insurance programmes supported by InsuResilience.

We recommend that InsuResilience...

- Agree on the Pro-Poor Principles as the **normative framework** for the initiative.
- Use these principles as a minimum benchmark for **monitoring and evaluating** the initiative.
- Support climate risk insurance schemes that meet the principles or supports schemes in meeting the principles when **designing and implementing** the initiative.
- Use the principles for the **prioritization** of investments and support in partner countries and schemes.

3. How can the findings of this study be applied to InsuResilience's efforts to effectively contribute to increasing the resilience of the poor and vulnerable?

Our research provides evidence that suggests that – if used in combination with other risk management efforts, reducing the residual risk that could not be reduced by measures taken previously – insurance can contribute to helping people to improve key capacities

that are imperative for reducing poverty and making poor and vulnerable people more resilient. These capacities include anticipatory, absorptive and adaptive capacities. This study showed that insurance can contribute to increasing these key capacities, both ex-ante and ex-post, in four ways¹⁰:

1. Protecting against climate shocks.
2. Promoting growth by unlocking opportunities.
3. Catalysing other elements in the process of comprehensive risk management that are necessary to build resilience.
4. Spurring transformation by incentivizing risk reduction behaviour and fostering a culture of prevention-focused risk management.

We recommend that InsuResilience...

- **Develop the following long-term vision:** The impact of InsuResilience can significantly contribute to the resilience of the target group by increasing in the beneficiaries' capability to anticipate, absorb and adapt to climate change impacts, which can be measured based on the determinants outlined in this study. By showcasing the complex relationships between climate risk insurance and resilience as part of this long-term vision, e.g. on a pilot basis, InsuResilience can contribute to the discussion on how to effectively increase resilience, e.g. in the context of the Sustainable Development Goals, the UNFCCC, the Sendai Framework for Disaster Risk Reduction, the Accelerating Action to Resilience Initiative and others.
- **Measure the impact of the initiative** on increasing the resilience of the target group as the contribution to anticipatory, absorptive, adaptive capacities and transformation towards a culture of resilience.
- Actively **support or initiate activities** that contribute to increasing
 1. anticipatory capacity, e.g. promote risk assessment activities;
 2. absorptive capacity, e.g. strengthen responsive delivery channels that make fast payouts after a shock possible, hence immediately improving financial liquidity after an event;
 3. adaptive capacity, e.g. promote risk reduction activities; and
 4. transformation, e.g. support the introduction, implementation or improvement of contingency plans as a precondition for supported

¹⁰ This framework was inspired by a similar concept on social protection from Devereaux and Sabates-Wheeler (2004).

macro-level insurance schemes, ensure a pro-poor focus in such plans and support insurance schemes that promote risk reduction behaviour.

- **Identify gaps** in respective partner countries and supported schemes with regard to capabilities that are necessary to build resilience and actively strengthen these capacities, building on existing local policies and activities (e.g. national adaptation plans).
- **Address research gaps** with regard to the potential of insurance for reducing vulnerabilities and enhancing resilience to better decide on adequate activities, e.g. by supporting comprehensive impact evaluations of existing insurance schemes.

7.2 Recommendations for other actors

Actors designing and implementing insurance products and comprehensive risk management strategies as well as policymakers can use the principles as guidance to select and support climate risk insurance schemes that meet the principles or to support schemes in meeting the principles.

Creating a business model for climate risk insurance for the poor and vulnerable

Improving access to insurance for the poor and vulnerable requires a combined effort to create a business model for climate risk insurance. A variety of actors will be needed to design and implement insurance solutions that close market gaps, introducing a culture of prevention-focused risk management alongside an active increase in the awareness, knowledge and trust among the potential beneficiaries. Moreover, actors are needed to build an enabling environment that can accommodate and foster pro-poor insurance solutions. Finally international decision makers need to provide guidance and support through international policy frameworks, backed by financial and technical means.

The following box provides an overview of relevant groups of actors in this process.

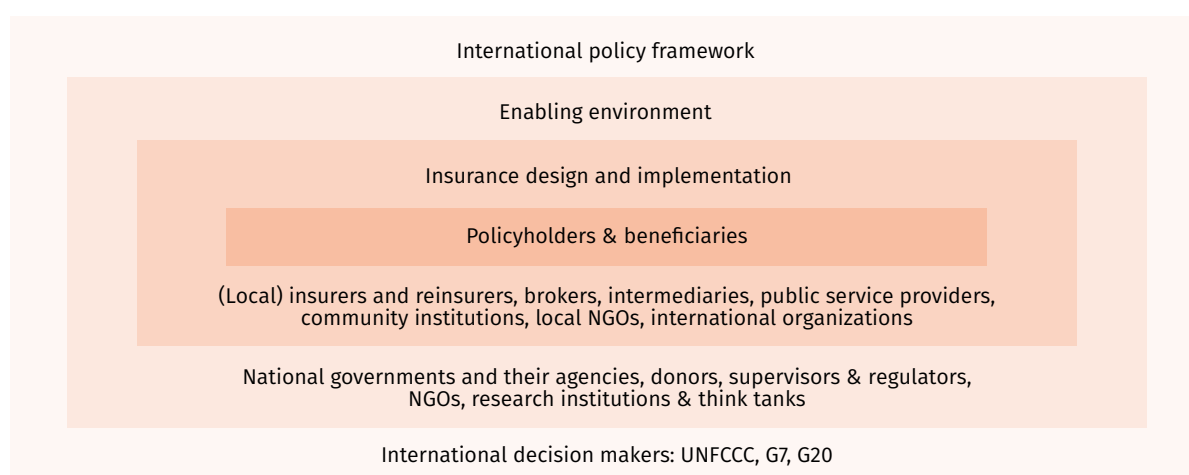


Figure 10: Actors for a climate risk insurance business model

Source: Own graphic.

Based on the Pro-Poor Principles, we formulated recommendations for these groups of actors. While many of the recommendations can be applicable to and utilized by various actors, the following boxes of recommendations provide suggestions for starting points that the relevant actors may use to promote, foster and implement climate risk insurance for the poor.

Actors relevant for insurance design and implementation

- Put the proposed principles into action by using them as a framework for the design of insurance products.
- Design and implement insurance solutions that are needs-based, adjusted to the local content, and are linked to comprehensive risk management strategies that place priority on preventing and reducing losses and damages.
- Implement risk, needs and context assessments to identify the real needs of vulnerable communities with regard to climate risk management and where insurance can fill gaps in existing strategies.
- Incentivize risk reduction and prevention through the design of the insurance scheme, including risk-based premiums, and ensure that insurance schemes do not incentivize practices that are not environmentally sustainable.
- Design insurance products that are nationally and locally driven and owned, that are tailor-made to the national/local context and that provide reliable and demand-based coverage.
- Build on natural aggregators which have established successful delivery mechanisms that are efficient and cost-effective.

- Ensure the inclusive, meaningful and accountable involvement of all relevant actors and stakeholders in the design, implementation and review of insurance products.
- Use the Pro-Poor Principles as a minimum benchmark for the monitoring and evaluation of insurance products to learn from past and current efforts and to improve outcomes in the future.

Actors relevant to building an enabling environment

Recommendations for governments and their agencies and donors:

- Foster nationally and locally driven and owned schemes that are tailor-made to the national/local context and linked to traditional risk management approaches.
- Provide a long-term perspective on project planning and financing; introducing insurance schemes is a multi-year effort.
- Maximize the impact of climate risk insurance within national strategies by using the Pro-Poor Principles as a guide.
- Embed insurance into comprehensive risk management and resilience-building strategies, acknowledging that it is only one step in a systematic process that places priority on preventing and reducing losses and damages.
- Provide smart premium support that is reliable, flexible and long term, that distorts incentives as little as possible, and that makes the client aware of the true risk costs.
- Strive to indirectly reduce premiums by investing in risk reduction measures and an enabling environment.
- Invest in tech-leveraged secure client identification and targeting and payment systems to reduce fraud and improve the timeliness of payouts.
- Support capacity-building to improve the financial and insurance literacy and risk awareness of the insured, local insurers, distribution channels and governments.
- Strengthen regulatory and legal frameworks that govern the market, support the effective functioning of the scheme, and allow growth by actively working with national governments and regulatory agencies.
- Promote strong, long-term partnerships, in particular public-private partnerships, which foster a clear allocation of roles.
- Invest in freely accessible data and technology as well as hazard/weather monitoring infrastructure, which are essential for effective and efficient

design and implementation as well as for ensuring the uptake, distribution and payout of insurance products.

Recommendations for researchers:

The research process also identified challenges with regard to the evaluation of the long-term impact of climate risk insurance. The following research gaps should be addressed in the near future:

- What are the key, long-term factors that determine the positive impact of insurance on reducing vulnerability and contributing to resilience-building?
- Are there negative impacts of insurance on resilience-building activities and how can these be circumvented?
- What are possible impacts of insurance on risk reduction activities and behaviour?
- What are further opportunities for innovation and synergies between insurance and social protection mechanisms?
- What are the most effective ways to integrate insurance in broader resilience-building activities?

International decision makers

- Establish international norms on pro-poor insurance solutions by, for example, agreeing on the Pro-Poor Principles and using them as standard for drafting operational policies that guide the way forward in climate risk insurance.
- Support the building of an enabling environment that can accommodate and foster pro-poor insurance solutions is a key success factor.
- Promote solidarity and human-rights-oriented insurance schemes that respond to concerns of equity.
- UNFCCC: Use the principles as an orientation for decisions on climate risk solutions in political bodies such as the UNFCCC Warsaw International Mechanism for Loss and Damage (WIM). The principles are particularly relevant with regard to the work on establishing a clearing house for risk transfer and activities within the (to be defined) five-year rolling work plan of the Executive Committee of the WIM.
- G20: Use the principles as a normative framework for decisions on climate risk insurance.



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ANNEX 1

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Level	Scheme (+ Abbreviation)	Country/ Region	Type of Insurance	Type of Peril	Type of coverage	No. of insured (cumulative unless otherwise stated)
Micro	Index-Based Livestock Insurance Program (IBLIP)	Mongolia	Livestock Index-based insurance	Extreme weather conditions	Livestock Mortality	14,000 Herders (Mongolian nomadic herders) (as of 2009)
	Modified National Agricultural Insurance Scheme (MNAIS)	India	Agricultural Index-based insurance	Cyclones	Crops	1,794,259 farmers (Rabi and Kharif seasons in 2014-15)
	Philippine Crop Insurance	Philippines	Government Agriculture Insurance	Typhoon, flood, drought, volcanic eruption, and earthquake	Multi-Risk Cover; nat. dis./ pests/ disease	389,056 farmers (in 2013)
	SANASA Agricultural insurance	Sri Lanka	Index-based crop Insurance	Drought, excess rain	Crops	14,514 farmers (in 2014), 46,456 (cumulative)
	PepsiCo	India	Agricultural index insurance	Late Blight Disease (Caused by rain, dew, irrigation or high humidity + moderate temps)	Potato crop	~10,000 (in 2008)
	R4 Initiative (R4)	Ethiopia, Senegal, Malawi, Zambia	Index-based Insurance	Extreme weather events/climate related shocks	Assets	37,058 farmers (as of 2016)
	MicroEnsure (MicroEnsure)	Rwanda	Index-based Insurance	Dry spells and excess rainfall	Crops	35,134 farmers from 2011 to 2014; policy discontinued
	Agriculture and Climate Risk Enterprise (ACRE Africa)	Kenya Rwanda Tanzania	Index-based Insurance	Drought, excess rain and storms, risks associated with accidental death and pregnancy losses for calving cows	Maize, beans, wheat, sorghum, coffee, potatoes, livestock	394,426 farmers (in 2015) (Kenya: 145,757; Rwanda: 222,505; Tanzania: 26,164)
	Index-based livestock insurance (IBLI)	Kenya, Ethiopia	Livestock Index-based Insurance	Drought related asset losses	Livestock Mortality	10,067 farmers (as of 2015)
	Microinsurance Catastrophe Risk Organisation (MiCRO-HAITI)	Haiti	Natural catastrophe and weather index insurance	Rainfall, wind, seismic activity	Protection of entrepreneurs against nat. catastrophes	~60,000 women-owned micro-enterprises (as of 2012), policy discontinued in 2013
Meso	La Positiva Seguros (La Positiva)	Peru	Agricultural Catastrophic Crop Insurance	Drought, low/high temps, hail, flooding, freezing, winds, plagues, diseases, humidity	Crops	8000 (as of 2013)
	Livelihood Protection Policy (LPP)	Latin America & Caribbean	parametric index micro insurance policy	High wind speed and excessive rainfall	Damage resulting from Peril	~ 1000 (as of 2016)
	PlaNet Guarantee	Mali, Burkina Faso	Index-based Insurance	Drought	Maize and cotton	Benin: 1,099 (2014), Burkina Faso: 8,281(2014),Mali: 17,481 (2014),Senegal: 4,035 (2014)
Macro	Index-based Flood Insurance Project (IBFIP)	Bangladesh	Index-based flood insurance scheme	Flood	Cash relief in event of catastrophic flood.	1660 poor and vulnerable households (2014)
	Caribbean Catastrophe Risk Insurance Facility (CCRIF SPC)	Caribbean	Multi-country risk pool regional catastrophe fund	Earthquake, cyclones, excess rainfall	Damage resulting from Peril	16 countries (2016)
	African Risk Capacity (ARC)	Africa	Pan-African risk pooling disaster response system	Droughts, floods and cyclones	Damage resulting from Peril	16 MOU Countries (2016)
	National Disasters Fund (FONDEN) & AGROASEMEX	Mexico	Index-based National Catastrophe Fund	Extreme weather events	Damage on public buildings and infrastructure	State of Mexico
	Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI)	Pacific	market based sovereign risk insurance scheme	Tropical cyclones and earthquakes/tsunamis.	Damage resulting from Peril	15 countries (2016)

The following questions were asked to the interviewees:

1. Does the insurance product target poor and vulnerable people? If yes, did the insurance scheme have positive impacts on the resilience of the poor and vulnerable?
2. What were the important elements in the design of the insurance product that helped in reaching the poor and vulnerable? (e.g. special measures or design features)
3. What were challenges in reaching the poor and vulnerable with the insurance product
4. What were success factors for the insurance product in reaching poor and vulnerable?
5. What kind of enabling environment supported the success of the product and reaching the poor and vulnerable? (e.g. financial inclusion, capacity building, DRR measures, improved regulation, etc.)

Disclaimer: The information contained in this document is a result of desk research and interviews, and is frequently taken directly from the source without having been modified. This was done in an effort to not change the meaning of information through paraphrasing and to display the most accurate information available. For all such instances, a correlating footnote is displayed indicating the source of the information.

1. MICRO LEVEL

1.1. Index-Based Livestock Insurance (IBLIP)

Background information	<p>IBLIP is a livestock insurance program designed and implemented by the government of Mongolia, with the assistance of the World Bank and other donors. The aim is to protect herders against excessive livestock mortality caused by harsh winters and summer drought. The program involves a combination of self-insurance by herders, market-based insurance, and social insurance. Although the scheme does not specifically target the poor, they make up a large part of the beneficiaries; whereas 70 per cent of policy holders are low income and highly vulnerable herders.</p> <p>Peril Insured: Weather related perils, drought and extreme winters</p> <p>Beneficiaries: Herders (Livestock of herder households), 14,000 herders covered as of 2014</p> <p>Payout: Payout 2009-2010: 1.8 billion tugriks (1.3 million USD) to more than 4,000 households. Payout August 2008: Following high livestock losses, MNT 389 million (US\$340,000) was paid out to 1783 herders.</p>
Impact on resilience	<p>IBLIP was not specifically targeted at the poor or vulnerable; it is a commercial product without public subsidy in the commercial layer. However, the poor are affected by livestock mortality due to droughts and severe winters and thus benefit from the product.</p>
Challenges ¹	<p>Low incentive for agents (to service the poor due to high transport cost / low premium payment);</p> <p>Lack of funds to pay insurance premium (though the loan product attempted to address this);</p> <p>Lack of financial infrastructure and lack of financial inclusion, e.g. the policy holders – in particular the poor households – did not have bank accounts to which the indemnity payments could be made.</p>

1 Interview with Andrew Goodland 2016, Mail Interview, 05 April 2016

Success Factors The scheme was successful in **reaching the smaller herders**. In fact, it was the larger herders who bought less insurance, as they believed they were less at risk (which may be true as they generally have better access to pasture).²

Lessons learned³:

- Enabling legal framework allows to test innovative ideas
- Strategy helps in balancing stakeholder interests
- Early success during the pilot is important
- Expert models help in getting access to global reinsurance
- Operational- start as a pilot project to have the followings:
 - General agreement among major stakeholders
 - Funds with disbursement guidelines
 - Checks and balances in the institutional framework
 - Technical assistance of experts
 - Agreed milestones and urgency

The success rate increases when a project is **implemented by a strong institution**, such as the Ministry of Finance in Mongolia, under an international credit agreement ratified by the Parliament.⁴ Mongolia represents one of the strongest cases of mixing social and commercial insurance in a carefully designed project that meets both public and private needs. Should the government decide it can no longer afford to take the extreme risks, a commercial product will still be firmly in place. At that stage it might even be possible for the insurance companies to increase their exposure to at least some of the extreme risk through reinsurance markets.⁵

2 Interview with Andrew Goodland, Mail Interview, 05 April 2016

3 Yadamsuren, Ulziiibold, 2013

4 Yadamsuren, Ulziiibold, 2013

5 Hellmuth et al. 2009

1.2. Modified National Agricultural Insurance Scheme (MNAIS)

Background Information	<p>In place of the National Agriculture Insurance Scheme (NAIS), MNAIS was implemented in selected districts of India on a pilot basis, in order to make the scheme easier and more farmer friendly. A list of the intended improvements made can be found here.⁶ As of 2016 the MNAIS is a functioning component of the National Crop Insurance Programme in India, providing insurance coverage and financial support to farmers in the event of crop failure and subsequent low crop yield.</p> <p>Peril Insured:⁷ Three types of crops are covered: Food crops which include cereals, millets, and pulses; oilseeds; and annual commercial / horticulture crops. The scheme broadly covers three stages of production (planting/sowing, standing crops, and post-harvesting crop damage).</p> <p>Beneficiaries:⁸ All farmers including sharecroppers and tenant farmers growing the notified crops in the notified areas are eligible for the insurance coverage. The scheme is targeted specifically at poor and vulnerable farming communities. Those who have taken farm loans from financial institutions (loanee farmers) are covered compulsorily.</p> <p>Payout:⁹ Coverage rates from 2010-2013 reveal that claims payout was Rs 864 crore against a premium of Rs 1,088 crore – a lower claims payout than the premiums collected reveals the successful financial performance of the scheme.</p>
Impact on resilience	<p>Adapt: The insurance opportunity that is provided through this scheme offers farmers the option of adopting progressive farming practices and making use of better technology to enhance their overall output.¹⁰</p> <p>Assess: The effective streamlining of loss assessment also allows for the expeditious settlement of claims.¹¹</p>
Challenges	<p>While we did not find specific challenges for the MNAIS, some of the impediments to effective functioning of NAIS were identified. MNAIS came to be in order to address the following issues (see more information here ¹²): enhancing the accuracy of yield estimation; unaffordable premiums; lack of confidence in weather data; lack of technical skill; lack of insurance awareness and literacy amongst farmers; and delayed settlement of claims.</p>
Success Factors	<p>While it is early to diffuse specific success factors, there are some key advantages of the MNAIS scheme worth highlighting, which will likely contribute to future success.¹³ These include: potential for private sector participation; greater likelihood of payouts under the scheme; revision of indemnity level; coverage of sowing/planting risk; coverage of a wider demographic; greater accuracy in assessment of losses; and financial assistance in paying premiums.</p>
Enabling environment components	<p>Government endorsement and support¹⁴: The central and state governments have been extremely supportive of the scheme and have enabled its efficient functioning. The regulatory processes have been simplified and made easily understandable and accessible to the especially vulnerable sections of the farming community.</p>

6 Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India: Modified National Agricultural Insurance Scheme.

7 General Knowledge Today, 2015

8 General Knowledge Today, 2015

9 Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India, 2014, p. 39-41

10 India Country Management Unit, South Asia Finance and Private Sector Unit, Global Capital Market Non Banking Unit, 2011

11 India Country Management Unit, South Asia Finance and Private Sector Unit, Global Capital Market Non Banking Unit, 2011

12 Department of Agriculture & Cooperation, Ministry of Agriculture, Government of India 2014

13 The Indian Express, 2014

14 National Crop Insurance Program, 2012

1.3. Philippine Crop Insurance Corporation (PCIC)

Background Information

The PCIP is the only government parastatal offering agricultural insurance in the country that targets the poor. It implements and manages the government program on agricultural insurance. Originally used as by the government mainly as an agricultural support mechanism to expand agricultural credit, the crop and agricultural insurance of the PCIC has evolved in recent years to offer fully subsidized special agricultural insurance programs, launched in 2012, 2013 and 2014.¹⁵

Beneficiaries:¹⁶ Agricultural (and subsistence) farmers and fisher folk

Coverage¹⁷: The various packages include crop insurance (rice, corn, and tobacco), non-crop agricultural assets, livestock insurance, term insurance power packages, and inland fish structures. The main insurance lines are multi-peril crop insurance policies for palay and corn.

Peril Insured:¹⁸ Natural Events, i.e. damage due to typhoon, flood, drought, volcanic eruption, and earthquake; Multi-Risk Cover for crops includes risks due to natural disasters, plus pest infestation and diseases.

Design Elements¹⁹: The PCIP strives to increase access to participation to more farmers and fisher folks in the insurance programs all year round and expand the area of insured farms, thereby increasing insurance coverage

Impact on resilience

About 71 per cent of chronically poor households in the Philippines are in the agricultural sector. This agricultural insurance has been described as a safety net that enables agricultural producers, and particularly the transient poor, to recover quicker from shocks.²⁰ The scheme has been reported to contribute to poverty alleviation by way of promoting the flow of credit in the countryside.²¹

15 Reyes et al., 2015

16 Reyes et al., 2015

17 CPBRD Policy Brief Congressional Policy and Budget Research Department, 2012

18 CPBRD Policy Brief Congressional Policy and Budget Research Department 2012

19 Interview with Dominico S. Diamon, Mail Interview, 05 April 2016

20 Reyes and others 2015

21 Interview with Dominico S. Diamon, Mail Interview, 05 April 2016

Challenges	<p>Difficulties reaching out to ‘far flung areas’ of farmers²²: This issue was addressed by creating a field extension or satellite offices in many areas of the country, helping provide insurance services to the farmers, i.e. applications and filing of insurance claims.</p> <p>Lack of predictability or continuity in the implementation of programs²³</p> <p>Difficulties in interagency coordination, resulting in operational challenges²⁴</p> <p>Lack of overarching policy to guide the administration of government subsidies²⁵</p> <p>Lack of guidelines on prioritization of beneficiaries. There was not enough money to reach all of the targeted population, resulting in a first come, first served, basis.²⁶ For this, Reyes et. al suggest, establishing guidelines on who to prioritize to help the PCIC in determining who should be given priority in the free premium (in other words, effective targeting mechanisms are important!)</p> <p>Lack of a long-term strategy to accompany increased premium support from Govt. (i.e. who received the support and through which distributor)²⁷</p> <p>Lack of funding prevented the program from being able to conduct an information campaign.</p> <p>Market/structural deficiencies: the country’s crop insurance badly needs institutional reforms to correct market/structural inefficiencies in the system in order to address the perils of climate change²⁸</p> <p>Costly Premiums: Government subsidies for premiums [and operational expenses] have been costly and concerns about the financial sustainability of the program have gained ground²⁹</p>
Success Factors	<p>Needs based approach: Satisfaction of farmers was evaluated and Client Satisfaction Surveys were conducted with farmers.³⁰</p> <p>Regular/frequent interaction (information dialogues) with the farmers by way of meetings facilitated communication and awareness among the communities. PCIC raised participation of more farmers and fisher folk in the insurance programs all year round, including year 2016.³¹</p>
Enabling environment components³²	<p>Government support through the Government Premium Subsidy (GPS); 100 per cent free insurance resulting in increased participation and enrolment of the farmers.</p> <p>See also: success factors above.</p>

22 Interview with Dominico S. Diamon, Mail Interview, 05 April 2016

23 Reyes et al., 2015

24 Reyes et al., 2015

25 Reyes et al., 2015

26 Reyes et al., 2015

27 Reyes et al., 2015

28 CPBRD Policy Brief Congressional Policy and Budget Research Department, 2012

29 CPBRD Policy Brief Congressional Policy and Budget Research Department, 2012

30 Interview with Dominico S. Diamon, Mail Interview, 05 April 2016

31 Interview with Dominico S. Diamon, Mail Interview, 05 April 2016

32 Interview with Dominico S. Diamon, Mail Interview, 05 April 2016

1.4. SANASA Agricultural Insurance (SANASA)

Background Information	<p>Committed to uplifting the standard of living for low-income Sri Lankan families, SANASA supports thousands of savings and credit institutions in the nation by offering insurance. With a focus on supporting community based organizations, SANASA transacts insurance products in many areas of Sri Lanka. After a successful pilot was initiated in 2008, a project was focused on the adaptation of weather-based crop insurance (based on a model in India) to the Sri Lankan environment and eventually led to the development of the current cooperative insurance model.³³ SANASA designed an index product for paddy farmers in 2011 and launched another product for tea farmers in 2012 to allow farmers access to scarce capital, new farming techniques and technologies, and with the hope of increasing investment by farmers and improving harvests and livelihoods.</p> <p>Beneficiaries:³⁴ 20,806 tea and paddy farmers (cumulative). Total sum insured: \$86,642 (sums insured cumulative)</p> <p>Payout:³⁵ \$65,330 (cumulative)</p> <p>Peril Insured:³⁶ Drought, excess rain. Previously covering for paddy against rain related risks with support from the ILO, SANASA now insures tea farmers also.</p>
Impact on resilience	<p>Insurance provides financial liquidity after disaster by providing financial support for farmers to overcome the financial challenges after the disaster and benefits from additional covers bundled with weather index insurance (funeral aids insurance, Health, PAB and property). Farming families were able to uplift their families to some extent and renewals rate of 40-50 per cent of weather index insurance can be predicted as another positive impact.³⁷</p>

33 Impact Insurance, 2014

34 IFC, 2016a

35 IFC, 2016a

36 IFC, 2016a

37 Herath, Ravinda. Email Interview. 19 April 2016.

Challenges

Targeting the needs of the poor: When developing the weather index insurance, it is revealed that a comprehensive customer survey is required. Analyzing correlation between rainfall and the yield will give more benefits to develop best product. Also, bundling the additional benefits according to the customer requirements is another advantage in designing of WII.³⁸

Participation needs to be increased: Participation of actuaries for this process is important to develop best affordable product for farmers.³⁹

Data quality and quantity can prevent scaling up the product to new geographies and improving coverage with the societies. There are very few weather stations and they are sometimes too far away to be accurate. This led to a high potential of basis risk, and negatively impacted the scaling-up product to other areas: only 69 of the potential 8000+ societies offer the weather insurance product. SANASA will explore possibilities of using satellite data and other remote sensing techniques for product development. These can provide information over a larger area and on different crops, which can make scaling up possible in an efficient manner.⁴⁰

- Data: Main challenge is obtaining reliable rainfall data from the meteorological department of Sri Lanka in order to build the trust among farmers on reliability of rainfall data and speed claim settlement.⁴¹
- Lack of data: There are difficulties obtaining rainfall data in a timely manner from the meteorological department, which has challenged the smooth operation of WII in Sri Lanka.⁴²

Time consuming and cost intensive education for farmers

Keeping premiums low: If the premium is low, then the benefit given to farmer is also automatically reduced; accordingly, higher premiums are a major disadvantage of reaching poor communities.⁴³

High costs of premiums: The high cost of premiums has inhibited sales of weather index products to paddy farmers.⁴⁴

Cost considerations may restrict bundling possibilities⁴⁵

Lack of sales of the product due to low awareness – (experienced with tea sector) A strong awareness campaign through mass media on weather index insurance is needed to promote sales.⁴⁶

38 Herath, Ravinda. Email Interview. 19 April 2016.

39 Herath, Ravinda. Email Interview. 19 April 2016.

40 Prashad and Herath, 2015

41 Herath, Ravinda. Email Interview. 19 April 2016.

42 IFC, 2016a

43 Herath, Ravinda. Email Interview. 19 April 2016.

44 IFC, 2016a

45 Prashad and Herath, 2015

46 IFC, 2016a

Lack of knowledge of target group by sales agents; there is a need to equip sales agents and marketing executives with knowledge of agricultural practices in order to convince clients. Since the concept of index-based insurance is new, the farmers asked many questions about its impact on their current cropping practices. Therefore, attempts were made to select agents with knowledge in agriculture, and to provide them with basic training on agricultural practices. The recruitment of agriculture science graduates helped improve communication with the farmers on agriculture topics.⁴⁷

Training and communication with farmers should address overall agriculture requirements: Successive rounds of sales highlighted that besides basic product knowledge, there is a requirement to explain overall crop, farm, and agriculture requirements so customers see value in the relationship with the insurer. Providing these additional services can make the benefits more tangible and position the insurer as an organization that can advise and help clients.⁴⁸

Problems with outreach strategy - Videos have not proved as effective, both in terms of reach and in terms of cost, as radio programmes, posters and leaflets. Feedback from customers and field staff suggested the impact of the videos was negligible, with only 7 per cent reporting to have either seen or been influenced by the video. There were also challenges to having the video shown in all the targeted areas due to terrain and infrastructure constraints. In contrast, farmers appreciated the reach of radio and gained a better understanding through the leaflets and posters, which they could carry with them and refer to.⁴⁹

Product configuration needs to be finalized well in advance of crop cultivation to allow for sufficient time for an educational and promotional drive. Farmers take time to understand and then invest in a new concept like index insurance. They also take time to “try” by not buying large quantities of an unknown product and waiting to see results with a trial purchase.⁵⁰

Frequently incorporating farmers’ views into products can be time-consuming and counterproductive. SANASA took feedback from the farmers and modified the product, including phased sales. These modifications had mixed results. Modifying the product to reflect farmers’ views is useful, but constant adaptation of product features is time-consuming and may become confusing for stakeholders. It is important to stabilize the product after some time. Frequent product modifications and “over-customization” is time consuming and can limit the potential client base.⁵¹

47 Prashad et al., 2014
 48 Prashad et al., 2014
 49 Prashad et al., 2014
 50 Prashad et al., 2014
 51 Prashad et al., 2014

Success Factors

Additional benefits: Additional benefits bundled with weather index insurance were offered to farmers at the lowest premium.⁵² Offering other covers in addition to weather insurance can help in improving product acceptance.⁵³ The unique part of the product offered by SANASA is it is bundled with other covers like accidental death and hospitalization, which caters to various needs of the farmers and offers a good coverage for both production and livelihood risks. In addition, the support available with financial solutions for premium payment enhances the attractiveness of the product.⁵⁴

Usage of established networks: Uses well established cooperative society networks and CBOs in rural communities to promote weather index insurance products.⁵⁵

Capacity building through our distribution network is the factor that supported reaching poor and vulnerable communities. SICL has built good rapport with SANASA Primary societies and CBOs that are operated within rural communities in Sri Lanka.⁵⁶

- **Education:** Continuous farmer education is the most important factor for sales and expanding index insurance markets in Sri Lanka. Farmers need training on how indexes are structured, what they cover and how payouts are measured.⁵⁷
 - **Proper understanding of the coverage by farmers can persuade them to pay a higher premium, provided coverage is sufficient.** If the farmers are convinced that the product covers what they see as major risks, they are willing to pay a relevant premium. However, if the feeling is the product is being forced on them, without providing sufficient protection, then they will not even be prepared to pay low premiums. The impact of claims demonstration cases is also very important in encouraging farmers to see value from the premium they pay.⁵⁸
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52 Herath, Ravinda. Email Interview. 19 April 2016.

53 Prashad and Herath, 2015

54 Prashad et al., 2014

55 Herath, Ravinda. Email Interview. 19 April 2016

56 Herath, Ravinda. Email Interview. 19 April 2016.

57 IFC, 2016a

58 Prashad et al., 2014

Technology can be used to leverage the high touch society relationships.

SANASA's marketing strategy currently relies heavily on human resources based on the relationship of the farmers' with the societies. While great for explaining about the product, this high touch engagement drives up the costs. For building better trust on the product and the insurer, mobile phone based technology can be used, in addition to enrollments, premium collection and claims settlement, for communicating and engaging with the customers over the life of the policy. Regular communication on the phone can be provided on how the index is performing, the progress of the index and when claims become payable. Value added services, like weather information and agriculture advisory services through SMS in local language and pre-recorded messages, can help in increasing trust on insurance as well as aid in renewals.⁵⁹

Cooperative societies can act as effective distribution channels. Since the farmers are in touch with societies for various other products, they form an effective means of accessing the target farmers. However, care needs to be taken as society employees have found it difficult to sell insurance along with their other tasks. It may therefore be worthwhile to experiment with exclusive sales personnel for insurance embedded at the society branches. The society and the leaders can help organise farmers meetings and take care of farmers' queries.⁶⁰

Payout mechanism:

- **The frequency and timings of premium payments are very important.** Monthly modular contracts are useful for farmers' understanding and acceptance of the product. This allows farmers to pay small premiums each month. However, doing a sales and collection activity each month can be challenging for the insurer and distributor, hence the advantages of this approach need to be evaluated keeping in mind the renewals and expected revenues each month. Timing premium collection to coincide with harvest time also helps. Farmers have money at this time to invest in insurance.⁶¹
- **Triggers and premiums that reflect land size rather than units can be more attractive to farmers.** Instead of being sold in units, which may not cover the actual requirements, a premium that fits the size of the land to be insured is more easily understood by the farmer. This helps farmers to determine the amount of insurance required.⁶²

Farmers perceive greater value from claims payments after each phase of the product coverage rather than after the entire risk period or season. In this way, farmers know at each stage how much money to expect. More frequent payments also provide more frequent demonstration cases to encourage further sales.⁶³

Enabling environment components

Capacity building through our distribution network is the factor that supported reaching the poor and vulnerable communities. The insurer has built good rapport with CBOs within rural communities in Sri Lanka.⁶⁴

59 Prashad et al., 2014

60 Prashad et al., 2014

61 Prashad et al., 2014

62 Prashad et al., 2014

63 Prashad et al., 2014

64 Herath, Ravinda. Email Interview. 19 April 2016.

1.5. PepsiCo

Background Information	<p>PepsiCo India offers weather index insurance as part of its contract farming programme: “The insurance is sold through the ICICI Lombard General Insurance Company, an international insurer, and managed by Weather Risk Management Services (WRMS), a private broker and weather station operator. PepsiCo added index insurance to its contract farming package not only to limit farmers’ weather risk, but also to establish long-term relationships with farmers and limit the risk in its supply chain”.⁶⁵</p> <p>Beneficiaries: Potato farmers participating in the PepsiCo contract farming programme; 4,250 farmers were insured in 2007 and 4,575 in 2008. Out of 24,000 contracts to date, approximately 5 per cent purchase index insurance.⁶⁶</p> <p>Peril Insured:⁶⁷ Late Blight Disease spreads under conditions of high moisture caused by rain, dew, irrigation or high humidity and moderate temperatures, resulting in severe losses of potato crop.</p> <p>Coverage:⁶⁸ The premium for the index insurance is 3 to 5 per cent of the sum insured and the product is structured to ensure the coverage of losses of above 40 per cent of the total yield. Up to this point, farmers are empowered to cover losses through various risk coping mechanisms and strategies conveyed to them during workshops and personal interaction sessions.</p> <p>Design Elements:⁶⁹ PepsiCo, through its insurance scheme offers incremental price incentives to the farmers according to the quality of the potatoes (+Rs0.30/Kg), the use of pesticides and fertilizers (+Rs 0.25/Kg) and the purchase of index insurance (+0.15/Kg).</p>
Impact on resilience	<p>Close to 50 per cent of the farmers insured in 2007 were smallholders, who owned less than five acres of land. PepsiCo, through its index insurance product, provides these farmers with technical assistance in a structured and phased manner so as to support them throughout the farming season. It is suggested that the product has contributed to enhancing the resilience of the farmers to weather shocks that could have otherwise resulted in significant losses and debilitated their ability to earn a sustained livelihood.⁷⁰</p>

65 IFAD and WFP, 2010
 66 IFAD and WFP, 2010
 67 IFAD and WFP, 2010
 68 IFAD and WFP, 2010
 69 IFAD and WFP, 2010
 70 Hellmuth et al., 2009

Challenges⁷¹	<p>The lack of historical weather information: Historical data is only available from 550 Meteorological department weather stations in India, which are required to cover 150 million hectares of arable land and are consequently overburdened and ineffective.</p> <p>Limited participation of reinsurers, which results in an inherent constraint on scalability. The reluctance of reinsurers to enter the market can be attributed to the difficulty in making an estimation of the size of the market and risk of exposure.</p> <p>Offering an affordable premium</p> <p>Lowering basis risk</p> <p>Securing delivery channels</p> <p>Need for new technology to enable a greater extent of accuracy in the capturing of weather data.</p>
Success Factors	<p>Contract farming effective for reducing vulnerability: Drivers for participation in contract farming are identified as: links to a market and buyers; fixed prices, which are typically above market prices; better access to inputs through PepsiCo, which purchases fertilizer in bulk and can sell it more inexpensively to its contract farmers (who can then produce higher yields); technical assistance, including agricultural production and weather forecasts; and access to financial services, including loans and index insurance.⁷²</p> <p>Drivers for demand include: Higher buy-back price from PepsiCo so smallholders are more incentivized to opt for product; financing of production costs and other incurred premiums through loans; strong foundational relationship of trust that has been built amongst the various stakeholders (the corporation, the processor, the insurer and local representatives); and a demonstrated success of the scheme through a timely payout structure.⁷³</p> <p>Coupling product information and technical assistance:⁷⁴ The success of the scheme can be attributed to the contract farming agreements that have been entered into with the farmers, which act as a consolidated package of both product information and technical assistance that includes the index insurance pilot programme.</p> <p>Educating the farmers⁷⁵ about the product was carried out in a systematic manner and accompanied with training and educational interactions conducted individually with each participant.</p> <p>Data dissemination through mobile phones:⁷⁶ Proven to be extremely effective in helping farmers minimize losses and gain an understanding of the nature of potentially harmful weather conditions as well as the proximity and the magnitude of risk. For example, farmers in Punjab were able to prevent crop losses due to frost and minimize irrigation crops through early warning signals communicated via timely SMS messages.</p> <p>Enabling environment components</p> <p>Technical advice through a network of agronomists, extension workers and local facilitators⁷⁷</p>

71 Hellmuth et al., 2009
72 FAD and WFP, 2010
73 IFAD and WFP, 2010
74 Punjabi, Meeta, 2015
75 IFAD and WFP, 2010
76 IFAD and WFP, 2010
77 IFAD and WFP, 2010

1.6. R4 Initiative (R4)

Background Information	<p>In response to addressing the impacts that climate-related shocks have on global poverty, Oxfam America and the UN World Food Programme launched the R4 Rural Resilience Initiative. R4 refers to the four risk management strategies integrated by the initiative, namely resource management (risk reduction), insurance (risk transfer), microcredit (prudent risk taking), and savings (risk reserves).⁷⁸</p> <p>Beneficiaries: Low income subsistence farmers</p> <p>Payouts: In the event of a seasonal drought, insurance payouts are triggered automatically when rainfall drops below a predetermined threshold. This payout can then be used by farmers to afford the seeds and inputs necessary to plant in the following season and potentially protect them from having to sell off productive assets to survive.⁷⁹ 2011 = \$17,000 in payouts; 2012 = \$320,000 in payouts; 2013 = \$24,000 in payouts.⁸⁰</p> <p>Design Elements: Insurance-for-work, which allows cash-poor farmers to use their ability to work to pay for weather index insurance. Because the programme allows vulnerable farmers to pay their premiums through risk-reducing labor, farmers and their communities benefit even when there is no payout; the risk reduction measures pay dividends even during the wet years.⁸¹</p>
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78 Forum for Agricultural Risk Management in Development, 2013

79 Sharoff et al., 2015

80 WFP, 2014

81 WFP, 2014

Impact on Resilience

The scheme targets the poor and vulnerable,⁸² and impact evaluations commissioned in Ethiopia and Senegal have shown that the programme is already making positive impacts in the lives of insured farmers, helping build their resilience.⁸³

The evaluation employed a difference-in-difference methodology making the impacts attributable to the programme. The evaluation findings include⁸⁴:

- The R4 model is helping to improve farmers' resilience by maintaining their livelihoods when rains fail. The specific ways that resilience is strengthened includes increased grain reserves, loan uptakes, and number of oxen owned.
 - R4 has positive, but less-widespread, effects on investments in production in good seasons. This includes increased investment in fertilizers, improved seed and compost.
 - Insured female-headed households, which are among the poorest households, are benefitting more from the programme. This includes increased agricultural investments as compared to male-headed households and increased amount of land planted, improved seeds and compost.
 - R4 participants are better equipped to cope with climate shocks. Even when both insured and non-insured farmers face worsening situations related to food production and consumption, R4 farmers were better equipped to face these constraints. For example in Senegal, the decrease in Food Consumption score for R4 farmers was limited to -4.7 per cent while it showed -49.1 per cent for non R4 farmers. Furthermore, the degradation of food security conditions resulted in an increase of the Coping Strategy Index for the entire population, with a higher change for non-participants: 18.6 per cent increase for participants and 102.5 per cent increase for non-participants.
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82 Madajewicz, Malgosia, Asmelash Haile Tsegay and Michael Norton (2013).

83 Interview with Sophia Belay, Mail Interview, 15 April 2016

84 Interview with Sophia Belay, Mail Interview, 15 April 2016

An impact evaluation on R4 revealed the following⁸⁵:

Increased farmers savings: Insured farmers increased the amount of savings by 123 per cent more than did the uninsured; insured farmers tripled their savings from an average amount of 465 birr in 2009.

Diversification of income resources: increased their grain reserves.

Increased no. of animals and livestock: The insured farmers also increased the number of oxen that they own by 0.18 of an ox more than did uninsured farmers, for a total increase of 0.25 of an ox from an average of 1.53 oxen owned in 2009 by those who eventually bought insurance.

Increased the number of loans and amounts borrowed relative to the uninsured Improving possibility to take up credits: Improved use of credit in Saesi Tsaedaemba since farmers' most common comment about the benefits of insurance is that it gives them the confidence to take loans because a payout enables them to repay loans; a few farmers mention that insurance does help them to obtain credit from their neighbors or wealthy individuals since these individuals are more confident that they will be repaid if the borrower is insured.

Preventing migration: Some farmers mention that the payout helps to prevent migration, though as of yet there is no data to support this finding at a larger scale.

However:

No improved access to loans: All farmers say that the insurance with its promise of a payout does not improve access to loans since institutional lenders, such as DECSI, do not pay attention to whether a farmer is insured or not. However, some farmers did say that institutional lenders come to the village on the day of the insurance payout to collect debts, therefore being insured may informally influence creditors' perceptions even if their formal policy is that being insured does not affect access to loans.

Not necessarily improving livelihoods: Almost all farmers and village leaders also agree that HARITA is not yet improving livelihoods in a transformative way; despite the benefits of the payouts, farmers for the most part do report that the payout will not change their life very much. They need good harvests in order to improve their livelihoods.

It is too early to determine if the product reduces poverty levels and increases resilience.

Challenges⁸⁶

Complexity of scheme – difficulties finding partners at all levels: Given that R4 through its combination of components is more complex and probably complicated than other projects, establishing partnerships at all levels (global, national, regional and farmer level), and finding the partners with the adequate capacities is crucial for the success of the project.

Low financial/insurance literacy: Education of farmers in index insurance has been a challenge as farmers have low financial literacy and index insurance is a complicated subject. Repeated trainings are given to ensure farmers understand the terms and conditions of their policies. The use of technology is important to reach farmers in remote villages.

Basis risk challenges for index products: Basis risk has been a challenge especially in villages which are particularly dry. It has been difficult to capture the worst years in terms of rainfall as almost all years are becoming bad years and the difference between a bad and worse year can be a small amount and thus difficult to explain to a farmer.

Adequate and predictable funding: Since it takes years for an index insurance programme to start making changes in the lives of farmers, adequate funding for a number of years is important.

Success Factors⁸⁷

The use of satellite data to design indices has helped us scale the programme to villages which do not have weather stations installed.

Multi-stakeholder partnerships at local, national and global levels have been essential to R4's ability to scale up. Also, beyond public-private partnership, this initiative involves multi-stakeholder engagement, i.e. with public and private sectors, climate experts, civil society, community institutions and local NGOs, MFIs, and technical experts.

Local Leadership: R4 works closely with local actors, e.g. NGOs, to ensure that the indices meet the community's needs.

Clear agreements on roles and responsibilities of each organization and/or individual partner can mitigate issues and avoid competition between partners. The programme needs different partners and/or expertise including insurance companies, reinsurance companies, government entities (Ministry of Agriculture, National Meteorology Agencies), Micro-Finance Institutions, Farmers Cooperatives etc. This is important as index insurance needs partnerships at different levels ranging from community to national level.

Trust and participation from the community is very important for the success of the project. Thus it is important to partner with local organizations which have earned the trust and respect of the communities. Involving farmers in designing of indices and DRR activities has also proven crucial to the success of the programme as farmers own the programme in the true sense of the word.

Working on and with existing structures is crucial: This is the reason why the R4 programme is redesigned to fit contexts as we expand to new regions and/or countries, e.g. in Senegal, we use the Saving Group Associations as delivery channel, while in Ethiopia we work with both Micro Finance Institutions and Farmers Cooperatives.

Working with governments of the countries: It is important to coordinate activities with the government as they can provide support to the programme both at local and national level supporting the implementation of the programme and also ensuring sustainability. As the plan of R4 is to eventually integrate the programme into the safety nets run by Governments, R4 works closely with governments to ensure evidence emerging from the programme is shared with them as they develop their policies.

Subsidy support: In Senegal, the 50 per cent subsidy of insurance premiums by the Government helps to reduce the net rate to farmers.

Enabling environment components⁸⁸

Strong institutions, organizations, or structures already exist, which could be partnered with or built on: In Ethiopia the strong Agriculture extension programme of the Government supported the success of the project. The programme works with the Agriculture extension agents to train farmers in DRR, insurance, savings and credit. The existence of a strong local NGO that coordinates activities at the local level and manages the Insurance-For-Work ensures the quality of the work and manages farmers' attendance. For this, an NGO experienced in designing and managing DRR activities is necessary.

87 Interview with Sophia Belay, Mail Interview, 15 April 2016

88 Interview with Sophia Belay, Mail Interview, 15 April 2016

1.7. MicroEnsure (MICROENSURE)

Background Information	<p>MicroEnsure provides various forms of micro-insurance, including micro-health, political violence, crop and mobile, for vulnerable people in twenty different countries around the world. With the mission to help uninsured people in emerging markets to mitigate the risks they face, they take a client-centric approach when designing products.⁸⁹ A satellite and weather station-based weather index insurance was launched in 2010 in Rwanda and 2013 in Zambia.⁹⁰</p> <p>Beneficiaries: 35,134 clients, farmers</p> <p>Extent of Coverage: Crops covered: Irish potato, maize, rice, cotton, cassava, soybean and bean.</p> <p>Payout: \$15,396 (2013). Payouts of over \$15,000 in 2013 demonstrate the effectiveness of the product.⁹¹</p> <p>Peril Insured: Dry spells and excess rainfall</p> <p>Design Elements:⁹² Higher value crops such as Irish potatoes and coffee have the potential to increase the total sum insured per farmer. This means that farmers will take out higher loans and more insurance, improving the profitability threshold for creating a sustainable market</p>
Impact on Resilience	<p>Unlocked access to finance and loans for smallholder farmers: The product had positive impacts on the resilience of the poor and vulnerable by providing cash payment following adverse weather conditions. The product unlocked access to finance by making lending institutions more willing to provide loans to smallholder farmers that rely on rainfall for a successful crop.⁹³</p> <p>Increased investment and changed investment behavior: Investment in Irish potatoes by insured farmers generally provides higher returns than maize and rice. The sum insured for this crop increased from \$16,000 in 2012 to \$254,000 in 2013.⁹⁴</p>

89 Micro Ensure, 2016

90 IFC, 2016

91 IFC, 2016

92 IFC, 2016

93 Dorey, David. Email Interview. 15 April 2016.

94 IFC, 2016

Challenges⁹⁵

Basis risk events posing challenges to weather index insurance: Rwanda has many microclimates as a result of the large number of hills. This increases the probability of basis-risk events. In some cases, manual verification had to be carried out, undermining the benefit of weather index insurance as being low-cost to operate, which on occasion led to ex-gratia payments being made.

Expensive premiums: Farmers were not able to afford the premiums required to pay for a product which would offer material benefit. Consequently products needed to be subsidized, or alternatively the claims paid did not reflect the extent of loss incurred.

Lack of private sector partners and financial institutions: There is a lack of commercial farming processes and aggregators (e.g. contract farming organizations) willing to pre-fund premiums on behalf of farmers, and a lack of formalized financial institutions working in the smallholder sector due to high risk of default.

Conflict: Missing weather station data due to the 1994 Genocide

Inaccurate mapping impacting the ability to insure flooding risk. Excessive rainfall may occur in an area outside of the insured area (for example at the top of a hill in the catchment basin) and accurate mapping of these areas is required to deliver effective flood insurance.

Sustainability due to lack of financial support: The market was not established enough to reach sustainability without significant financial support in the form of grants and premium subsidies.

Success Factors

Design Elements that lead to success include: minimizing the costs of distribution (the product was sold via commercial banks, MFIs and cooperatives who acted as aggregators); removing the need to file a claim (by selling a weather index based product, claims triggers were automatic removing the need to make a claim); and using a combination of weather stations and satellite data which allowed farmers who were outside the range of weather stations to be covered.⁹⁶

High demand for product: The willingness always exceeded the ability to pay.

Training: With training, farmers were able to understand the fundamental principles of weather index insurance.

Capacity Building grants and premium subsidies were essential to the success of weather index insurance as they enabled the market to be established as well as provided the training required for farmers and distribution partners.

Other success factors include the introduction of **satellite-based products**, which allows areas to be covered where there is no current or historical weather station data available; the **use of satellite data** (MicroEnsure is no longer limited by weather station locations for implementing products) and **market growth** (as it acts as a catalyst for new distribution channels to become involved with the weather index insurance market, e.g. input suppliers).⁹⁷

Enabling environment components⁹⁸:

Fiscal regulations, i.e. taxes, can make a difference: The removal of VAT on weather index would have increased affordability for farmers.

A good working relationship with the National Meteorological Office was essential.

95 Dorey, David. Email Interview. 15 April 2016.

96 Dorey, David. Email Interview. 15 April 2016.

97 IFC, 2016

98 Dorey, David. Email Interview. 15 April 2016.

1.8. Agriculture and Climate Risk Enterprise (ACRE)

Background Information

Launched in 2009, the ACRE (a.k.a. Kilimo Slama) scheme, offering weather, area yield and satellite-based index insurance products, became the largest agricultural insurance programme in Kenya. Products are also sold in Rwanda and Tanzania. The programme specifically targets the poor and was the first of its kind to reach smallholders using mobile technologies.⁹⁹ Since inception in 2009 up to 2015, over 800,000 farmers have benefited from insurance products designed by ACRE Africa.¹⁰⁰

Beneficiaries: Smallholder farmers; 394,400 farmers in 2015 (Kenya: 145,800; Rwanda: 222,500; Tanzania: 26,200)¹⁰¹

Coverage: Insured Crops and Livestock: Maize, beans, wheat, sorghum, coffee, potatoes, rice and cows¹⁰²

Payout: \$370,405 (2013); \$486,200 (2014); \$45,000 (2015)

Peril Insured: Drought, excess rain and storms, risks associated with pregnancy losses for calving cows.

Design Elements: Farmers can “try out insurance” by insuring as little as one bag of seed. Insuring one acre of maize against drought costs a farmer ≈ 37 USD, or 10 per cent of harvest value. Any payout is transferred to the farmer’s “mobile phone wallet” at the end of the season.

Impact on Resilience¹⁰³

High rates of investment and earnings: ACRE Africa-insured farmers invested 19 per cent more and earned 16 per cent more than their neighboring uninsured counterparts.

Increased access to finance: 97 per cent of farmers insured by ACRE in 2013 received loans linked to the insurance; 177,782 farms received \$8.4 million in financing in part due to index insurance product – in part due to ACRE’s index insurance products.

99 IFC, 2014

100 Kariuki, Rahab. Email Interview. 19 April 2016.

101 World Bank and Index Insurance Forum, 2016

102 World Bank and Index Insurance Forum, 2016

103 IFC, 2014

Challenges¹⁰⁴

The differing insurance regulatory environment in each country presents a challenge for setting up index insurance markets: Laws and regulations on the role of agricultural insurance service providers and allowable fee per centages vary by country. New partnerships need to be set up in each country, including government institutions, farmer aggregators, and insurance companies who carry part of the risk.

The greatest barrier to expansion is access to reliable long-term data to base agricultural insurance indices on: For index insurance to be affordable and accurate, 10-20 years of historical rainfall or yield data is required. Collecting, verifying, and analyzing this data is the most time consuming process in product development. Where such data is not available, Kilimo Salama is investing in cutting edge satellite data and testing analysis techniques to generate the most accurate proxy for the farmer experience.

Establishing trust: A key challenge faced by any insurance product is establishing trust between the insurer and customer. ACRE Africa discovered this during the product roll-out, as people were reluctant to use any product until they saw that it would pay out. This barrier was addressed by letting customers take as little insurance as they wanted. For instance, a farmer could insure just one bag of seeds so that they could test the product before buying more insurance. After that, they would be more comfortable insuring more, even if there was no initial payout.¹⁰⁵

Short-term profitability cannot be a primary goal: Products such as insurance are contingent on establishing relationships and trust, which take time to cultivate. These elements should not be sacrificed for short-term profitability, and it is these very ingredients that are essential for long-term gains.¹⁰⁶

104 IFC, 2014

105 Kariuki, Rahab. Email Interview. 19 April 2016.

106 Kariuki, Rahab. Email Interview. 19 April 2016.

Success Factors

The use of an aggregator channel enabled partnerships with organizations whose key role is smallholder farmer recruitment and empowerment. This has ensured ACRE Africa's developed products are accessible to a large database of farmers. Kilimo Salama used local stockists to market its product and local trainers to educate farmers on its benefits. These interactions are critical for engaging with farmers.¹⁰⁷

Objective rainfall measurement: Micro-insurance products should rely on objective measurements for product reliability. ACRE Africa uses innovative, solar powered weather stations that give accurate rainfall measurements and also communicate other useful data for farmers.¹⁰⁸

Using local people where possible: The distribution and education for a product should use local people who understand the region.¹⁰⁹

Mobile banking: The use of Safaricom's M-PESA system has been key to ACRE Africa's success. It allowed the product to reach farmers throughout Kenya with little infrastructure requirement and provided easy access for every transaction. This tool makes it very easy for the farmer to sign up and removes the need for farmers to file a claim. It should be noted that this was successful partially because of Safaricom's significant pre-existing market penetration. Indeed, more mobile network competition would have provided more of a challenge for product take-up and distribution. **The proliferation of mobile money platforms** has made leveraging on technology to distribute the insurance and send farmers compensation easy. This has enabled farmers to understand and sign up for insurance without difficulty. The penetration and ease of usage of the mobile technology ensures that even the illiterate can use the mobile device to insure their crops and receive compensation. For example, the Replanting Guarantee product allows farmers to sign up for insurance by dialing a USSD code on their phones and receiving compensation.¹¹⁰

Establishing a local distribution channel: Insurance products being distributed using local stockists at the time of purchasing inputs make it easier for the customer to adopt the new product. From a behavioral perspective, this distribution channel capitalizes on existing relationships since farmers are more likely to take advice from someone they know and trust.¹¹¹

Offering a holistic solution to mitigate weather risks, not just insurance. ACRE's profound understanding of agricultural risk enables them to develop customized insurance products using mobile technology, bundled with agricultural advisory services, weather data, local access to quality inputs, and input credit. Their products have allowed credit institutions to enter agricultural lending by mitigating weather-related repayment risk.¹¹²

Locally based knowledge hub of experts: Located in Nairobi, Kenya, ACRE's team of 30 local and international specialists, models crop risks, develops crop indices, manages climate data, develops insurance products, educates farmers, and creates distribution channels for the insurance.¹¹³

107 Kariuki, Rahab. Email Interview. 19 April 2016.

108 Kariuki, Rahab. Email Interview. 19 April 2016.

109 Kariuki, Rahab. Email Interview. 19 April 2016.

110 Kariuki, Rahab. Email Interview. 19 April 2016.

111 Kariuki, Rahab. Email Interview. 19 April 2016.

112 International Finance Cooperation, 2015

113 International Finance Cooperation, 2015

Enabling environment¹¹⁴

The creation of capacity building sessions by input companies, county governments and media stations has eased the awareness of climate related risks and the need to mitigate them using insurance and other mitigation solutions such as diversification.

Flexible Insurance regulator in Tanzania and Kenya.

1.9. Index based livestock insurance (IBLI)

Background Information¹¹⁵

Exploring opportunities for vulnerable rural smallholder farmers and livestock keepers to benefit from insurance, the International Livestock Research Institute and its partners have been developing and implementing market mediated index-based insurance since 2010 when the initial pilot phase took place. Partnerships (i.e. with local insurance companies, technical partners, NGOs, and government bodies) have since grown, and IBLI has been expanding into new areas.

Beneficiaries: pastoralists, vulnerable rural smallholder farmers and livestock keepers

Extent of Coverage: IBLI insures pastoralists against forage deterioration that can lead to drought, resulting in livestock deaths. IBLI does not cover any other causes of livestock deaths. It focuses on asset risk (not income risk).

Perils Insured: Drought related asset losses, particularly those in the drought prone Arid and Semi-Arid Lands (ASALs).

Payouts: 2011 indemnity payments to policyholders in all five divisions of Marsabit District of Kenya; 2012, the index triggered payout in two divisions of Marsabit. As of April 2015, 10,067 IBLI contracts have been sold and USD 149,007 in indemnity payments have been made to insured pastoralists.¹¹⁶

Design Elements: IBLI uses satellite observations of forage availability – Normalized Difference Vegetation Index (NDVI) – to determine whether or not there will be a payout.

¹¹⁴ Kariuki, Rahab. Email Interview. 19 April 2016.

¹¹⁵ IBLI, 2016

¹¹⁶ Jensen et al., 2015

Impact on Resilience

Although IBLI **targets poor and vulnerable pastoralists** in Northern Kenya and Southern Ethiopia, research has revealed that **IBLI is not well suited for the poorest**, who already slowly collapse toward destitution over time, as the premium payment tends to further speed up such herd decumulation during good seasons.¹¹⁷ Our key result is also that IBLI will be less valuable to the poorest whose assets are too small, relative to the critical threshold and whose herd decumulation therefore cannot not be altered through IBLI alone. In order to make IBLI work as economic development tool, promotion of IBLI might need to be complemented by promotion of asset accumulation programmes. This could include targeted asset transfer programmes to first move the poor toward the critical herd size threshold. They could also include expanding access to credit, the introduction of risk mitigating interventions and other efforts that would effectively lower the asset bifurcation threshold. With these longer term adjustments, IBLI might become more valuable to the poorest as well.¹¹⁸

By contrast, IBLI is **most valuable for the vulnerable non-poor**, for whom insurance can stem. It collapses onto a trajectory of herd decumulation following predictable shocks.¹¹⁹ The following findings use an IBLI payout in Marsabit district of northern Kenya during the drought of 2011 where researchers analyzed the immediate impacts of this microinsurance pilot on expected asset accumulation and human capital investments.¹²⁰

Reduction of drawing down assets during a shock

- Research has shown that IBLI coverage has led to a 36 per cent reduction in likelihood of distress livestock sales, improving their chances of recovery ¹²¹
- This effect is larger for livestock-rich households who are most likely to compromise assets in response to a negative shock ¹²²

Reduction in the likelihood of reducing food consumption

- Research has shown that IBLI coverage has led to a 25 per cent to 36 per cent reduction in the likelihood of reducing meals as a coping strategy in times of drought.¹²³
- This second impact is stronger for livestock-poor households who are most likely to destabilize consumption.¹²⁴

117 Chantarat, 2009

118 Chantarat et al., 2016

119 Chantarat et al., 2016

120 Janzen and Carter, 2013

121 Mude, Andrew. Email Interview. 05 April 2016. / Jensen and others 2015

122 Janzen and Carter, 2013

123 Mude, Andrew. Email Interview. 05 April 2016. / Jensen and others 2015

124 Janzen and Carter, 2013

Increase pastoral investments in maintaining livestock through vet expenditures

Households with IBLI coverage increase investments in livestock veterinary and vaccination services, and reduce herd size (most likely reflecting a reduction of precautionary savings in response to an insurance alternative). These and other changes to production strategies among the insured seem to pay off, increasing milk productivity of livestock and the total value of milk produced.¹²⁵

Discussion of reasons why this happens in Jensen et al. 2014

Decrease dependency on food aid

By improving food security during a drought, we also find that insured households are less dependent on food aid and other forms of assistance. As food security improves, insured households are 42-50 per cent less dependent on food aid and 0-26 per cent less reliant on other forms of assistance.¹²⁶

Positive impact on indicators of well-being, including greater household income per adult equivalent (AE) and improvements to mid-upper arm circumference (MUAC), are a strong predictor of child malnutrition.¹²⁷

Even in the absence of severe drought or indemnity payments, IBLI seems to improve purchasers' well-being by reducing their reliance on costly ex-ante risk reducing strategies, or just providing improved peace of mind about drought risk exposure. These positive effects of IBLI coverage are large enough to overcome an observed and statistically significant negative impact of buyer's remorse due to having spent money on insurance that did not pay off and thus, in retrospect, was an unnecessary expense.¹²⁸

Challenges

Basis risk: Most importantly, fully insuring with IBLI still leaves households bearing a significant amount of uninsured risk.¹²⁹

Infrastructural obstacles in reaching pastoral clients: Our insurance company partners have struggled to overcome infrastructural obstacles in reaching pastoral clients, who are nomadic and live in remote and expansive areas with low mobile phone and internet coverage where road networks are also minimal.¹³⁰

Pastoralists understanding and trust in insurance; low written literacy: They are a population that has rarely purchased insurance previously, are accustomed to a culture of reciprocity, and do not always understand why they do not receive their money back if there is no insurance payout. Extension and public awareness campaigns are on-going but expensive and require committed public resources in order to build salience in the product and a critical mass of understanding. The pastoral population also has low written literacy and requires a level of continuous engagement to build their trust and confidence in the product.¹³¹

Culture of dependency due to humanitarian programmes: The existence of many humanitarian programmes in the area have created a culture of dependency which has made the communities less willing to pay for services since they are used to being offered these for free. It takes longer-term commitment and foresight to reorient this culture toward more proactive efforts at asset risk management.¹³²

125 Jensen and others 2015

126 Janzen and Carter, 2013

127 Mude, Andrew. Email Interview. 05 April 2016.

128 Jensen et al., 2015

129 Jensen et al., 2014

130 Mude, Andrew. Email Interview. 05 April 2016.

131 Mude, Andrew. Email Interview. 05 April 2016.

132 Mude, Andrew. Email Interview. 05 April 2016.

Success Factors

Tailor made product for the potential beneficiaries: A well-designed and affordable product with the appropriate educational and extension materials and implementation to create awareness and understanding of the product.¹³³

Affordability

Public private partnerships are important for scale: Initial investment by private and public institutions to make the above possible. International experience shows that agricultural insurance programmes that have scaled up have strong public and private sector pillars, as part of overall agriculture risk management strategy.¹³⁴

Leveraging on technological advancements in ICT and others to reduce the cost of providing insurance in these areas (use of cellphone based sales transaction platforms, m-learning etc.)¹³⁵

A rigorous and productive research programme that continuously improved the precision and value of the IBLI product and generated evidence of socioeconomic benefits of IBLI and the household level. The research outputs played a key role in convincing government agencies of the value of IBLI and resulted in the GoK launching the Kenya Livestock Insurance Program based on the IBLI product.¹³⁶

Simpler products are easier to develop and introduce: As IBLI expanded to other areas of Kenya, ILRI realised that livestock mortality data was not easily available and that predicted mortality contracts were not giving good results. As an alternative, ILRI has decided to move in the direction of forage scarcity contracts, similar to what is being implemented in Borana, South Ethiopia. In this case, contracts are designed based only on transformations of NDVI (Normalized Difference Vegetation Index), which is easier to explain to the pastoralists than predicted mortality.¹³⁷

Proof of success - Upscaling to Kenya: Following the success of the IBLI product and the demonstrated positive welfare impacts of the same, backed by rigorous research on the product, in late 2015, the Government of Kenya, launched the Kenya Livestock Insurance Program (KLIP). An insurance product that has similar parameters as the IBLI contract and one which offers limited livestock insurance contracts to targeted individuals in Northern Kenya with possible subsidies to the general public in later years. This is a much-heralded “scaling-up” of the IBLI product, but it is important to note that IBLI (ILRI’s micro/individual coverage) is still being sold on a commercial basis across Northern Kenya and it remains a separate product.¹³⁸

- So far, over 14,000 pastoralists, approximately 40 per cent of whom are women, have purchased IBLI and IBLI policyholders have been paid close to \$200,000 in times of severe drought.
- After launching in Marsabit in 2010, IBLI expanded to other areas of Northern Kenya, including Wajir and Isiolo in 2013, Mandera and Garissa in 2015, Moyale and Turkana in 2016 Samburu and Tana river are expected to come on board in October 2017

133 Mude, Andrew. Email Interview. 05 April 2016.

134 Mude et al., 2015

135 Mude, Andrew. Email Interview. 05 April 2016.

136 Mude, Andrew. Email Interview. 05 April 2016.

137 Mude et al., 2015

138 Mude, Andrew. Email Interview. 05 April 2016.

Including non-poor pastoralists in the scheme: Our analysis shows that targeting IBLI subsidies toward vulnerable non-poor pastoralists offers a considerable productive safety net by helping protect many such households from slipping into a poverty trap stage after catastrophic drought hits. This supports assertions that interventions targeting the non-poor can, in such systems, be poverty reducing in the long run as they reduce the ranks of vulnerable individuals from falling into poverty in the event of a shock (Barrett et al. 2008)¹³⁹

Cost advantages of index-insurance: Traditional insurance requires that the insurer monitor the activities of their clients and verify the truth of their claims. For relatively small clients in infrastructure-deficient environments like northern Kenya's drylands, the costs of such monitoring are often prohibitive. With index-based insurance products, all one has to do is monitor the index, thereby sharply reducing costs as well as the incidence of fraud.¹⁴⁰

Easy targeting towards the poor with index insurance: Furthermore, by using an index base on variables that cannot be influenced by any insuree's behaviour, index-based insurance products overcome the twin problems of adverse selection and moral hazard that plague traditional insurance contracts. These innovations allow the risk-management benefits of formal insurance to be feasibly targeted toward vulnerable populations like pastoralists.¹⁴¹

Trust building activities and targeted trainings and capacity building for the target group: The pastoral population also has low written literacy and requires a level of continuous engagement to build their trust and confidence in the product. For this reason, the IBLI team has designed instructional guides to help implement trainings and capacity building activities that are appropriate to the adult learning needs of pastoralists that improve understanding about IBLI and insurance, and that create sustainable and positive demand for IBLI in pastoral areas.¹⁴²

Enabling environment
components¹⁴³

Support by private sector: The emergence of private sector insurers interested and willing to offer IBLI in pastoral areas, especially as related to sharia-compliance.

Donor support: The interest of donors to support the short to medium-term start-up costs of reaching such a previously inaccessible population.

Advancements in technology that helped to reduce the cost of extension and training while increasing the efficiency of the same. These include e-learning and m-learning platforms etc.

Regulatory environment: Support from the Insurance Regulatory Authority in approving the product pending the completion of the microinsurance policy for the country.

Partnerships with organizations working on other DRR activities (Mercy corps, World vision and Solidarities) to include IBLI into their regular programming. An interested and supportive government had promised livestock insurance as part of its political manifesto and was building the enabling environment for the same.

Informal risk sharing agreements still very important: It reveals that basis risk, especially idiosyncratic risk, is substantial, pointing towards the continued importance of informal risk sharing agreements and other complementary risk management mechanisms even when index insurance is available. An optimally designed index insurance product yields risk-reducing welfare gains for many prospective purchasers, but offers far-from-full coverage. Caution seems warranted in the promotion of index insurance as a risk management instrument for low-income populations underserved by conventional insurance markets.

139 Chantararat, 2009

140 Mude, Andrew. Email Interview. 05 April 2016.

141 Mude, Andrew. Email Interview. 05 April 2016.

142 Mude, Andrew. Email Interview. 05 April 2016.

143 Jensen et al., 2014

1.10. Micro insurance Catastrophe Risk Organization (Micro Haiti)

Background Information¹⁴⁴

Micro Haiti is a scheme from the Micro Insurance Catastrophe Risk Organization that provided coverage for property and merchandise to clients of Fonkoze, the country's largest microfinance institution, from 2011-2013. More than 60,000 people were covered with the mandatory product during the two-year period it was in existence. Because it was not financially sustainable, it was discontinued after 2012. Micro now offers a meso policy to Fonkoze.

Beneficiaries: 64,498 women-owned micro-enterprises

Perils Insured: Floods, hurricanes, earthquakes

Payout: US\$8,897,427 (2012/2013). More than 36,500 claims were paid out totaling \$8.8 million following events like Hurricane Sandy and Tropical Storm Isaac.

Design Elements: Principle Design Feature was the distribution method through the MFI, Fonkoze. The model used was able to deliver fast and accurate payments. This "hybrid model" is a unique approach in that weather triggers "provide a timely picture of what kind of payout might be needed", and at the same time, "Fonkoze meets with its local borrower groups to figure out the actual losses."¹⁴⁵

Impact on Resilience¹⁴⁶

In terms of food security, only 3 per cent of clients were food secure upon entering the programme. Of those that had been in the programme for 3 years or more, 58 per cent were food secure. While not conclusive, these data do document that Fonkoze is reaching very low-income clients. Anne Hastings and James Kurz believe that the product had a positive impact, though, evidence is primarily anecdotal. In a study by the Microinsurance Learning and Knowledge Center, 97 per cent of clients who received a payout and 90 per cent of those who did not indicated the product was a "good addition" to Fonkoze. 69 per cent of those who received a payout used the proceeds to invest in their businesses or to save. Without an insurance payout, many clients might have had to sell assets or borrow money at high interest rates instead. In 2012, the year of Hurricane Sandy, Fonkoze made more than 28,000 payouts, which included a small cash payout, loan forgiveness and a new loan when the client was ready.¹⁴⁷

¹⁴⁴ MiCRO, 2016

¹⁴⁵ Mercy Corps, 2016

¹⁴⁶ Hastings, Anne and James Kurs. Email Interview. 14 April 2016.

¹⁴⁷ Hastings, Anne and James Kurs. Email Interview. 14 April 2016.

Challenges¹⁴⁸

Assessing risk and determining the level of insurance coverage needed, while also ensuring premiums are affordable, was a challenge.

Sustainability of the product: “We were not able to make the product financially sustainable. The price we charged for the product could not support the benefits in the two-year period culminating in Hurricane Sandy, which devastated the country.”

Basis risk: “Many low-income people, especially in countries like Haiti, live in remote and difficult to access places. Traditional indemnity insurance products are extremely expensive to deliver in such contexts, requiring innovations like index insurance. Yet, as we discovered, the weather index we used did not always mirror the results on the ground. We had one case when there was a large payout in one region, but few losses on the ground. Soon after in another region, there were large losses on the ground, but little or no payout.” Basis risk led Fonkoze to switch from micro-retail coverage for individual clients to portfolio coverage through the MFI.

Difficulties accessing the insured following major events: “It was very difficult to reach the insured following major events. Roads were impassable, communications were down. Yet our design relied on someone assessing whether there was damage to the client or not. This indemnity aspect to the design of the product was impossible to respond to in a timely manner. With thousands of claims at a time, it was, quite simply, impossible to meet a reasonable timeline to get the benefit into the hands of the clients.”

In summary, the problem was not reaching the poor and vulnerable. The **problem was designing a sustainable product in a country with so much risk.**

Success Factors¹⁴⁹**Design Elements that lead to success:**

- The distribution through Fonkoze, a MFI, is itself a success factor
- Insurance products that target those most excluded, particularly the poor and vulnerable, **must be low cost, easily accessible, and easy to understand.** Many people in this demographic around the world are unfamiliar with the concept of insurance and have never used insurance before.¹⁵⁰
- **Cost is a key factor.** Not only do low-income, vulnerable people have little available income to pay premiums, they are also reluctant to spend much on a product that they are consuming for the first time.
- **Administration of the product,** especially claims, leveraged Fonkoze’s credit solidarity centers – groups of 30-50 women following the Grameen model of microlending. Delivery of the product through this “social infrastructure” greatly lowered cost and complexity, and enabled a platform to educate and inform the policyholders about the insurance product.

The principal success factor was selecting a **microfinance institution that was already reaching the poor and vulnerable.**

Other success factors included: clients’ prior experience with credit-life insurance; the fact that some payouts came quickly so the clients could see the benefits; the relatively quick acceptance of the product given the clients’ history with earthquakes and hurricanes.¹⁵¹

148 Hastings, Anne and James Kurs. Email Interview. 14 April 2016.

149 Hastings, Anne and James Kurs. Email Interview. 14 April 2016.

150 Hastings, Anne and James Kurs. Email Interview. 14 April 2016.

151 Hastings, Anne and James Kurs. Email Interview. 14 April 2016.

Enabling environment components

MiCRO is establishing **partnerships** that enable the delivery of “value-added” service to policyholders which help them find solutions to other challenges they face, such as price risk and crop quality improvement.¹⁵² Example: Fonkoze’s 46 branches are subdivided into “solidarity centers,” groups of 40-60 women who meet twice a month to repay their loans, learn savings and business-building tips, and discuss issues affecting their lives. This is the forum through which Fonkoze communicates about MiCRO’s micro-insurance product, called Kore W, or “Reinforce You” in Creole.¹⁵³

1.11. La Positiva Seguros (LA POSITIVA)

Background Information

La Positiva is an insurance company in Peru that offers agricultural insurance. Along with MAPFRE Peru, La Positiva is working together with the Ministry of Agriculture on the Seguro Agrícola Catastrófico, which is a fully subsidized product for the most vulnerable regions of Peru. The product is provided jointly between the two insurers and the modality of the contract has gone from annual to biannual to provide more certainty to the insurance companies. Claims to final beneficiaries are being done through savings accounts.¹⁵⁴

Beneficiaries: Farmers (mostly poor farmers)

Extent of Coverage: Between 100 to 200 US dollars per hectare.

Peril Insured: Drought, low temperature, hail, high temperatures, humidity excess, flooding, freezing, strong winds, plagues, and diseases.

Design Elements: This project stands out because of the commercial association between an insurer and a field-based organization that is in close contact with farmers and thus familiar with and advocates for needs and rights.

Impact on Resilience

No Information Available

Challenges¹⁵⁵

Developing alternative distribution for rural areas is a difficult task that involves several steps:

(1) The product design initially wanted to **cover too many risks creating a complex product** that was hard to understand for both the agents and the clients – In the end the initial product had to be simplified to improve the experience particularly for the channel.

(2) The **training of a rural distribution channel** and its channels took several attempts to try a diversity of approaches – from presential, to manuals, to online platforms.

(3) The **IT system** to monitor and support the distribution outlets had to be developed to be able to provide the right information and to enable live enrolment.

(4) The **payment collection** became an issue as different mechanisms had to be set up to facilitate the agents to deposit the premium to the insurance company.

(5) **Communication and promotion** involved testing different approaches to create the right messages to the farmers, radio spots were developed to disseminate through community radio stations, and wall painting was a more effective means to attract the population of rural populations.

(6) The **activation and maintenance of rural channels** involves a close follow-up with the distribution channels and its agents, and also meant improving the incentive schemes for agents.

152 MiCRO, 2016

153 Mercy Corps, 2016

154 Impact Insurance, 2016

155 Interview with José Miguel Solana, Mail Interview, 21 April 2016

Success Factors¹⁵⁶

The most important component, and the reason why the project was selected for support, was the **partnership with an alternative distribution channel like the Water boards**. These structures are present in all rural areas of the countries and they are in charge of cashing the fees for the irrigation service to farmers.

Understanding the registries of users of these organizations was key as there were duplicate registrations that could increase the expected outreach, therefore misleading the estimations about the target audience.

Carrying out an initial **study to understand needs and develop the product and communication tools** was key to kick off activities. The insurance company had to create a division and enable a team to operate this product as it was a very different structure from the rest of the organization – this change in management initially took significant resources and time.

The initial product tried to **serve the needs of farmers in terms of risk** based on the information from the baseline study. The organization had a true commitment to test ideas and to invest resources in developing this market. The team has built an experience that is very relevant to be able to successfully launch this kind of products to the market.

Enabling environment components¹⁵⁷

Insurance regulation in Peru has been very conducive to improve the environment for microinsurance. Furthermore there has been a strong **interest by national development institutions** like Agrobanco and the Ministry of Agriculture to develop agricultural and rural insurance. The organization participated in several initiatives organized by the Facility like workshops on client value, a peer exchange with Old Mutual in South Africa, innovations fora and several other initiatives, which helped it to improve its own capacity and to think about the problems faced during the implementation. They could have further benefitted from a more **structured technical assistance** in terms of project management and specific interventions to improve the quality of the implementations and the results.

156 Interview with José Miguel Solana, Mail Interview, 21 April 2016

157 Interview with José Miguel Solana, Mail Interview, 21 April 2016

1.12. Livelihood Protection Policy (LPP)

Background Information ^{158,159}	<p>The LPP is an insurance product designed to protect the livelihood of poor and vulnerable individuals against potential risks brought about by erratic weather patterns caused by climate change, and facilitate their financial stability. It is a weather-indexed microinsurance product, now sold in Grenada, St. Lucia and Jamaica. The policy seeks to provide poor and vulnerable individuals with financial support within a short period of time so as to enable them to start rebuilding their assets after an extreme weather event. The scope of the programme, by not restricting itself to just farmers, but everyone falling within a low income group, offers a greater accessibility and facilitates the development of a more resilient, financially stable community.</p> <p>Beneficiaries: A broad swath of low-income people are exposed to weather risk</p> <p>Payout: The policy pays out in a structure that could either cover up to four “small” events, with a return period of 15 years, two “medium” events with a return period of 20 years, a mix of small and medium events until the exhaustion of the annual limit or one major event with a return period of 25 years.</p> <p>Perils Insured: Losses caused by wind and excess rain</p>
Impact on Resilience	It has had a positive impact on the poor, for example: quick payout for recovering, income smoothing after a disaster, and helping raise the risk awareness. ¹⁶⁰
Challenges	<p>Cost: This product is sold at market price without premium subsidies, but the poor have other financial expenses to manage, e.g. food, clothing, and education. Insurance has to make way for these basic needs.¹⁶¹</p>

158 Climate Risk Adaptation and Insurance in the Caribbean, 2014

159 MCII, 2016b

160 Wang, Weijing. Email Interview. 21 April 2016.

161 Wang, Weijing. Email Interview. 21 April 2016.

Success Factors¹⁶²

Several elements contributing to the **outreach** of the poor:

- Very low operation cost, making the product good value of money
- Very easy settlement process: no claim procedure, no loss adjustment. The vulnerable will receive the payout automatically
- Simple product, easy to understand
- The vulnerable can buy the insurance any time with flexible sum insured, depending on the money they have
- The product is distributed through credit unions and farmers associations, to take the advantage of their network and proximity to farmers
- Intensive consultation was carried out during product design, to best reflect the needs of the poor and vulnerable
- Good product and good service are fundamental factors in reaching the poor and vulnerable. In addition to that, the following factors might be helpful too:
- Farmers' education, including official training by project team or Credit Unions, but also including communication among farmers
- Bundling with credit, if there is good demand on the loan
- Passionate sales people: People who actively advocate and sell the product, either because of the passion for the poor or because of the work itself, can increase sales

Enabling environment components¹⁶³

Government support, such as regulatory approval, public awareness, financial supports and data sharing/confirmation

Community-based capacity building, conducted through disaster management committee or farmers associations, for instance, was helpful to enhance the awareness on risk management and insurance.

162 Wang, Weijing. Email Interview. 21 April 2016.

163 Wang, Weijing. Email Interview. 21 April 2016.

2. MESO LEVEL

2.1. PlaNet Guarantee

Background Information

In partnership with EARS, PLANET GUARANTEE has designed three drought index products. The scheme operates in Benin, Burkina Faso, Mali and Senegal. The insurers, reinsurers and delivery channels vary between countries.¹⁶⁴ PlaNet Guarantee's focus is low-income populations with one to two hectares on average which stands for 80 per cent of producers in Western Africa. These populations face an 'absolute' climate risk with no production in case of drought when capital intensive production may suffer a drought event (irrigation, agro-technologies, etc.) and suffer a 'relative' climate risk, i.e. volatility in yields.¹⁶⁵

Scheme details¹⁶⁶:

Benin: Weather satellite-based index insurance (maize and cotton)

Burkina Faso: Satellite-based weather index insurance (maize), area yield index insurance (cotton)

Mali: Satellite-based weather index insurance

Senegal: Weather station-based index insurance (maize, groundnut)

Beneficiaries: Farmers

Payout: Benin payout in 2013: \$2,223 ; Burkina Faso: 60 (2013, maize) ; Mali Payout: \$7,615 (2013) ;

Senegal Payout: \$31,215 (2013)

Peril Insured: Drought

Impact on Resilience¹⁶⁷

Quotes from farmers which demonstrate the positive impacts:

Nimna Diayite, president of maize producers cooperative (FEPROMAS), Senegal.

"Our partnership with PlaNet Guarantee since 2012 has been really positive and we hope to strengthen it in the upcoming years. We have been, for a long time, in search of a way to protect ourselves against the risk of bad harvest due to climate hazard, and PlaNet Guarantee brought us the index insurance solution...This compensation has been really useful; it allowed us to repay the credit to the bank and save some money that will serve for other useful purposes. We hope this initiative will be extended to farmers that couldn't benefit from it this year".

Seynabou Ndao, groundnut producer, Senegal

"PlaNet Guarantee gave the co-operative more than five million CFA in pay-out, and each farmer that had received input was given 15,000 CFA." Seynabou Ndao pays 25,000 CFA to the co-operative per year for inputs and insurance. Instead of spending the 15,000 CFA per farmer payout, the co-operative received for lost harvest last year; the money was saved collectively to cover this year's costs at the start of the season. "We were wise to save money. It would have been hard at this time if we didn't have the saved money from the insurance...The farmers that did not join the programme last year, now they see the benefit, and they also want to join".

¹⁶⁴ IFC, 2016b

¹⁶⁵ Kara, Anaar. Email Interview. 15 April 2016.

¹⁶⁶ Kara, Anaar. Email Interview. 15 April 2016.

¹⁶⁷ Kara, Anaar. Email Interview. 15 April 2016.

Challenges

Creating a market where it did not previously exist: PlaNet Guarantee is mainly involved in Francophone West Africa where the market for index insurance did not exist at all. The initial challenge was creating these markets, working with CIMA authorities to create the framework and working in the absence of data to build products.¹⁶⁸

High costs: Reinsurers price the contracts on a short term basis and add loadings which are too high relative to the capacity of farmers to pay.¹⁶⁹

Resources for Capacity Building: The need for means to conduct marketing, training and capacity building activities.¹⁷⁰

Establishing a regulatory framework: There is a need to have a regulatory framework that would allow for dematerialization of insurance contracts, premium subsidies, etc.¹⁷¹

Low success with initial Pilot (Benin)¹⁷²

Conflict: leading to political and financial crises impacting banks' and other institutions' ability to provide support (Mali)¹⁷³

High expenses related to installing a network of weather stations are an impediment to scaling up. (Senegal)¹⁷⁴

168 Kara, Anaar. Email Interview. 15 April 2016.

169 Kara, Anaar. Email Interview. 15 April 2016.

170 Kara, Anaar. Email Interview. 15 April 2016.

171 Kara, Anaar. Email Interview. 15 April 2016.

172 IFC, 2016b

173 IFC, 2016b

174 IFC, 2016b

Success Factors	<p>Design Elements that led to success:¹⁷⁵</p> <ul style="list-style-type: none"> • Index insurance for accessibility: PlaNet Guarantee opted for index insurance to render the products more accessible for vulnerable populations and to avoid high management and administrative expenses associated with traditional insurance. • Index insurance for reduction of admin costs: An index insurance revolves around an independent parameter and reduces administrative costs as well as reducing moral hazard and adverse selection and delay in claims management. <p>Capacity Building: The products are accompanied with sensibility, training and capacity building programmes to help partner distribution channels and their clients (cooperatives, farmer's organisations, MFIs) understand the insurance.</p> <p>Other success factors include¹⁷⁶: Innovative use of technology – satellite information to design products in absence of yield and weather station data; use of index as opposed to non-parametric insurance; participatory approach to product development – conducting focus groups and working with farmers to design products; position as an intermediary - ability to link poor and vulnerable with insurance and reinsurance industry; strong partner network. The next frontier will be the development of bundle products coupling climate risk and health insurance in rural context to reduce the volatility in income</p> <p>The insurance product helps secure the investment, and adding additional products and services (such as risk mitigation practices) will help increase the access to credit.</p> <p>Success factors given by the International Financial Corporation¹⁷⁷: Partnership with national insurance company (Benin); partnership with ministries, which can e.g. support scaling up efforts (Benin); having a variety of distribution channels: i.e. MFIs, banks, agrodealers, cooperatives (Benin); partnership with committed cooperatives that help with premium support (often of its members) (Mali); flexibility of index product (able to adjust and adapt) to meet demand and needs of farmers (Senegal).</p>
Enabling environment components ¹⁷⁸	<p>International organizations and donor support to build markets, e.g. providing financial support for capacity building</p> <p>Common insurance regulation framework in the various countries (Code CIMA); the next step is to develop underwriting via mobile technologies.</p>

¹⁷⁵ Kara, Anaar. Email Interview. 15 April 2016.

¹⁷⁶ Kara, Anaar. Email Interview. 15 April 2016.

¹⁷⁷ IFC, 2016b

¹⁷⁸ Kara, Anaar. Email Interview. 15 April 2016.

2.2. Index Based Flood Insurance Program (IBFIP)

Background Information

Launched by Oxfam in 2012, the IBFIP involved several private actor and meso-level institutions to address the impacts of catastrophic flooding in Bangladesh. Over 1,600 poor and vulnerable householders, in 10 villages in the river basin areas of Sirajganj, were covered by the index-based flood insurance. The project is now being implemented by a local NGO, and a leading insurance company in Bangladesh is working as the insurer.¹⁷⁹ The policy holder is a meso-level institution that invests resources in and works with poor households.¹⁸⁰

Beneficiaries: Beneficiaries included poor and extremely poor households that depend on daily wage labor and do not own cultivable land as well as households headed by widowed or abandoned women.

Extent of Coverage: Tangible damage – where a monetary value can be assigned.

Payout: First payout in 2014¹⁸¹

Peril Insured: Flood

Impact on Resilience

No distress sales: The payout amount is helping the affected household to meet up their immediate liquidity/funding gap, therefore they do not need to go for distressed sale about the labour or productive assets. We found that, the affected communities who have received the payout are using the amount with their own means for undertaking repairing the damaged houses, farming, and vegetable cultivation and also for poultry, which provided them extra income, thus impacting by adding new dimensions in their resilience.¹⁸²

With floods severely affecting the lives of people living in the flood-prone areas of Sirajganj district each year, the insurance payout helps them cope with the economic fallout due to lack of livelihood options. The villagers spend the money to repair their homes, invest in seeds or fertilizers to grow more crops and enhance yields.¹⁸³

¹⁷⁹ Islam, 2015

¹⁸⁰ Akhter, M. B. Email Interview. 13 April 2016.

¹⁸¹ Swiss Re, 2014

¹⁸² Akhter, M. B. Email Interview. 13 April 2016.

¹⁸³ Islam, 2015

Challenges

Overall, the product design seems viable technically while **not optimal for its current 'client'**, MMS. Some potential for improvement at the current location remain and there is a need for further learning in the current district. The technical viability of the product should not be overlooked as it has an impact on commercial viability.¹⁸⁴

No comprehensive approach taken - not possible to scale up¹⁸⁵

Not affordable for an individual poor household because of high level premium.¹⁸⁶

High costs of data: Product is designed and payout is dependent on scientific database, therefore there is a high cost of data.¹⁸⁷

In-depth understanding of the protection needs is crucial: Since all meso-level clients may have different coping strategies, the segmentation of clients should be at the centre of the product designer and get the intermediary's focus. Only by understanding these needs and segmentation can a product, or rather a set of products, offer client value and ensure adequacy thus take-up.¹⁸⁸

Approaching the product design from a fund allocation perspective is important and developing different layers of intervention may represent one part of this optimization exercise.¹⁸⁹

Insurance might not be the ideal solution for the peril: Delivering value to Chaur inhabitants through insurance seem an inadequate solution since Chaur inhabitants get impacted every year by floods, and support such events is not best delivered through insurance solutions.¹⁹⁰

Misunderstandings due to meso level solution: The payout by step, if the benefits are directly provided in cash to the families, may create misunderstanding. People may not understand why they do not get financial support when they are impacted by floods while the trigger is not hit.¹⁹¹

184 Oxfam, 2013

185 Anthony and Wilhelm. Phone Interview. 14 April 2016.

186 Akhter, M. B. Email Interview. 13 April 2016.

187 Akhter, M. B. Email Interview. 13 April 2016.

188 Oxfam, 2013

189 Oxfam, 2013

190 Oxfam, 2013

191 Oxfam, 2013

	<p>Lack of complexity to match the needs of the target group: The product could have been more complex to match the exposure and reflect, for example, the impact of floods occurring at different time during the monsoon period as the economic impact differs between early/normal/late floods.¹⁹²</p> <p>Lack of initial assessment: The objectives should have been to assess MMS's current response and financial burden in case of floods and the objectives of MMS to support the community better. This may be the most important comment on the design.¹⁹³</p> <p>Local ownership: Oxfam was de facto leading this project. While all stakeholders bring specific expertise, the dynamic in the group has to change in order to match the objective of market development. Through the different project phases, this transfer of leadership should take place (i.e. from leadership to facilitation). This may be achieved by engaging the insurer/reinsurer in the drafting of the strategy and capacity building process.¹⁹⁴</p> <p>Capacity building: Further capacity building is required among all the project stakeholders to ensure that the contribution to the project and stakeholders' expertise are optimal. The group can then address all challenges encountered in the project and think about broader and future issues. Each stakeholder should assign a flood project champion in order to build the capacity and lead this initiative within his/her organization.</p>
Success Factors ¹⁹⁵	<p>Data Availability: Availability of accurate data through IWM (based on flood damage assessment and flood data generated by Flood Hazard Model).</p> <p>Strong partnerships: Oxfam's presence and experience in the target area: (previous project work in this area under REE-CALL flagship programme was an enabling factor as pre-established relationships created an enabling environment for claim distribution process). The project has been equitably participated in by a number of important actors which is the important success factor that helped to reach the poor and vulnerable. The players are namely: Oxfam, Institute of Water Modelling (IWM), Centre for Integrated risk Management (CIRM), Pragati Insurance and local NGO Manab Mukti Sangstha (MMS).</p>
Enabling environment components	See success factors.

192 Oxfam, 2013

193 Oxfam, 2013

194 Oxfam, 2013

195 Akhter, M. B. Email Interview. 13 April 2016.

3. MACRO/PAN NATIONAL LEVEL

3.1. Caribbean Catastrophe Risk Insurance Facility (CCRIF)

Background Information CCRIF began as a response to a request to the World Bank by Caribbean governments for assistance to design and implement a cost-effective risk transfer programme after Hurricane Ivan caused billions of damages to the Region in 2004. Therefore, the Caribbean governments had ownership of CCRIF from the beginning and were committed to becoming members. It is the first multi risk pool, with sixteen Caribbean countries which joined in 2007. The facility “provides the member countries with access to affordable and effective coverage at a significantly lower cost than that available in the open market.”¹⁹⁶ The pooling of individual risks and the resulting diversified joint mechanism allows for this reduction in costs thus benefitting the countries and facilitating a more efficient response to devastating natural disasters. CCRIF functions as a mutual insurance company that is controlled by participating governments. Under the CCRIF scheme, member countries can buy liquidity coverage that provides support to the national budget subsequent to a major natural disaster such as an earthquake or a hurricane. This provides governments with adequate time to assimilate the financial and infrastructural resources to carry out efficient and durable long term reconstruction undertakings. The facility has the support of the international reinsurance markets and provides coverage at a significantly lower cost than what the Caribbean governments would have to pay if they sought to buy such insurance individually from the market.¹⁹⁷

Beneficiaries: 16 member governments

Coverage: Parametric

Payout: Proportional to the estimated impact of the event on the budget of a particular country

Peril Insured : Earthquake and Hurricane risk

Impact on Resilience Whilst CCRIF policies with Governments do not stipulate what payouts provided to countries are to be used for, countries who have received payouts have used those funds to pay government salaries right after an event disrupted normal operations – for example, following the 2010 earthquake in Haiti, the CCRIF funds – received two weeks after the event – and the first form of liquidity received, was used to cover the salaries of key emergency personnel, thereby “keeping the wheels of government turning” and assisting those individuals most in need of critical health services; other governments have used the funds to repair critical infrastructure, including bridges and roads, and institute mitigation measures to increase their country’s resilience to natural hazards.¹⁹⁸

¹⁹⁶ GFDRR, 2011

¹⁹⁷ GFDRR, 2011

¹⁹⁸ Anthony, Isaac. Email Interview. 19 April 2016.

Challenges¹⁹⁹

Affordability of adequate coverage: Each year member countries are faced with fiscal and budgetary constraints and must make decisions regarding allocation of funds to CCRIF policy premiums. While most members use national funds for premiums, one-member country (Haiti) has been reliant on donor support from the Caribbean Development Bank, and previously the World Bank, to cover its policy premiums. CCRIF believes that adequate coverage would be 20 to 25 per cent of the overall government exposure to hurricane, excess rainfall and earthquake risk and many countries do not have adequate coverage. Countries purchase the coverage for which they can afford the premiums. Being able to afford adequate coverage remains a challenge.

Risk transfer is not sufficient: There is a perception among some stakeholders that CCRIF insurance is sufficient to address a country's natural hazards. CCRIF continues to stress that risk transfer like CCRIF insurance must be only one part of a country's disaster risk management framework and must be complemented by risk reduction actions.

Level of payout: There is also a common perception that a policy payout should cover all losses after an event, and there is often concern if a policy is not triggered after an event that may have affected many people, or if the payout is deemed insufficient. It is only by understanding the specific terms of a country's policy that this can be clarified.

Success Factors²⁰⁰

Quick payouts: Payouts can be calculated and made very quickly because loss adjusters do not have to be relied on to estimate damage after a catastrophe event, which can take months or years. All CCRIF payouts are made within 14 days after a triggering event.

Easy administration: The member governments do not have to provide detailed asset values and other information prior to the insurance programme commencing; this is important since very often these detailed data are not available in developing countries.

Objective calculation of payout: Calculation of payouts is totally objective, based on a few simple input parameters published widely in the public domain from the globally-mandated bodies responsible for estimating those particular parameters, and a set of formulae which form part of the policy.

Tailor made risk profiles: The risk, which drives policy pricing, is uniformly defined and is based on natural hazard risk profiles of each country.

Risk pooling among countries: Through pooling of risks among countries and building a strong capital base supplemented by reinsurance CCRIF is able to offer insurance at the lowest possible rate; which can be up to 50 per cent less than what individual countries would be able to obtain individually.

Relevant payouts: Unlike traditional parametric insurance products that are based only on event parameters, the CCRIF model estimates hazard-induced losses to the built environment to determine the triggering of policies and calculation of payouts. This results in more relevant payouts.

Low premium rates: CCRIF is committed to keeping policy premiums as low as possible and provides discounts to member countries each year.

Close partnership with government: Each year CCRIF works closely with governments to determine the best policy options for the premium they can afford to increase the likelihood of a policy being triggered and to maximize the value of payouts – for that premium.

Dynamic and responsive to needs: CCRIF is dynamic and responsive to current and potential members' needs. The excess rainfall product was developed in response to stakeholders' needs for a product that addressed rainfall, which annually causes much damage during storms. CCRIF's hurricane product is based on wind and storm surge and does not take losses due to rainfall into account. Similarly, CCRIF is working on products related to drought and agriculture – because of demands from stakeholders.

Stakeholder involvement: CCRIF involves stakeholders from critical sectors – the ministries of finance and the disaster management and meteorology agencies and others – to increase an understanding of disaster risk management as well as how CCRIF insurance products can play a role.

Enabling environment components²⁰¹

Increased international focus on – and understanding of – risk transfer as a tool for disaster risk management and climate change adaptation (and as most recently included in COP 21 and specifically under Loss and Damage)

Capitalization by donors of CCRIF - CCRIF is capitalized significantly above established national benchmarks for catastrophe insurers. It was operationalized under the technical leadership of the World Bank and with a grant from the Government of Japan, and was capitalized through contributions to a multi-donor trust fund (MDTF) by the Government of Canada, European Union, the World Bank, the governments of the UK and France, the Caribbean Development Bank and the governments of Ireland and Bermuda (itself a member country) as well as the participation fees paid in by members. During the developmental phase of CCRIF, donors' contributions to the MDTF totalled approximately US\$67.4 million. Today donors such as the EU and the Government of Canada have capitalized the MDTF to support Central American countries joining CCRIF

Recognition by Caribbean governments that catastrophe insurance was needed in the region

Linking the disaster management and meteorology communities with the finance sector

Capacity building: Through its Technical Assistance Programme, CCRIF has engaged with regional organizations to build capacity to implement initiatives that increase climate and hazard resilience. CCRIF's engagement as a full partner in disaster management in the region has helped to create a greater awareness and appreciation of its insurance products – thus facilitating the annual policy renewals and uptake of new products.

201

Anthony, Isaac. Email Interview. 19 April 2016.

3.2. African Risk Capacity (ARC)

Background Information

The African Risk Capacity (ARC) was established as a Specialized Agency of the African Union (AU) to help Member States improve their capacities to better plan, prepare and respond to extreme weather events and natural disasters, therefore protecting the food security of their vulnerable populations.²⁰² ARC's Index-based insurance payouts, based on Africa Risk View data, are triggered at or before harvest time if the rains are poor in the case of drought, or as soon as a severe flood or cyclone has occurred in the case of floods or tropical cyclones.²⁰³ ARC Member States currently pay insurance premiums through national budget processes and receive payouts for pre-approved contingency plans. Through insurance and its in-country capacity building programme, ARC provides expertise to and incentives for governments to invest in their emergency planning and response capacities. The payment of premiums from the national budget is simply the last step in a process of building both financial and political ownership and accountability.²⁰⁴

Beneficiaries: African Union Member States

Extent of Coverage: Subsequent to the pledges made by the G7 leaders in 2015, ARC aims to reach 30 countries with \$1.5 billion of coverage against drought, flood and cyclones, indirectly insuring 150 million Africans²⁰⁵

Initial returnable capital: Subsequent to \$90 million of a \$200 million commitment of returnable capital provided by the governments of Germany (through BMZ and KfW Development Bank) and the United Kingdom (through DFID), ARC Ltd issued drought insurance policies totaling \$130 million in coverage for a total premium cost of \$17 million to an initial group of countries (Kenya, Mauritania, Niger and Senegal) in May 2014. Five countries joined the pool in May 2015, increasing the drought coverage to \$190 million for the 2015/16 rainfall seasons.²⁰⁶

Payout: In January 2015, the first payouts of just over \$26 million were made to Mauritania, Niger and Senegal, subsequent to droughts in these countries.²⁰⁷

Peril Insured: Drought, floods and cyclones

202 ARC, 2016b

203 ARC, 2016b

204 ARC, 2016a

205 ARC, 2016a ("ARC: Counting Population Covered by Climate Risk Insurance, 20 October 2015, subject to revision for G7 purposes. This coverage estimate is based on implementing ARC's Agenda for Action as described in this document including premium financing and replica coverage.")

206 ARC, 2016a ("DFID have committed a total of GBP 100 million and KfW EUR 50 million to ARC. An additional commitment is anticipated from KfW towards ARC Ltd total returnable capital needs of \$270 million to 2020.")

207 ARC, 2016a

Impact on Resilience

There is no proof of the poor being covered. This is something that is currently being worked on through a counting methodology with BMZ.²⁰⁸ ARC has a contingency planning component that specifies exactly how insurance payouts actually reach the most vulnerable. This depends on countries. Sometimes the money is used for humanitarian relief operations that include:²⁰⁹

- subsidized sales
- food distribution
- scaling up safety net programmes
- cash transfer programmes

In some cases, Governments are looking at insurance as a tool to guard against budget dislocation and assist populations more effectively because it provides immediate liquidity.²¹⁰ ARC combines four elements, early warning systems, contingency planning, climate risk insurance and climate adaptation finance to provide governments with the support required to access immediate funds for early, systematic and planned responses.²¹¹

The early financing immediately following a weather shock, linked to predefined national contingency plans, is key to improving the efficiency of disaster response, and to building the capacity of countries to lead their own responses and reduce their reliance on the international appeals process for assistance.²¹²

208 Kassam, Fatima. Phone Interview. 15 October 2016.

209 Kassam, Fatima. Phone Interview. 15 October 2016.

210 Kassam, Fatima. Phone Interview. 15 October 2016.

211 ARC, 2016a

212 ARC, 2016a

Challenges²¹³

Capacity building: The agency provides capacity building necessary to get governments to sign a contract which involves modeling weather risk and developing a contingency plan together. It is important to educate the governments about risk finance so that they are more critically aware to make informed decisions about the right agency.

Affordability: It is important to assist with building the ability of countries to pay premiums. Premium financing is not a popular option but it's necessary in order to get to the scale that is needed to cover larger numbers.

Coordination with partners: It is necessary to have a sustainable coordinating capacity, in the absence of satisfactory operational capacity, as a large part of humanitarian operations are conducted by NGOs or international organizations. It is also important for the governments to coordinate with them to ensure relief efforts are carried out in a smooth and expeditious manner. Insurance can provide an opportunity for agencies such as the WFP or MFF or Oxfam to expand in emergency aspects of insurance.

Alignment with Governments: ARC is looking at [replicable, rapid aid] coverage, where a government, which is established in the pool and cannot absorb \$60 million for an operation, has the option to partner with, e.g., WFP. Agencies, such as the WFP, can avail of a matching policy so they get a pay out when the government gets a payout, and it's aligned with government contingency plans. Presently, humanitarian systems don't really align with governments. This form of replicate coverage essentially doubles the number of people insured in the countries that have access to this form of insurance.

Premium support: It is necessary to build the capacity of countries to accommodate for this in their budget line every year. From our findings, it is evident that in the first couple of years it is accommodated for, but as more peril is added, it becomes expensive (Kassam, Fatima. Phone Interview. 15 October 2015.). One of the things we are looking at is a 5 year plan where premium support diminishes over time. This would be tied to programmes on a bilateral basis with a country, such as EDF, working for premiums.

Success Factors²¹⁴

Bringing the **humanitarian assistance community into government led programmes**, which means they have to be comfortable not only with the African leadership and governance, but also with paying premiums. This is especially important for international organizations that already contribute to the budget and are voluntarily funded.

Enabling environment

Components

There needs to be a **mechanism of social protection** in place in the form of a safety net programme or adequate infrastructure, which may not be extremely essential for ARC or insurers but might be an important element for development institutions.²¹⁵

213 Kassam, Fatima. Phone Interview. 15 October 2016.

214 Kassam, Fatima. Phone Interview. 15 October 2016.

215 Kassam, Fatima. Phone Interview. 15 October 2016.

3.3. Mexico's National Disaster Fund (FONDEN) & AGROASEMEX

Background Information

In 1996, the Government of Mexico established a Natural Disaster Fund (FONDEN) within the Civil Protection System in response to the continued budget reallocations, scaling back of investment programmes, and slow deployment of funds for post disaster assistance. In 2011, FONDEN placed an indemnity-based excess of loss insurance cover of US\$400 million in excess of US\$1 billion, issued by Agroasemex, a state-owned insurance company. It was renewed in 2012 for US\$425 million with the same priority. Agroasemex issues an insurance policy to FONDEN and enters a reinsurance facultative with a consortium of reinsurers on the international reinsurance market. The insurance policy leverages FONDEN's financial capacity by transferring excess losses to the international reinsurance market. It is one component of Mexico's integrated disaster risk financing and insurance strategy.²¹⁶

Beneficiaries: Federal and state governments (whose aim is to protect small producers who are affected by droughts)

Payout: FONDEN's resources are distributed through the Federal Budget. The Program for Reconstruction is FONDEN's primary budget account. It channels resources to the FONDEN Trust and the Emergency Relief Fund, which in turn create specific financial accounts for each reconstruction program.²¹⁷

Peril Insured: Post disaster response and reconstruction expenditures

Design features: When the Government of Mexico issued a second catastrophe bond, it was the first country to use the World Bank MultiCat program, a cat bond platform that allows for the issuance of cat bonds with multiple perils, regions, and countries. Mexico issued a US\$290 million multi-peril cat bond in October 2009 for coverage against earthquake and hurricane in different regions of the country.²¹⁸

Impact on Resilience

The scheme does not specifically target the poor. It aids the Government in its disaster relief efforts and enables it to be more prepared in order to mitigate loss and damage. The poor may benefit due to the enhanced capabilities of the government to plan and be better prepared for natural disasters with the help of FONDEN, but how exactly the Government chooses to use this enhanced preparedness to accommodate the needs of the poor and vulnerable remains to be seen.

²¹⁶ GFDRR, 2013b

²¹⁷ World Bank and GFDRR, 2012

²¹⁸ World Bank and GFDRR, 2012

Challenges

Increased Funding Needs: The high variability of disaster losses has given rise to funding needs that have exceeded FONDEN's resources in five of the last 14 years. As a response, the GoM enabled the FONDEN Trust in 2004 to pay premiums and receive loss payments from risk transfer instruments.²¹⁹ Moreover, FONDEN requires that state governments must finance, on average, 50 per cent of the cost for reconstruction of local infrastructure through their own budget, which has proven challenging.²²⁰ "Despite FONDEN's stable annual budget appropriation, variations in funding needs related to the occurrence of one or multiple disasters means that shortfall can occur in any given year. To manage the volatility of demand on its resources, FONDEN is allowed to transfer risks through insurance and other risk transfer mechanisms such as catastrophe bonds."²²¹

Strategies and Lessons learned through FONDEN:²²²

Developing a clear inter-institutional framework is essential

- Well-defined rules and funding channels allow for expedited, needs-based expenditures
- Guidelines are continually updated to adapt and streamline procedures
- Continuous communication between agencies is vital
- IT and governance innovations allow efficient monitoring and allocation of expenditures as well as maximization of the impact of disbursed funds
- Geocoding and digital imagery improve monitoring and oversight
- Matching funds and insurance requirements incentivise prevention

National disaster funds can promote ex-ante disaster risk management (DRM)

- Mexico: the establishment of FOPREDEN enabled the government to channel funds for the full DRM cycle through one budgetary tool
- Investments were simplified and more attention was given to risk reduction, retention and transfer

219 FONDEN, 2013

220 World Bank and GFDRR, 2012

221 World Bank and GFDRR, 2012

222 FONDEN, 2013

Success Factors²²³**Developing a clear inter-institutional framework is essential.**

Innovative, market-based risk transfer solutions help leverage additional financing for emergency response and reconstruction following extreme losses.²²⁴

IT and governance innovations allow efficient monitoring and allocation of expenditures, maximizing the impact of disbursed funds.²²⁵

National disaster funds can promote ex-ante disaster risk management (DRM).²²⁶

Shift from ex-post response to ex-ante disaster risk management: The Interior Ministry, SEGOB, holds responsibility for managing this process²²⁷:

- SEGOB issues a declaration of a natural disaster in order for FONDEN resources to be accessible by affected federal agencies or state governments.
- After declaration has been made, the federal agencies and/or state government(s) can apply for funding and the damage assessment process can begin.

Innovative software to enhance accuracy of damage assessment:

FONDEN uses innovative information technology, such as geocoding and digital imagery, to ensure efficiency and accuracy of the damage assessment process.

Efficient process of transferring funds: Based on the findings of the damage assessment, SEGOB reviews the related funding applications, appropriate allocations are determined; the Ministry of Finance and Public Credit is requested to convene the FONDEN Technical Committee to authorize transfer of funds to a subaccount for the reconstruction program in the FONDEN Trust. From this subaccount, resources are transferred to the service providers implementing reconstruction works.

Financing of Reconstruction Costs:

FONDEN resources finance 100 per cent of the reconstruction costs for federal assets and 50 per cent of those for local assets (the first time that the assets are impacted by a disaster – this percentage declines thereafter if insurance is not purchased for reconstructed assets).

Programmes such as FONDEN and FOPREDEN represent a new integrated approach to disaster management and policy in Mexico's educational sector. They:

- address infrastructure of schools, universities, historical landmarks, artistic buildings and archaeological sites;
- foster co-operation between federal, state and municipal agencies;
- use site selection, mappings and other assessment tools to monitor their implementation; and
- promote community awareness and education of natural disaster issues.

223 FONDEN, 2013

224 FONDEN, 2013

225 FONDEN, 2013

226 FONDEN, 2013

227 World Bank and GFDRR, 2012

Enabling
environment
components

Clear framework for damage and loss assessments, resource allocation, funding channels and implementation time lines between federal and state government agencies after a disaster. This allows the GoM to manage emergency response and reconstruction funds efficiently and transparently, as well as reinforces trust and discipline.²²⁸

Working in close collaboration with the Ministry of Finance and Public Credit, FONDEN has established a strong link between its technical and financial arms for natural disasters: The National Centre for Disaster Prevention (CENAPRED) acts as the technical arm for disaster risk reduction and works closely with FONDEN, the financial vehicle for disaster management.

See also success factors above.²²⁹

228 FONDEN, 2013

229 World Bank and GFDRR, 2012

3.4. Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI)

Background Information

PCRAFI, launched in 2007, aims to provide the Pacific Island Countries with disaster risk modeling and assessment tools, and to engage in a dialogue with them on integrated financial solutions for the reduction of their financial vulnerability to natural disasters and to climate change. The initiative is part of the broader agenda on disaster risk management and climate change adaptation in the Pacific region.²³⁰ PCRAFI initiated an insurance pilot in 2013 as part of the Disaster Risk Financing and Insurance Program (DRFI). The scheme focuses on developing a national disaster risk financing strategy, making available post-disaster budget execution, and insurance of key public assets to contribute to reconstruction financing.²³¹ The scheme covers emergency losses, which are estimated using a model representation of the actual event through a risk assessment tool based on various hazard parameters and a calculation of the total modeled physical damage.

Beneficiaries: The members of the Pacific disaster risk management and climate change adaptation community are the immediate beneficiaries of the scheme. These include the National Disaster Risk Management Offices, the Ministries of Environment and other national agencies responsible for urban planning, agriculture, health, water and energy. In addition to these local non-governmental organizations participating in community based disaster risk management, along with regional technical centers such as the Secretariat of the Pacific Community, SPC/SOPAC, also benefit.²³²

Extent of Coverage: Countries have the option of choosing between three layers of coverage depending on the frequency of the events.²³³

Payout: The first catastrophe risk insurance payout of US\$ 1.27 million was made within two weeks of Tropical Cyclone Ian, a category 5 cyclone that hit Tonga on 11th January, 2014 and caused extensive loss and damage across the country.²³⁴ Vanuatu received a payout of US\$1.9 million subsequent to the catastrophic Tropical Cyclone Pam that hit in March 2015. The payout was received within seven days of the cyclone hitting.²³⁵

Peril Insured: Natural Disasters in the Pacific Island Countries

Design Elements: This scheme differs from a conventional insurance scheme in its payout structure, which is not based on actual incurred losses but on the results of the model. This allows for a much faster payout.²³⁶ The Pacific DRFI program is a specific application of the data collected under the Pacific Risk Information System (PacRIS), which was developed as a part of the Pacific Catastrophe Risk Assessment and Financing Initiative. The information collected under the PacRIS is detailed and unique to every country, providing valuable information about the assets, the populations, the hazards and the potential risks. This information allowed for a detailed quantitative assessment of the potential costs of natural disasters to the national budget, and instigated the development of sovereign disaster risk financing instruments.

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- 228 FONDON, 2013
 229 World Bank and GFDRR, 2012
 230 PCRAFI, 2016
 231 World Bank, 2015
 232 World Bank, 2015
 233 World Bank, 2015
 234 World Bank, 2015
 235 World Bank, 2015
 236 World Bank, 2015

Impact on Resilience	<p>The funds received from the insurance payout support the government in developing efficient strategies to prepare for disasters and mitigate the losses caused, thereby enabling a more effective response. This affords people affected with the opportunity of a swift recovery and a return to their everyday lives with minimum delay.</p> <p>No concrete impact found.</p>
Challenges ²³⁷	<p>Acquiring Appropriate Real-Time Event Data: Parametric triggers require reliable, independent sources of real-time event data of sufficient scope to calculate loss.</p> <p>Estimating Government Emergency Losses Caused by Natural Disasters: The pilot provides coverage against post-disaster emergency losses, which are a portion of the total losses experienced by government, which are themselves a portion of the total economic losses suffered by the affected country. Because the pilot was structured as a modelled-loss (parametric) risk transfer, as opposed to the indemnity risk transfer typical of traditional insurance, the catastrophe risk model had to be able to estimate government emergency losses.</p> <p>Ensuring Consistency between the Risk Analysis and Post Event Process: Ensuring the process for calculating a loss after an event was replicable for the risk analysis (the probabilistic calculation of expected loss and probable maximum loss to the transaction layers).</p> <p>Coordinating the Transaction Process: The introduction of additional parties into the transaction preparation process increased the amount of coordination needed. One central party had to ensure that the structuring was completed with the necessary inputs from all sides and in a timely manner. In this case, the World Bank created a technical transaction team that undertook this role. Formally identifying contacts (and contact details) within each stakeholder organization was critical to the delivery of the pilot, as the execution of the transaction documents required review and signature from multiple parties.</p> <p>Negotiating Terms: Agreement on key terms must be reached early in the process of structuring, as negotiation can take several weeks. It is critical that the structuring entity engages the transaction counterparties (and particularly the reinsurers taking the risk) early on in the process.</p> <p>Timing Challenges, including coordinating signatures, seasonality in perils, reinsurance renewal seasons, window of validity of the risk analysis, window of quote validity, timing obligation laid out in the term sheet.</p>

237 World Bank, 2015

238 World Bank, 2015

239 World Bank Group and Pacific Islands Forum Secretariat, 2014

Success Factors	<p>Provided governments with quick cash following major disaster: Evidenced by two successful payouts during pilot phase. Although, payouts were not always triggered (i.e. Solomon Islands), which demonstrates the need to complement catastrophe risk insurance with other financial solutions to cover more frequent, less severe events. Such solutions can be developed through the Pacific DRFI Program, which provides the PICs with technical assistance to help them increase their post disaster financial response capacity. Catastrophe risk insurance products could be refined to allow for more comprehensive coverage.²³⁸</p> <p>Enhancement of Preparedness Capabilities of Public Institutions²³⁹ There has been a marked improvement in the public institutional capacity of individual countries to financially manage natural disasters. Capacity building efforts across the region, undertaken through a combination of regional and national workshops and DRFI country missions, have translated into an enhancement of preparedness capabilities and more effective response strategies, thus mitigating the losses suffered in the wake of natural disasters. The workshops and missions have allowed in depth consultations with key staff members of the Ministry of Finance, thereby facilitating initial discussions on the option of providing technical assistance. In addition to this, several DRFI country profiles have been formulated, providing an overview of the specific tools used within each country along with recommendations for their future improvement. A regional steering committee has been instituted to provide recommendations for the future design of DRFI in the Pacific.</p>
Enabling environment components	<p>Government endorsement/support: All of the participating countries (except The Cook Islands) have made a contribution towards the cost of the premium.²⁴⁰ The Pacific DRFI Program has received high-level government support. The Pacific DRFI Program has been discussed and approved by the cabinet in the respective PICs, showing support at the highest level of government.²⁴¹</p> <p>A set of preconditions that existed, which made implementation of catastrophic risk transfer possible:²⁴²</p> <ul style="list-style-type: none"> • A clear and structured rationale for the regional pooling and transfer of the risk of natural disasters as a consequence of the restricted capacity of the governments of the small island state PICs to spread and absorb catastrophe related loss and damage • A foundation of trust and collaboration within the region • Pre-existing International market standard catastrophe risk models that could assess and predict the nature of the perils and the countries in question, so as to allow for extensive risk assessment and preparedness management • An increased international emergence of a market appetite for Pacific Risk • The pilot insurance program was framed in the context of a broad strategy for disaster risk assessment, management and adaptation to climate change, as a result of five years of dialogue with the PICs under the PCRAFI initiative.

240 World Bank Group and Pacific Islands Forum Secretariat, 2014

241 World Bank, 2015

242 World Bank, 2015

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ANNEX 2

LIST OF INTERVIEWEES

Affiliation	Name	Organisation	Type of interview	Date
IBLIP	Andrew Goodland	The World Bank	mail	05 April 2016
PCIC	Dominico S. Digamon	Philippine Crop Insurance Company (PCIC)	mail	05 April 2016
	Crescencio V. Deligero	Philippine Crop Insurance Company (PCIC)	mail	18 April 2016
SANASA	Ravinda Herath	SANASA	mail	19 April 2016
R4	Richard Choularton	World Food Programme	phone	9 November 2015
	Sophia Belay	Oxfam	mail	15 April 2016
	Gilda Charles	Oxfam	mail	15 April 2016
MICROENSURE	David Dorey	MicroEnsure	mail	15 April 2016
	Richard Leftley	MicroEnsure		
	Stephen Cartwright	MicroEnsure		
	David Dorey	MicroEnsure		
ACRE Africa	Rahab Kariuki	ACRE Africa	mail	19 April 2016
IBLI	Andrew Mude	ILRI	mail	05 April 2016
	Munenobu Ikegami	ILRI		
	Brenda Wandera	ILRI		
	Bryn Davies	ILRI		
MiCRO-HAITI	Anne Hastings	Global Advocate I Uplift (former Microfinance CEO Working Group), Microinsurance Catastrophe Risk Organisation, aka MiCRO	mail	14 April 2016
	James Kurz	Microinsurance Catastrophe Risk Organisation, aka MiCRO	mail	14 April 2016
LA POSITIVA	José Miguel Solana	ILO	mail	21 April 2016
LPP	Weijing Wang	Project Consultant, MCII	mail	21 April 2016
	Severin Francois	EC Global Insurance Agency	mail	23 April 2016
PlaNet Guarantee	Anaar Kara	PlaNet Guarantee	mail	15 April 2016
	Sebastian Weber	PlaNet Guarantee	mail	15 April 2016

IBFIP	M.B Akhter	Oxfam Bangladesh	mail	13 April 2016
	Anisur Rahman Chowdhury	Oxfam Bangladesh		
	Shah Muntamin Mujtaba	Oxfam Bangladesh		
CCRIF	Isaac Anthony	CCRIF	mail	19 April 2016
ARC	Fatima Kassam	ARC	phone	15 October 2015
	Erin Tressler	ARC	phone	30 October 2015
GENERAL INSURANCE EXPERTS	Craig Churchill	ILO Impact Insurance Facility	phone	23 October 2015
	Gaby Ramm	Advisor to UN-GIZ-Insurance Industry Microinsurance/Integrated Risk Management	phone	26 October 2015
	Therese Anthony	Swiss Re	phone	14 April 2016
	Mario Wilhelm	Swiss Re		
	Thomas Loster	Munich Re Foundation	phone	27 October 2015
	Eugene Gurenko	Worldbank	phone	29 October 2015
	Daniel Clarke	Worldbank	phone	11 November 2015
	Verena Treber	Allianz Climate Solutions GmbH (Subsidiary of Allianz SE)	phone	29 October 2015
	Simone Ruiz-Vergote	Allianz Climate Solutions GmbH (Subsidiary of Allianz SE)	phone	28 October 2015
	Paul Kovavs	Institute for Catastrophic Loss Reduction (ICLR)	phone	28 October 2015
	Laurence Bouwer	DELTARES	phone	30 October 2015
	Swenja Surminski	London School of Economics	phone	30 October 2016
	Dan Osgood	International Research Institute for Climate and Society, Columbia University	phone	30 October 2015
	Rupalee Ruchismita	Resilience Design and Research Labs	phone	4 November 2015
	Joanne Lynrood-Bayer	IIASA	phone	5 November 2015
	Reinhard Mecheler	IIASA		
	Craig Hart	Johns Hopkins University and People's University of China	phone	9 November 2015

	Francis Ghesquiere	World Bank	phone	10 November 2015
	Jeremy Tobacman	University of Pensilvania	phone	20 November 2015
	Peter Hoeppe	Munich Re	phone	11 November 2015
	Malgosia Madajewicz	University of Columbia	phone	22 October 2015
	Luc Noubissi	CIMA (Inter African Conference for Insurance Markets)	phone	11 November 2015
	Tom Herbstein	Cambridge Institute for Sustainability Leadership	phone	4 November 2015
	Aaron Oxley	Results UK	phone	19 November 2015
	Catherine Blampied	Results UK		
	Florent Baarsch	Climate Analytics	phone	29 October 2015

