

INSURANCE AS AN ADAP- TATION OPTION UNDER UNFCCC BACKGROUND PAPER

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BACKGROUND REPORT INSURANCE AS AN ADAPTATION OPTION.DOC

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CONTENT

EXECUTIVE SUMMARY	1
1. INTRODUCTION	2
2. OBJECTIVES AND PRINCIPLES	5
2.1. OBJECTIVES	5
2.2. PRINCIPLES	5
3. ADAPTATION COMPONENTS	6
3.1. RISK ASSESSMENT COMPONENT	6
3.2. PREVENTION COMPONENT	7
3.3. INSURANCE COMPONENT	8
3.3.1. Insurance solutions as an adaptation option	8
3.3.2. Examples of climate related insurance solutions	12
4. INSURANCE BASED MODULES AS ADAPTATION OPTIONS	17
4.1. POSSIBLE MODULES	17
4.1.1. Data collection / capacity building	18
4.1.2. Insurance product development	21
4.1.3. Access to insurance products	21
4.2. ROLE OF PUBLIC AND PRIVATE SECTOR	22
5. THE WAY FORWARD	26
LITERATURE	27

EXECUTIVE SUMMARY

Adaptation to climate change requires an integrated risk management approach, including risk assessment, prevention and insurance. Insurance solutions can potentially provide a significant contribution in expanding and strengthening adaptation response to climate change risks.

Numerous proposals and submissions under the United Nations Framework Convention on Climate Change (UNFCCC) make reference to risk transfer and insurance solutions as a complementary element of a systematic adaptation approach, but no consensus has been achieved regarding their role and eventual implementation under UNFCCC.

This paper intends to raise awareness on existing work and the current challenges related to climate relevant insurance, in developing countries and to contribute to a further discussion of the insurance topic under UNFCCC.

Past experiences and discussions can provide a framework for larger policies on the role of insurance in the emerging climate financing architecture. Further pilot implementation, research, and systematic learning is required. Many of the elements such as data collection, research, capacity building and exploration of public private partnerships are valuable for achieving broader adaptation objectives. It is therefore encouraged that the Parties further explore and define the scope of insurance solutions as part of climate change adaptation.

1. INTRODUCTION

Risk transfer solutions, such as insurance, play an important role in mitigating climate risk in many parts of the world. They can be part of a systematic adaptation approach and can enable vulnerable countries to better manage climate risks, especially extreme weather events. However, the promotion of inappropriate insurance options could also lead to mal-adaptation.

Risk transfer strategies are generally not available in developing countries, where insurance markets are limited, if they exist at all, and are not oriented towards the poor. Only few people have access to the insurance market and those with no access are much more vulnerable to financial impacts of disasters.

If designed and introduced carefully, insurance solutions put a price tag on risks and hence help to set the right incentives to stimulate adaptation. Insurance is a useful tool because it enhances peoples' economic and livelihood resilience, enabling access to new resources and economic activities that can help them to develop and buffer themselves against the direct impacts of the climate.

The climate has always presented a challenge to those whose livelihoods depend on it. For poor people, a variable and unpredictable climate presents a risk that can critically restrict options and limit development. The risk materializes at two levels: the direct effects of a weather shock and the indirect effects due to the threat of a weather shock (whether it occurs or not). When a weather shock occurs, poor people are vulnerable, as local coping strategies often break down. They have few assets to fall back on, and may be forced to sell these in order to survive, pushing themselves further into poverty. These impacts can last for years in the form of diminished productive capacity and weakened livelihoods. Under the threat of a possible weather shock, poor people avoid taking risks. They shun innovations that could increase productivity, since these innovations may increase their vulnerability, for example by exhausting the assets they would need to survive a crisis or by requiring them to spend money without being sure of a return.

New tools are urgently needed to help vulnerable people deal with climate variability and change, as well as the underlying uncertainty. But, it is not only the poor who need such tools. After a climate-related disaster, governments struggle to finance relief and recovery efforts and maintain essential government services. Disaster response can be delayed for several months as humanitarian aid trickles in, which results in even higher human and economic costs (Goes and Skees, 2003).

Insurance also reflects a growing interest in, and a move towards, market-driven solutions to these problems. Shifting responsibilities from public agencies, which provide interventions to ‘beneficiaries’, to market-based mechanisms where people choose the services and technologies they prefer, may offer the poor a more sustainable development model. Public–private partnerships and private-sector development are key to this approach.

Insurance under UNFCCC

It is widely accepted that insurance mechanisms can potentially provide a significant contribution in expanding and strengthening adaptation response to climate change risks (FCCC/TP/2008/9, p. 9). Numerous proposals and submissions make reference to risk transfer and insurance solutions as a complementary element of a systematic adaptation approach (FCCC/AWGLCA/2008/16/ Rev.1). Two detailed insurance proposals have been submitted so far, including a proposal by the Alliance of Small Island States (AOSIS) and a proposal by the Munich Climate Insurance Initiative (MCII):

- › **AOSIS** proposal for a “Multi-Window Mechanism to Address Loss and Damage from Climate Change Impacts (AOSIS 2008): The proposed mechanism would consist of three inter-dependent components: 1. Insurance component to manage financial risk from increasingly frequent and severe extreme events; 2. Rehabilitation / compensatory component to address progressive negative impacts of climate change which result in loss and damage, 3. Risk Management Component to support and promote risk assessment and risk management tools.
- › **MCII** proposal on “Insurance Instruments for Adapting to Climate Risks” (MCII 2008): The proposed insurance module would consist of a prevention pillar and an insurance pillar. The prevention pillar puts risk reduction as its top priority. The insurance pillar would consist of two tiers. The first is a Climate Insurance Pool that would absorb a predefined proportion of high-level risks of disaster losses in vulnerable non-Annex 1 countries. The second tier would provide technical support and other forms of assistance to enable public-private insurance systems that provide cover for the middle layers of risk in these countries.

Risk transfer / insurance solutions are generally assessed as important by most parties. Nevertheless, these are one of the disputed elements of the AWG-LCA text on adaptation. The mechanism proposed by AOSIS is currently supported by developing countries, however not supported by most developed countries – with the most contentious issue being the rehabilitation / compensatory component to address progressive negative impacts of climate change (UNDP 2010, p. 17).

Background paper for insurance as an adaptation option under UNFCCC

This paper is building upon the Swiss proposal “Funding Scheme for Bali Action Plan: A Swiss Proposal for global solidarity in financing adaptation” (UVEK 2008¹) and existing proposals on insurance. It provides an overview on elements and key questions on insurance as an adaptation option that shall be further developed and refined in consultation with various stakeholders (Parties, experts, implementers).

This background paper summarizes objectives and principles. It also provides details on possible components and modules of insurance options and suggests ideas on next steps towards implementation.

1 The Swiss submission is available in the document FCCC/AWGLCA/2008/MISC.5. The full document can be downloaded at: www.bafu.admin.ch/klima/10343/index.html?lang=en.

2. OBJECTIVES AND PRINCIPLES

2.1. OBJECTIVES

The objectives of this discussion paper are:

- › **To outline the elements considered when dealing with insurance as an adaptation option under UNFCCC:** Insurance (or risk transfer) plays an important role in strengthening climate resilience and could be included as a measure to complement risk prevention measures.
- › **To facilitate negotiations:** Insurance is referred to in several Parties' submissions and forms part of the draft decision of the AWG-LCA on enhanced action on adaptation. By building upon existing proposals, this paper intends to raise awareness about insurance issues and forward negotiations on this topic.

2.2. PRINCIPLES

The paper is based on the following major principles:

- › **Country ownership** (no “one size fits all”): Countries will decide on the modules / measures that are most suitable under their circumstances (e.g. micro-insurance at national level or risk pooling at regional level).
- › **Flexibility regarding integration in funding architecture:** Elements of this paper may in the long-term be integrated in any of the different (existing or emerging) funding solutions currently discussed under UNFCCC.
- › **Private sector involvement:** The private sector shall play a pivotal role as a provider of insurance products and would therefore make available public resources for other priority needs. Optimal forms of private-public partnership, ranging from both ends of the spectrum - fully private insurance to fully humanitarian assistance - shall be developed.
- › **Principles of insurability have to be met:** Insurance is complementary to other components of adaptation, in particular prevention. The risk assessment component (refer to chapter 3.1) is the basis for selecting the appropriate adaptation measure (prevention or insurance). The principles of insurability have to be met.²

² These principles are: 1. Assessability: loss probability and severity are quantifiable, 2. Randomness: time of occurrence must be unpredictable (no gradual shifts), insured loss outside control of the beneficiary, 3. Mutuality, 4. Economic viability, affordable premium.

3. ADAPTATION COMPONENTS

An Integrated risk management approach is key in the context of higher risks and higher uncertainties, as it is the case with climate change. Such an integrated view could encompass the following components:

1. Risk assessment component, 2. Prevention component, 3. Insurance component.

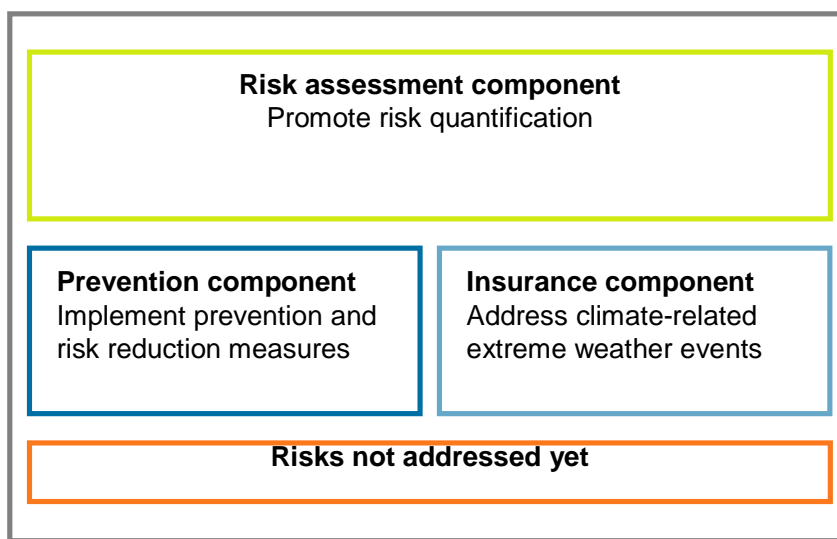


Figure 1 Overview on possible adaptation components.

The components build on the 2008 Swiss proposal on adaptation financing and have similarities with the proposals brought in by AOSIS and MCII. Even if the focus is on the insurance component, it is important to emphasize that insurance must be viewed as part of an integrated adaptation approach; this should include first and foremost risk prevention. Transferring risk through insurance could only be a complementary measure to the reduction of risks by adaptation measures.

The risks not addressed in this paper include gradual, non-random chronic climate hazards; these risks cannot effectively be addressed by insurance solutions.

3.1. RISK ASSESSMENT COMPONENT

Identification and quantification of risks is a first step to assessing the most suitable adaptation option. Integrated risk assessment helps ensure prudent investments in adaptation measures suitable for addressing local climate risks (The Geneva Association 2009, p.92).

Developing an analytical understanding of future climate change risks is extremely difficult. An accurate risk assessment requires detailed knowledge not only of the physical impacts of climate change at the national or sub-national level (precipitation, temperature, wind speeds, frequency and severity of extreme events) but also of socio-economic developments and adaptation measures that affect insurance density and future vulnerability (OECD 2009, p. 100).

Elements of a risk assessment

A risk assessment may include the following elements (Economics of Climate Adaptation Working Group 2009, p. 126ff.):

- › Identification of most relevant hazards and areas most at risk
- › Assessment of the magnitude of the expected loss: assess frequency and severity of hazards, quantify value at risk (population, assets, income) and determine vulnerability of population, assets and income.

Assets do not have to be financial, and may include agricultural harvests, livestock, infrastructure or intangible assets such as public services (UNFCCC 2008, p. 5)

How to conduct a risk assessment

A risk assessment could be conducted by applying the following stepwise approach (Economics of Climate Adaptation Working Group 2009, p. 126ff.):

- › **Identification of most relevant hazards and areas most at risk**
 - › Collect data sets (if available) or surveys of local inhabitants information on temperature, precipitation, hazards in the past
 - › Identify, quantify and prioritize most important hazards (including event hazards and gradual shift hazards)
 - › Identify areas most at risk: overlaying spatial distribution of hazard with population density, economic activity etc.
- › **Assessment of the magnitude of the expected loss**
 - › Assessment of future frequency and severity of hazards (based on climate scenarios)
 - › Assessment of size and value of future assets
 - › Combine future hazards and values at risk to determine vulnerabilities.

3.2. PREVENTION COMPONENT

The prevention component is not elaborated in detail for this paper. Prevention includes adaptation activities ranging from planning, prioritizing, implementing adaptation actions. It is dealt

with separately in different Parties' submissions and in the UNFCCC negotiating text on adaptation.

Generally speaking the following types and levels of prevention measures could be differentiated (refer also to Economics of Climate Adaptation Working Group 2009, p. 44f.)

- › Planning of adaptation actions (e.g. national adaptation plans or programmes)
- › Implementation of prevention measures:
 - › Infrastructure based responses, such as dams, strengthening of roofs of residential buildings, mangrove tree buffers etc.
 - › Technological / process optimization responses, such as improved irrigation or use of drought resistant crops.
 - › Systemic/behavioural responses, such as awareness campaigns and emergency response trainings.

3.3. INSURANCE COMPONENT

3.3.1. INSURANCE SOLUTIONS AS AN ADAPTATION OPTION

Insurance and other risk transfer solutions can be part of a systematic adaptation approach and can enable vulnerable countries to better manage the new climate risks. Insurance can provide financial security against the economic impacts of extreme climatic events and may for some climate change perils be more cost effective than certain prevention measures. The combination of risk transfer and prevention adaptation measures is a subjective choice that depends on policy preferences, investment choices and opportunity costs.

There are three mechanisms by which insurance can be an important component of adaptation. The first is by directly **transferring the risks away from the vulnerable**, allowing people to use insurance payouts to recover from shocks and maintain their livelihoods. The second is by **allowing them to take productive risks** (e.g. to take or make a loan, to invest in their own productive capacity and to develop economically). The poor are almost always the most exposed to climate impacts. They are more likely to escape poverty if they are able to better protect themselves. The third mechanism is through the signals provided by **insurance pricing**. Insurance sets a price tag on risks; if certain activities become riskier under a changing climate the insurance price will rise to reflect this risk. The price increase can **incentivize changes to less risky activities** and to more comprehensive risk management strategies.

The chapter gives an overview on characteristics, potentials and challenges of climate related insurance markets in developing countries and the importance uncertainties play in shaping insurance solutions.

Characteristics of existing insurance markets in developing countries

Currently, only 1% of households and businesses in low-income countries, and 3% in middle-income countries, have insurance coverage for catastrophe risks, compared with 30% in high-income countries (Munich Re 2005 in UNFCCC 2008, p. 45). Insurance penetration of non-life insurances in emerging markets accounts for 2% of Gross National Product (GNP) compared to 5% of GNP in industrial markets (The Geneva Association 2009, p. 85). This results in a considerable gap between economic loss and insured loss.

Barriers to the development of insurance markets in developing countries persist on both the supply and demand side. They could be summarized as follows (expanded from UNFCCC 2008, p. 47ff.):

Supply-side barriers:

- › Weak rural financial sector: limited access of the rural population to banking and professional financial advice, where penetration rates of microfinance institutions is still low
- › Unpredictable commercial return leading to gaps in the availability of insurance coverage
- › Rigid insurance regulations
- › Insufficient data on hazards and exposures increasing the overall uncertainty
- › Deficiency in quantity and quality of weather/climate information
- › Incomplete and underdeveloped set of insurance tools and technologies
- › Risk attitudes and moral hazard: Limited public control of the risk management framework leading to moral hazard.
- › Limited scale of operation: Individual values insured are often small in relation to the insurance transaction cost.
- › Restrictions, limited access of non-domestic insurers.

Demand side barriers:

- › Lack of familiarity with insurance, especially in rural areas
- › Perception of risk: Low risk awareness regarding low-frequency, high-impact events
- › Price: High costs of premium preventing consumers to insure.
- › Efficiency: Recovery must be achieved in acceptable timescales

- › Fairness: Perception of consumers that they pay more than a fair share to insurers.

Potential and challenges of insurance markets in developing countries

Insurance sets a price tag on risks and hence helps to allocate funds to prevention and other measures. Insurance markets have the potential to unleash new capital, ideas and approaches, offering a unique opportunity to address and adapt to climate risk. Especially in the developing world, shocks, variations and long-term trends in the climate have significant implications for economic production. If not properly accounted for, climate risks can act to amplify poverty and depress livelihoods. At its most extreme, resources are used simply to stay alive and are not invested to build for the future, placing people in a vicious cycle known as a «poverty trap». Insurance can help vulnerable people adapt to climate variability and change by enabling them to build economic capital and make productive decisions in the face of a changing global climate.

The most dramatic benefits of insurance as an adaptation strategy are not due to reductions in risk per-se. They are due to the productivity insurance can unleash by transferring away key risks. For example, if a farmer does not lose her plough animal or capability to buy seeds as a result of a bad year, the farmer can be much more productive in the other years. If a farmer is able to repay a loan in the bad year, she may be able to obtain loans for the quality inputs necessary for much higher yields in normal years. Likewise, if a lender is protected from large-scale defaults during a drought year, the lender can afford to provide the credit for inputs and investments that lead to higher productivity in normal years. The insurance becomes a meaningful and affordable solution when the productivity it unlocks allows people to make better use of their normal years to cover their bad years.

Insurance does not need to be built to cover a loss far off into the future but can adapt year to year as information about climate improves. In the immediate future, while short-term climate processes will dominate, the long-term trends represent only a small fraction of the climate variability faced. During this time, insurance can be used to safeguard investments that can be used to improve livelihoods. This should help them build wealth and accumulate the assets necessary if it eventually becomes important to shift into other livelihoods. Over time, as the cumulative impacts of climate change start to materialize, they can be reflected in insurance through prices, incentivizing gradual adaptation and, when appropriate, transitions into new livelihood systems.

Principles of insurability

Insurance can work only for risks that are insurable. The main principles of insurability are (Swiss Re):

- › Assessability: Probability and severity of loss and damage must be quantifiable
- › Randomness: Time of occurrence must be unpredictable (no gradual shifts), the insured loss must be outside the control of the beneficiary
- › Mutuality: Numerous exposed parties must join together to form a risk community, to share and diversify the risk
- › Economic viability: Private insurers must be able to obtain a risk-adequate premium and the premium has to be affordable.

Dealing with climate uncertainties in designing insurance products

Climate variability and change have significant implications on insurance – impacting the frequency of payouts and the levels of risks. The natural processes that govern the climate system will, over the coming decades, be affected by the increasing influence of greenhouse gases. The variations in climate will continue to operate at yearly, decadal and long-term timescales, creating a complex system of interactions. If ignored, these interactions could threaten the viability of insurance as an adaptation instrument by adding uncertainties as to how the future climate of a particular region will vary in comparison to the past. Furthermore, lack of accurate climate information enhances these unknowns.

For insurance, the uncertainty presented by the large range of predictions and the relative coarseness of models can cause complications. If you are unsure if an aspect of the climate will become more variable or if you do not know the magnitude of future changes, it is difficult to target risk and plan pricing schemes. It may be possible to build insurance solutions to address problems of uncertainty in climate – but at a price. Continually improving climate science can help reduce future uncertainties and costly insurance fees, as well as foster a better understanding of climate issues amongst stakeholders.

Accurately priced uncertainties that reflect climate risk can act to incentivize risk reduction through price signals and risk management stipulations. When the probability of an increased climate risk is perceived, this possibility is reflected in insurance prices, leading to a more expensive contract. Such a signal can act as a warning to the client and provide an incentive to use other forms of adaptation (e.g. changing the crops grown).

3.3.2. EXAMPLES OF CLIMATE RELATED INSURANCE SOLUTIONS

Innovative insurance instruments can help to bridge some of the adaptation financing gap by transferring these risks through insurance mechanisms (The Geneva Association 2009., p. 86). Such innovative solutions have been developed and applied throughout the world.³

It is important to stress that according to different circumstances and levels different schemes could be most appropriate.

- › At the household or business level, insurance can help prevent an extreme climatic event from leading to long-term reduction in assets. This helps to prevent a household from falling into a poverty trap, and enables a business to continue to grow.
- › At a government level, insurance can help prevent extended gaps in government services after an extreme event, and can speed reconstruction of roads, energy systems, and other important infrastructure. As a result, these interventions help maintain economic, social, and political stability (WRI 2009).

This section provides three successful examples of risk transfer solutions at local, regional and international level.

Example at local level: HARITA: A farmer centric risk transfer approach in Ethiopia

(Adapted from Hellmuth et al 2009)

Over the past three years, Oxfam America (OA) and Swiss Re, in collaboration with IRI, the Relief Society of Tigray (REST) and other partners have worked together to launch an innovative climate change resiliency project called “Horn of Africa Risk Transfer for Adaptation” (HARITA). This pilot project takes a farmer-centric approach, and is working to integrate insurance with other risk reduction activities such as improved agronomic practices, conservation measures, and seasonal and daily weather forecasting. Project innovations include the extension of weather insurance to communities that are technically challenging to serve, the various stakeholders from the local to the global levels and facilitating a holistic risk management model.

HARITA initially targeted the farmers in the village of Adi Ha in Tigray, with expansion to other villages and crops after 2009. OA and REST have been working with farmers in Adi Ha for more than a decade and these long-standing networks of knowledge and trust, within the

³ The World Bank, for example, was pioneering the application of weather risk insurance schemes, regulation reforms and further development of index based insurance for the first time in a number of emerging and developing countries.

country, are an advantage of the project. HARITA began in late 2007 with exploring the potential for micro-insurance and gauging the community's interest in a potential pilot program.

Lack of delivery channels for reaching remote and inaccessible rural customers is often a major obstacle to offering micro-insurance. To overcome this challenge, the financial institutions involved in the pilot are employing a partner-agent model. Debit Credit and Savings Institution (DECSI), the second largest microfinance institution in Ethiopia, acts as the insurance agent. DECSI has very extensive operations throughout Tigray, and can harness its strong community relationships and reputation to market and deliver insurance on behalf of Nyala Insurance, the primary insurance supplier.

A significant feature of HARITA is its efforts to engage farmers as partners in insurance design. For example, a team of five community members from Adi Ha was recruited to join the HARITA project management team. The project has conducted workshops with farmers in the village to build their financial literacy. Recently, it 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.

The project is also working on ways of overcoming weather data limitations. IRI has led the exploration of new techniques to enhance sparse local datasets through a combination of satellite data, rainfall simulators and statistical tools that interpolate data from stations nearby. Satellite data will also be used to improve understanding of the correlation between rain gauge data and actual losses on farms. With this information, the project may be able to reduce basis risk by answering the difficult question of what is the maximum distance between farm and rain gauge for which the rain gauge measurement of precipitation is valid.

The HARITA project complements Ethiopia's innovative social protection scheme, the PSNP. This reaches approximately 8 million vulnerable people, about 11% of Ethiopia's total population. The PSNP provides payments to participating households in exchange for labor to build community assets such as water harvesting structures.

Such households tend to be chronically food- and resource-insecure, and are likely to be unable or unwilling to pay cash for insurance premiums, despite finding risk management highly relevant to their livelihood strategies. HARITA explores ways to build upon the PSNP model by enabling farmers to pay insurance premiums in kind rather than in cash. Under the scheme, farmers have the option of working a few additional days in exchange for an insurance voucher that protects them against drought. Experience and interviews with farmers in communities across the country suggest that many more people may be willing to purchase larger amounts of insurance if premiums can be paid for in labor rather than cash.

Example at regional level: Risk pooling CCRIF

Caribbean Island States formed the Caribbean Catastrophe Risk Insurance Facility (CCRIF), the first multi-country and index-based catastrophe insurance pool in the world. The facility, owned, operated and registered in the Caribbean for Caribbean governments, is designed to limit the financial impact of devastating hurricanes and earthquakes by quickly providing financial liquidity when a policy is triggered (CCRIF 2009).

Sixteen governments are currently members of the fund. Governments share the risks of weather-related catastrophic events by paying into regional or global sovereign risk pools (WRI 2009). Countries can select various degrees of protection and insure themselves against hurricane and/or earthquake losses. Annual premiums vary from US\$200,000 to \$4.5 million for payouts from US\$1 million to \$100 million (www.caribrm.com).

The CCRIF provides funds to governments purely for emergencies, and not for reconstruction, private property or business interruption. It allows for expedient post-disaster repairs and gives governments time to raise funds for intermediate-and longer-term recovery activities (www.caribrm.com).

The CRRIF solutions help countries to diversify the risk, help to get access to a liquid and competitive international insurance market and would also help to transfer some of the risks to capital markets if the risks keep increasing.

The CCRIF received seed funding from donors for the development stage and to finance a substantial proportion of the premiums. Professional risk-modelling techniques were used to develop country risk profiles and to design and price parametric insurance products for each country based on the individual country risk profile, thus addressing concerns of participating countries about potential cross-subsidization (FCCC/TP/2008/9, p.67f.).

The CCRIF represents a paradigm shift in the way governments treat risk, with Caribbean governments leading the way in pre-disaster planning. By pooling their risk, the governments saved approximately 40% on what each government would have paid had they negotiated individually through commercial insurance markets (www.ccrif.org). The CCRIF acts as a local centre of competence on climate change and has built up essential knowledge, data bases, insurance models and insurance know-how in the region.

Launched in 2007, the CCRIF made two payouts in its first year, both as a result of an earthquake. The CCRIF is working on developing new products, such as an extreme rainfall coverage.

Example at international level: Transfer to capital market: Multi cat Mexico

Natural disasters have a negative impact on public finances as governments typically absorb a large portion of the economic costs of such catastrophes. For example, they must cover the costs of emergency and relief efforts as well as subsequent reconstruction of infrastructure (Swiss Re). One option to deal with large scale losses has been to attract extra funding from the capital markets by securitising some of the risk in bonds, which could be sold to high-yield investors. Catastrophe (cat) bonds are such securities that transfer risk from sponsors to investors (OECD 2008, p. 99).

With the MultiCat transaction, Mexico is diversifying its financing mix with risk transfer instruments. Mexico combined earthquake and climate risks and transferred the risks to the capital market. Essentially the government transferred their peak low probability, very high severity risks away from its budget, which will free up money that can be invested in other areas and hence help the development of the country. At the same time this kind of pre-disaster risk management will help reduce the impact of a catastrophe as money will be available more quickly than if the country would depend on emergency aid. This will help the country to recover more quickly after a catastrophic event.

Based on a parametric approach, this cat bond runs for three years. Payouts from MultiCat Mexico 2009 link directly to pre-defined triggers, in this case, related to the strength of the earthquake on the Richter scale, or the air pressure experienced during a hurricane. The transaction contains four tranches, each relating to a different peril or geographic areas, with potential payouts of USD 140 million to cover earthquakes and USD 50 million to cover hurricanes in two Pacific coastal regions and one Atlantic region (Swiss Re).

General assessment of the examples

The following elements are crucial for successfully using insurance as a meaningful tool in adaptation:

- › There is **no “one size fits all-approach”** in insurance. Insurance solutions have to take into account the specific circumstances of an area, country or region and the specific needs and capabilities of stakeholders.
- › **Pooling of climate information and know-how of insurance product structuring** e.g. in a centre of competence helps to kick-start insurance solutions in developing countries.

- › **Improved climate science** and a **better understanding of climate issues** among stakeholders have to be built up. Climate uncertainties and related challenges have to be taken into account when designing insurance solutions.
- › Insurance must be **demand driven and locally owned**. End-users need to be incorporated in the design of insurance products and community groups can provide an efficient method by which to do so.
- › Insurance works best when **integrated into broader programs for development, adaptation and disaster risk management**. An integrated approach to disaster risk prevention and adaptation without differentiation on the causes of the risk (natural climate variability or climate change induced) has proved as most successful approach.
- › The successful examples presented here are implemented at the **micro finance level** on the one hand and at the **state level** on the other. The penetration of PPP good practice examples into economic activities of **larger private sector operations** so far, facing enhanced climate risk, is still **limited**.
- › Investment in **capacity building is needed** to support the **scaling up of insurance**. Training and educational support should be provided to stakeholders in developing countries, enabling them to reach their full capacity. The lack of exposure and unfamiliarity that stakeholders have with insurance concepts are a limiting factor, especially in developing countries. Providing a necessary understanding of the insurance process and climate information can create a more successful and robust system.
- › Since insurance markets for adaptation are often novel offerings, it is important for national governments to devise **methods to regulate their use and functions**.
- › Investing in the **capacity of met agencies** in developing countries is vital, as their expertise is needed to help develop all stakeholders' understanding of climate risk. Low data quality and quantity restrict the implementation and scale-up of insurance.
- › Alternative **private sector mechanisms** for distribution of insurance products are already in place, but these networks **need to be strengthened** in order to utilize the private sector to make insurance viable as a climate adaptation strategy.

4. INSURANCE BASED MODULES AS ADAPTATION OPTIONS

4.1. POSSIBLE MODULES

In this section the insurance component will be further specified. In difference to chapter 3, where the whole system of an integrated risk management is described, the focus is on modules, where support through public funding could play an important role.

Different modules could be part of an insurance approach and be eligible for support. The modules could be grouped as follows:

- › 1. Data collection / capacity building
- › 2. Insurance product development: Product development (pilot insurance schemes)
- › 3. Access to insurance products (refer to Figure 2 for examples of modules).

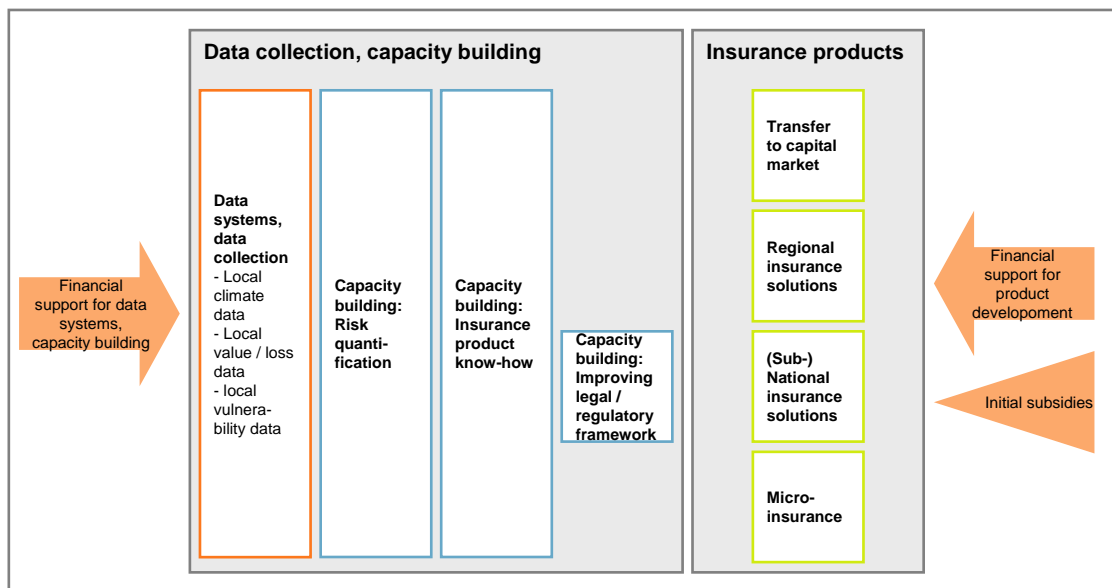


Figure 2

It will be up to the Parties to decide how to integrate insurance elements as adaptation options into either an adaptation mechanism under UNFCCC and/or modalities of enhanced international cooperation complementary to UNFCCC. Merits and demerits of the integration of insurance elements into an adaptation mechanism under UNFCCC shall be further assessed. Additional learning is required on types of loss and damage which can effectively be addressed through insurance solutions, as well as on national circumstances providing the required enabling environment. Hence, decisions on the type of modules that shall be eligible for support, and on the requirements for support, will have to be taken through the negotiation process when

appropriate information is available. Developing country Parties would then, based on their specific circumstances and climate change risks, decide on the modules for which they apply for funding. Such a procedure would allow a customized approach per country or region.

4.1.1. DATA COLLECTION / CAPACITY BUILDING

Since insurance is new to many stakeholders in developing countries, capacity building must focus on the full range of stakeholders as successful up scaling depends on knowledgeable participation and active engagement of all groups. Stakeholders include clients/individuals, public sector actors, private sector actors and NGOs (often acting at the interface between the public and private sector)

Investment in data collection and capacity building is needed to support the scaling up of insurance. Training and educational support should be provided to stakeholders in developing countries, enabling them to reach their full capacity. Providing a necessary understanding of the insurance process and climate information can create a more successful and robust system.

Data systems, data collection

Improved quality of local climate information and data on the assets at risk, as well as *improved access* to this information by the relevant stakeholders is crucial for building insurance models.

Currently, there is a gap between climate science and the essentials of insurance design. While there is an ongoing global effort to expand the planet's meteorological observation networks, access to reliable historical data in developing countries often poses problems. Installing a gauge does not provide the historical data on which to build insurance. Historical information is required to understand the probability of events. Without access to such information it remains difficult to place weather and climate conditions in the context of what has occurred in the past. Gaps in the quantity and quality of historical data also make it difficult to identify new climate variations.

In developing countries, the available data systems are often of poor quality and quantity and meteorological agencies often face serious challenges: lack of computing capacity, relatively few and poorly supplied observation stations, gaps in historical data that is often undigitized. National meteorological agencies are usually the best source for historical data and are also responsible for the installation and maintenance of observational stations / equipments. With the advent of more accurate satellite rainfall estimations (especially those with long historical records), National Met Service capacities are beginning to be enhanced and new opportunities of data quality and quantity are emerging.

The degree of met service weather and climate forecasting capabilities varies greatly from country to country. However, the ability for the met service to communicate weather and climate information effectively to the public remains important. Investment in weather station infrastructure, capacity building and education is needed to create meaningful collaboration with local met services.

Improved access to climate information could help clients (e.g. farmers) to make more informed decisions and to choose the appropriate adaptation measures. A better understanding of how the climate varies in different regions of the world can inform the design of insurance. For insurance companies, climate information capabilities are increasingly important, since they will be responsible for designing contracts that address climate risk. Added investment in their capabilities will be needed so that they understand strategies for insuring weather risk and how they relate to climate science as a whole. Greater access to climate information will lead to fairer, more accurate and stable prices of insurance products, enhancing the sustainability of any climate-based insurance scheme.

Capacity building: Risk quantification / Risk assessment

This module would encompass capacity building for all the relevant steps that are necessary to carry out a risk assessments (refer to chapter 3.1).

Capacity building: Insurance product know-how

For private sector actors there are two main needs in building their capacity: building the capacity to understand and react to climate information, and building the capacity to reach out to a diversified, dispersed rural customer base. This includes capacity building for the insurance companies themselves as well as the financial and communication companies that serve them.

Insurance companies in developing countries typically have little experience in offering insurance products that will be suitable for adaptation strategies. Companies in local markets, that have experience with insurance marketing and sales, will need added incentives to develop their capacity to reach out to customers in rural markets. Added investment in the capabilities of insurance companies will be needed so that they understand strategies for insuring weather risk (how to apply insurance concepts to weather-related risk) and how they relate to climate science as a whole. Insurance solutions have to be designed in such a way that they take climate uncertainties and related challenges into account.

Microfinance institutions (MFIs) can partner with local insurance companies, but they too need capacity and links to information. MFIs must also conduct research to understand the cli-

mate risks that their clients face as well as the full package of tools to address climate risk for their clients. However, the recent successes of the MFI industry show that complex financial products can be produced and marketed successfully in developing countries.

Capacity building: Improving legal / regulatory framework

The legal and regulatory framework is crucial for the development of insurance market solutions in developing countries. Regulatory and structural barriers quite often limit the operations of private risk-sharing markets. In addition, regulators often require time to determine how new insurance products fit into a legal and regulatory framework. Policies and regulations should be fine-tuned to accommodate new products and remove barriers to their introduction. Properly trained regulators with a comprehensive understanding of the insurance process are needed to promote this successful assimilation. Regulatory agencies must enforce good behaviour on the part of the insurer (ensure that a product is fairly priced and useful to consumers), but also provide an environment under which financial transactions can take place.

Rules for support: data collection / capacity building

Data collection and capacity building form the basis for integrated risk assessment and sound decision making on any adaptation action. Reducing uncertainty (e.g. in climate information) and enhancing capacities of stakeholders will not only lead to a reduction in insurance contract prices (as risks are more accurately represented), but also to the creation of more robust insurance mechanisms. More generally, basic data collection and data processing infrastructure are crucial for shaping a climate resilient development and providing benefits to all stakeholders.

Following the definition that “infrastructure is anything which is not provided by markets” (Norgaard et al 1988), the build up of systematic climate observation at local and national level as well as transboundary systems of information exchange is an infrastructure, which will predominantly fall into the public sector. Responding to market needs with regard to specific packaging of specific weather, climate or hydraulic system information, private public partnerships will have a role to play.

The private insurance sector will only engage and provide insurance solutions when these fundamentals are developed. It is therefore the main role of the public sector to provide funding for data collection and capacity building.

4.1.2. INSURANCE PRODUCT DEVELOPMENT

Various pilot schemes have been developed in several developing countries. This module could include further product development at different levels such as micro-insurance, national insurance solutions, regional insurance solutions and transfer to the capital market.

A focus would also be on scaling up and replicating existing pilot insurance schemes. Due to the fragmentary nature of the market in developing countries this is a challenging and lengthy process (UNFCCC 2008, p. 64f.). Although an array of micro-insurance tools exist, many of these tools are still exploratory and will need to be further developed and refined for large scales. It is critical to enhance the ability of these tools to address adaptation problems, as well as increase their robustness to climate change and uncertainty.

Furthermore, it is important that community groups and organizations be recognized as a strong potential partner in establishing and strengthening insurance as part of an adaptation strategy. Experimentation and evaluation are still needed to design the mechanisms that will work in different contexts.

Rules for support: product development

Public funding should focus on developing and refining robust pilot insurance schemes (where they do not yet exist), as well as scaling-up and replicating existing schemes.

Public funding should be made available provided that good quality climate information is obtainable, risk assessments have been conducted and capacity amongst stakeholders on insurance products and risk quantification has been built (refer to chapter 4.1.1).

4.1.3. ACCESS TO INSURANCE PRODUCTS

As climate change related impacts increase in the future, historical climate and loss data will not be sufficient for calculating future risks. Future climate change scenarios will need to be incorporated in order to ensure adequate risk quantification and trigger adequate adaptation.

The higher the uncertainties, the more expensive risk transfer will become. As a consequence, insurance takers may no longer be able to pay for risk transfer solutions. Access to insurance markets will be even more difficult, particularly of poor households and poor countries, where uneven insurance cover is already an issue.

In such cases, the risks must be adequately reduced and the cost of transferring the remaining risks must be shared between the international community and local insurance takers. Subsidizing premiums of the most extreme layers of risk might be required in these cases, at least in an initial phase. Broader use of premium subsidies, however, may reduce incentives to move

away from activities that become progressively less viable under the changing climate (maladaptation) (OECD 2008, p. 126).

Although it is widely recognized that subsidies can cause problems most experts agree that even subsidized financial mechanisms are preferable to post-disaster aid, and the reinsurance market is not yet prepared to commit sufficient capital to markets serving the poor (UNFCCC 2008, p. 101).

Rules for support: initial subsidies

- › Subsidies to users of an insurance scheme should be used sparingly, taking into account consideration that this should not lead to the diversion of scarce funds from more effective programmes, and that mal-adaptation should not be encouraged (through moral hazard) (UNFCCC 2008, p. 61).
- › The funding part from climate finance should be subsidiary and be gradually increased back to back with counter measures undertaken by developing countries to limit mal-adaptation.
- › The value of insurance should exceed its costs. If this is not the case, insurance is not the appropriate tool. Subsidies that address public good, liquidity, product development, distribution costs, capacity building, or other constraints that prevent insurance from being cost effective, should be exhausted before premium subsidies are considered. Subsidies are no alternative to addressing needs and building capacity.
- › Subsidies, also when limited to kick-start a process (e.g. to develop an insurances market), must be used with great caution in order to avoid false incentives or permanent subsidies.

4.2. ROLE OF PUBLIC AND PRIVATE SECTOR

Role of Public Sector

The Public Sector plays a critical role in establishing insurance solutions and may need to foster or provide the investments needed to begin large-scale insurance for climate-change adaptation. Large initial investment can help build partnerships and social infrastructure and to develop products in each country. Because of the limited margins offered by insurance at small scales and because insurance is a new concept in many places, the free market may not develop the range of products that are urgently needed without assistance. This is especially true when addressing the most vulnerable populations in rural areas, which might only transact a few dollars a year and may not be very active in the formal economy.

Public Sector actors also provide crucial functions for the ongoing support of insurance projects. These may be in the form of information, like national meteorological agencies, or in the form of consumer protection and regulation. In this context, government activities can be broadly split into two main categories: 1. Regulatory and enforcement functions, and 2. Service and support functions. These public institutions are a vital link to building successful insurance systems, in developing countries. It is important to think of these institutions as partners and they represent excellent targets for investment and capacity building, in order to foster cooperation and improve understanding of the complicated issues involved in adaptation to climate change.

Role of Private Sector

In developing countries, Private Sector actors depend on the functions of the Public Sector for ongoing services to support insurance as adaptation projects. However, the Private Sector also plays a key role in risk transfer solutions such as insurance. The expansion and further development of Private Sector actors, such as microfinance institutions (MFIs), insurance companies, distribution actors, etc., is necessary in order to enhance the adaptive capacity and viability of insurance in developing nations. Improving access, understanding and use of climate information by Private Sector actors will allow for better-tailored insurance contracts that more accurately represent risks and incentivize adaptation. In addition, it is crucial to improving the capacity of the Private Sector to reach out to a diversified, dispersed rural customer base.

For example, MFIs, focusing on small-size loans to low-income people, are often already known and trusted on the local stage. These stakeholders have strong rural outreach capabilities and are capable of playing a crucial role in unlocking a broader development strategy of rural credit leading to productive risks.

While distribution actors, such as seed companies, may not be explicitly part of any insurance transaction, they have an important role to play in the evolution of adaptation strategies. Such companies are already active in the rural sector and can provide an alternative method for transacting insurance policies by bundling those policies with for example, seed and fertilizer distributors. These companies also provide improved technology in response to changing climate conditions, for example seeds for varieties that are more tolerant to climate extremes. Increases in technology can effectively enhance the ability of distribution actors to better provide services.

Role of NGOs

Falling between the Public and Private Sector, NGOs represent a broad category of national and international actors. NGOs may be engaged in a variety of different ways depending on the specific country and sector. NGOs fill gaps between the public and private sectors and provide necessary services to underserved populations. NGOs can serve as a trustworthy source for rural outreach, both in education and contract transaction.

NGOs are much more capable of investing in a new project that is designed to help people, than a for-profit company might be, but the project will tend to reach sustainability only when it's taken over by for-profit companies or local governments. Often there will be hundreds of NGOs operating in developing countries, and thus more complex situations can arise in working with numerous NGOs, rather than just one government system.

Public-private partnerships

The complexity of a comprehensive approach to adaptation requires a combined response by the public and private sectors as well as by NGOs. The choice and mix of different options is an important element in the design of any new and strengthened adaptation strategy or regime (UNFCCC 2008, p. 9).

Possible roles of public and private sector in insurance could be summarized as follows (based on Swiss Re 2008, p. 5).

POSSIBLE ROLES OF PUBLIC AND PRIVATE SECTOR IN INSURANCE		
	Public sector	Private sector
Risk assessment		
Data systems, data collection	<ul style="list-style-type: none"> › Expertise on met services, data provider › Owner, manager of met stations 	Knowledge provider
Risk awareness, capacity building	<ul style="list-style-type: none"> › Awareness raising on risks, risk assessment etc. for different stakeholders › Financial support for capacity building 	Knowledge provider
Risk assessment, vulnerability assessment	<ul style="list-style-type: none"> › Implementer or risk / vulnerability assessments 	<ul style="list-style-type: none"> › Knowledge provider › Eventually financial support (as part of overall product development)
Risk transfer / Insurance		
Risk transfer / insurance solutions	<ul style="list-style-type: none"> › Provide appropriate legal and regulatory framework, allowing access to markets › Financial support for start-up, product development (eventually also initially subsidizing premiums) › Facilitator for development of insurance products 	<ul style="list-style-type: none"> › Develop and provide insurance products › Risk taking: Manage risks, determine risk premium › Provide access to global diversified portfolios › Financial support for pilots

Table 1 Sources: Swiss Re 2008, p. 5, UNFCCC 2008, p. 83. NGOs, falling between the public and the private sector, are not mentioned separately in this table, but have an important role to play in filling the gaps between the public and private sectors.

In all elements of risk assessment and risk transfer / insurance an optimal form of public-private partnership has to be developed.

The public sector has the political and legal power to set framework conditions for adaptation options and is in a position to provide the basis for a systematic adaptation approach (e.g. data collection and access to data, risk and vulnerability assessments).

The private sector has the financial resources and can spread the burden of replacing a given asset to a third party if a hazard occurs (Swiss Re 2008, p. 5). Therefore, private-sector insurers can play an important role by freeing up public resources for other priority needs such as social and economic development. The private sector can support the high-risk or high-cost functions that the public sector performs in a public-private partnership (UNFCCC 2008, p. 6).

5. THE WAY FORWARD

Experience makes it clear that insurance has a role to play as part of an integrated approach to climate change adaptation. Through continued discussion, it is valuable to determine the next steps that are necessary in furthering insurance as an adaptation tool. Past experiences and discussions can provide a framework for larger policies on the role of insurance in the emerging climate financing architecture. Further pilot implementation, research, and systematic learning is required (comparable to the AIJ pilot phase acting as a precursor to CDM). Many of the approaches necessary in developing robust, successful insurance solutions, such as data collection, research, capacity building and exploration of public private partnerships, are valuable for achieving broader adaptation objectives. It is therefore encouraged that the Parties further explore and define the scope of insurance solutions as part of climate change adaptation.

Further exploration with the Parties, international organisations and the private sector is crucial for the success of insurance as a climate change adaptation strategy. Additional dialogue is required before the political decision-making process on insurance adaptation is brought forward. Continued discussions and negotiations, especially through the UNFCCC process, can enable the sharing of broad experiences and technical information to inform the political process. It is important to raise awareness among negotiators on existing work and the current challenges related to climate relevant insurance, in developing countries.

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