



# Climate insurance schemes for poor and vulnerable households and micro, small and medium enterprises



Corn field destroyed by drought

## **Insurance improves preparedness for the increase in weather related loss events**

Climate change further increases the frequency of weather related loss events, such as droughts, floods, heavy rain or tropical cyclones. In particular, low income populations in developing and emerging markets are most vulnerable to these risks. Weather risk insurance is an effective mechanism to support people in coping with their exposure. Insurance

provides financial protection, helps people affected to quickly recover and regain their ability to produce and support themselves and incentivizes to install precautionary measures to mitigate the impact of weather related loss events.

However, the affordability of insurance products is a major hurdle to the success of weather insurance in developing markets. In addition, data is often

insufficient or unreliable, financial literacy tends to be poor among beneficiaries and distribution channels are frequently unsuitable or inefficient to access rural and remote areas.

**Cost efficiency and high perceived value for money**

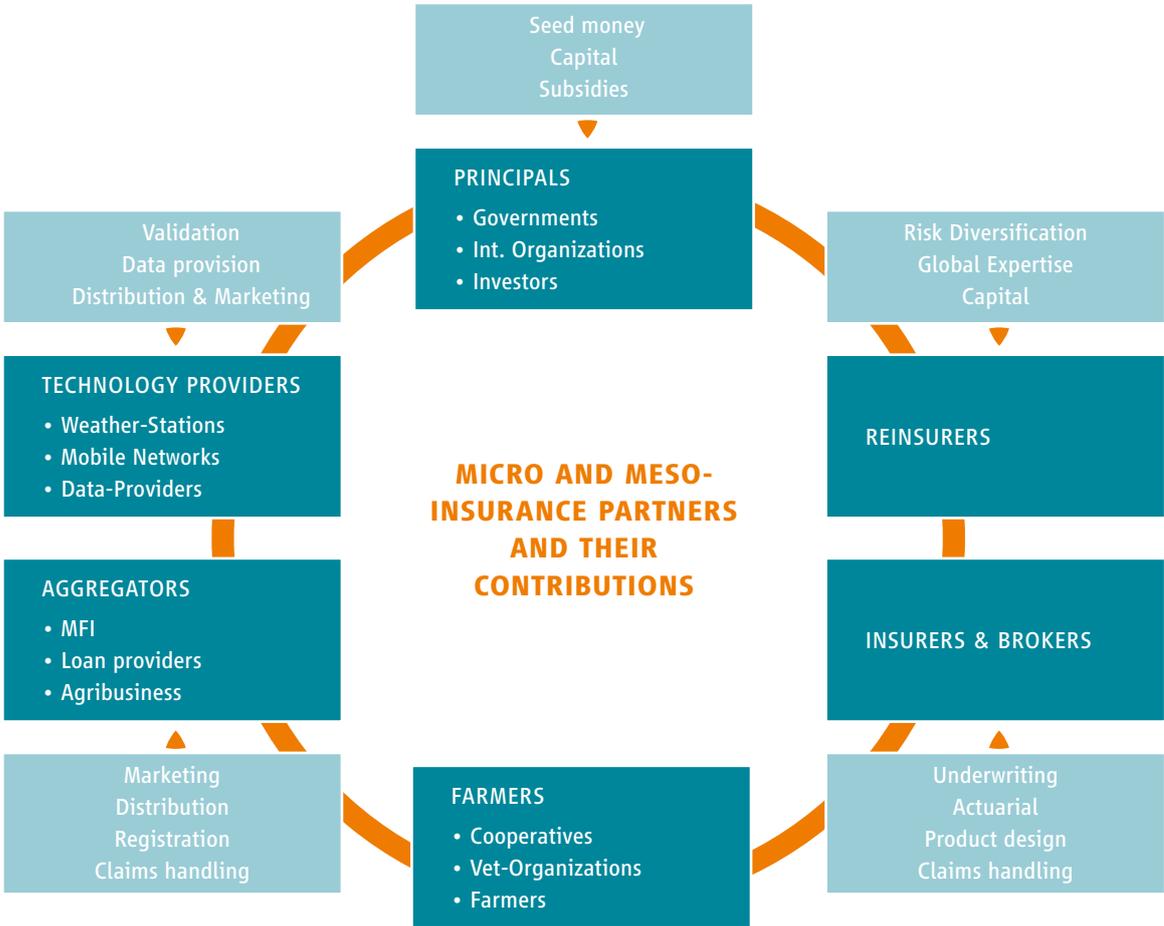
Weather-insurance at the micro- and meso-level targets a population segment which typically has no access to insurance as the values to be insured are low and premiums small. A cost-efficient distribution of products and claims payments is essential to maintain insurance affordable. The relative share of the insurance premium available to pay for expected losses should be maximized. The use of mobile technologies or the provision of meso-level instead of micro-level coverage may contribute to lower acquisition and operational cost. Index insurance,

where payouts are released directly if an index has been triggered, is a cost efficient approach to lower operational costs and improve the affordability of insurance protection.

**The early involvement of target beneficiaries and powerful partnerships are key to achieve scale**

Raising the understanding for insurance products and its mechanics is essential for its acceptance among first time weather-insurance buyers. The earlier beneficiaries are tied into the development and product design phase, the more likely their buy-in. In addition, they need to understand the product and see its benefits. Insurance facilitates access to credit and may thus lead to higher investments and returns – as in agriculture, where insured farmers enhance their yields through improved inputs. The bundling of insurance products

**Micro- and meso-level insurance – potential network of partners**



Source: InsuResilience Investment Fund

may also help to broaden distribution, deepen penetration and enhance overall customer satisfaction. Weather insurance cover is often sold together with life, health, property and other insurance products.

For a successful implementation and later scale-up of the scheme, an extensive network is crucial for the distribution of products and pay-outs with agri-finance providers, agribusinesses, cooperatives, insurance brokers, large scale farms and other stakeholders in the agricultural value chain. Insurance companies should invest in product development, new technologies and an extended distribution network. In addition, coherent product portfolios with similar sums insured, covered assets, insured perils and trigger mechanisms are easier to implement and administer and will improve the portfolio's stability.

### **Insurance as part of a holistic approach to mitigate weather risks**

Climate insurance schemes are often combined with measures to mitigate the impact from catastrophic weather events. Access to financing, higher yielding seeds and fertilizer, but also reduced premiums for those who take measures to preserve soil and water strengthen the resilience of beneficiaries against weather risks. If governments contribute to the scheme's design and implementation, it is ideally embedded in a strategic weather risk management process. Clear objectives regarding beneficiaries, achievements and key performance indicators have to be identified, defined, and constantly monitored.

## **Index versus indemnity based insurance solutions**

### **Index based insurance solution**

- ▶ Loss estimates based on a predefined parameter or index, which acts as proxy for the potential loss.
- ▶ Payments are only an approximation of the actual loss.
- ▶ Avoids risk of moral hazard, because index is independent of policyholders.
- ▶ No adverse selection, as the trigger for a loss is transparent.
- ▶ Includes a "basis risk": Potential mismatch between the loss incurred by the policyholder and the damage registered by the index as a basis for pay-outs.
- ▶ Best suited for correlated and homogenous risks that affect many policyholders in a similar fashion.
- ▶ Set-up cost to establish the proxy, i.e. weather stations.
- ▶ No loss adjustment costs, quick payment process.

### **Indemnity based insurance solution**

- ▶ Actual loss incurred. Losses have to be verified on a case by case basis.
- ▶ Claims payments reflect the actual loss incurred.
- ▶ Best used to reflect and compensate individually different losses.
- ▶ Good indication of the opportunity cost for insurance and will thus better serve as an incentive to invest in measures to reduce risk exposure.
- ▶ High distribution and claims payment costs.

## Africa

# ACRE Africa – Agriculture and Climate Risk Enterprise

### Africa's largest agricultural program

ACRE is Africa's largest and most renowned agricultural insurance programme. Founded in 2009 by the Syngenta Foundation and the EU and Japan backed Global Index Insurance Facility (GIIF), it was converted into ACRE in 2014 – an operationally sustainable for-profit organisation. Today ACRE insures about 400,000 smallholder farmers, located in Rwanda, Kenya and Tanzania. Farmers protect their crop – maize, beans, wheat, sorghum, coffee, potatoes – against drought, floods and torrential rain, as well as their dairy livestock against pregnancy losses.

### Efficient distribution and claims handling

One of the drivers for ACRE's successful expansion is its efficient distribution and claims-handling mechanism. Farmers mainly purchase their insurance protection as part of the seeds they acquire for sowing or as a precondition for an agricultural loan. If due to adverse weather conditions seeds do not sprout during germination, the insurance pays-out to allow the farmer to replant new seeds within the same planting cycle.

Weather conditions are measured through a multitude of weather-stations. In case the trigger of the index is activated the insurance pays out to the farmers' mobile phone wallet, which serves to manage the policyholder/insurer relationship. The insured asset is in fact the farmers' input – seeds or fertilizers – for which he pays premiums of approximately 5% - 25% of the sum insured – maintaining both the initial cost for the farmer and the magnitude of the potential loss within an affordable range.

### Broad partnership

Furthermore, ACRE benefits from its broad network of partners from the agricultural sector, such as input and finance providers; the farming side, such as cooperatives, large scale farms, dairy hubs, and veterinarian associations; the insurers' side with primary and reinsurers and the public side, with national governments and multinational developmental organisations.



Poor malagasy boy leading angry bulls, zebu - Madagascar

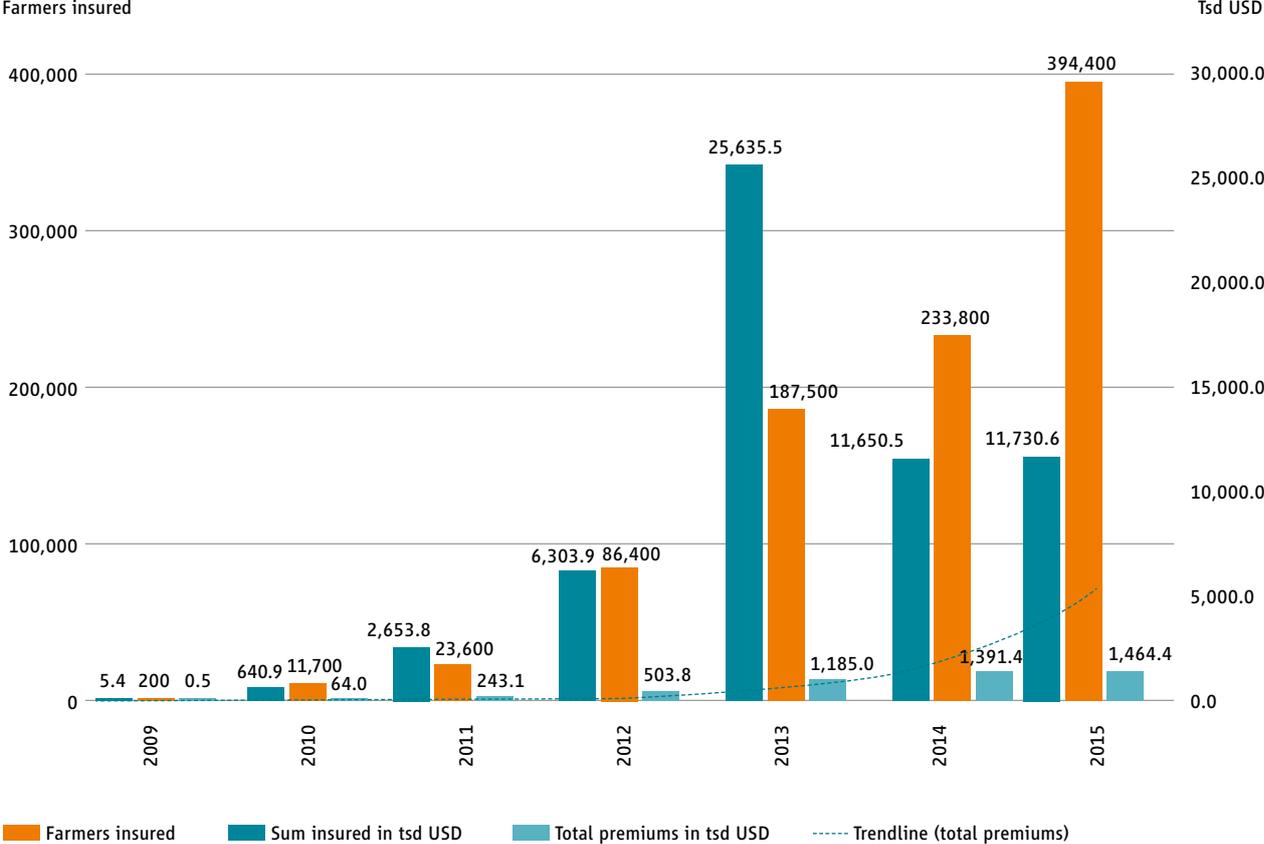
### Holistic approach to mitigate weather risk

ACRE enhances food security through its holistic approach in mitigating weather risk. It bundles innovative insurance products with mobile technology, agricultural advisory services, weather data, access to quality inputs, and input credit. Credit institutions now provide agricultural loans to small holder farmers, which in turn are able to invest into more expensive but higher-yielding seeds. According to an impact study by the IFC from 2012, ACRE's farmers invest more and generate on average a 15% higher output than their uninsured peers.

 Premiums paid by farmer:  
5% - 25% of input value

 Farmers insured: 400,000

### ACRE: Performance 2009 – 2015



## Kenya Livestock Insurance Program (KLIP)

### Pure livestock insurance

Launched in 2015, the Kenya Livestock Insurance Program (KLIP) is a livestock insurance initiated by the World Bank and the Government of Kenya, which aims to protect its pastoral farming population against natural disasters. From 2005 to 2011, Kenya's Government spent on average more than USD 60 million per year on disaster relief.

KLIP offers livestock insurance to targeted pastoral farmers in northern Kenya. For the base cover, aiming to provide protection to the most vulnerable farmers, the government pays 100% of the premium. Farmers may choose to top-up the coverage or purchase the product on a stand-alone basis. Under the second product component, any household has the opportunity to purchase cover at market rates.

### Subsidies complemented with additional insurance purchases

To promote the uptake, the cost of premiums is publicly supported and accompanied by sensitizing pastoralists to the importance of covering their livestock assets against weather related risks. Kenya's government recently pledged a further USD 2.8 million towards the cover, accelerating its expansion to 14 counties in Northern Kenya.

### KLIP is a macro scheme based on a NDVI index

KLIP is based on a Normalized Difference Vegetation Index (NDVI)\*, which provides pasture-drought protection on a macro level. Kenya's government is the policyholder. It pays the full premium and selects the pastoralists eligible to benefit from the subsidized cover. In case of a payout, funds are paid to farmers at the onset of drought to keep breeding stock alive. The premium is based on the deviation of the NDVI from the mean in two rain seasons and calculated according to so-called Tropical Livestock Units (TLUs), whereby one TLU is equivalent to one mature cow, or 10 sheep or goats, or 0.7 of a camel. The maximum pay-out of the policy is approx. USD 137 per TLU, which represents the amount needed to buy fodder for livestock in a severe drought situation.



Premiums paid by farmer:

Premium is paid in full by the government



Farmers insured: 15,000

\*) The Normalized Difference Vegetation Index (NDVI) is a numerical indicator that uses the visible and near-infrared bands of the electromagnetic spectrum, and is adopted to assess whether a certain type of vegetation to be observed contains live green vegetation or not. Depending on the density of the green and its colour the infrared is absorbed or reflected differently.

# Assurance Récolte Sahel – PlaNet Guarantee

## First multi-country index insurance in West Africa

Assurance Récolte Sahel (ARS) was founded in 2011 to provide weather insurance to small hold farmers in Benin, Burkina Faso, Mali and Senegal. The program was initiated by the EU backed Global Index Insurance Facility (GIIF), which entrusted PlaNet Guarantee, a micro-insurance brokerage and advisory, to develop the first multi-country agricultural index insurance for West Africa.

The program was first rolled-out in Burkina Faso, followed by Mali and Senegal in 2012 and Benin in 2013. In 2016, Ivory Coast was added. By the end of 2015 ARS insured roughly 80,000 farmers, protecting a diverse range of crops, such as maize, groundnut, millet, rain-fed rice and multi cereals, but also cotton – an important cash crop in Burkina Faso – against the impact of drought.

## PlaNet Guarantee serving as a broker

The insurance mechanism is similar to the approach taken by ACRE: farmers purchase the cover as an add-on to the inputs that they acquire from their local cooperative or as part of an agricultural loan provided by a microfinance institution or an agricultural bank. PlaNet Guarantee acts as a broker between the local delivery channel and the primary insurers. Payouts are triggered if weather stations or satellites register poor weather or vegetation conditions and are paid out by the insurers through the respective delivery channel to the farmers. In all four countries the national governments subsidize the premiums.

## Proximity to farmers as a pre-condition for success

The success of ARS is partly due to its broad distribution model and, closely related, its proximity to local farmers, who were able to participate in the design phase and helped to tailor the scheme to their needs. In addition, this approach allowed to raise awareness and understanding within the farming community and to spread the gospel that the insurance program offers real added value to farmers.

## Project expansion to benefit from combination with financial services

Going forward PlaNet Guarantee will expand the outreach of ARS by further bundling the index insurance with agricultural loan and savings programs, thereby providing small hold farmers with access to the financial services system. In addition, the number of weather stations is expanded to cover more remote areas, while a combination with credit insurance is developed for professional farmers. Finally, for more vulnerable farmers PlaNet Guarantee currently develops a savings-insurance scheme with further partners such as OXFAM and the World Food Program.



Premiums paid by farmer:  
≈ 10% of sum insured



Farmers insured: 80,000

## Latin America

### Seguro Agrario Catastrófico – Peru

#### Public-Private-Partnership insurance scheme to protect smallholder farmers

In 2009, the two insurance companies La Positiva Seguros and MAPFRE Peru joined the Peruvian Ministry of Agriculture in setting up the Seguro Agrario Catastrófico (SAC) insurance program. The scheme aims at protecting subsistence farmers with less than 5 hectares of land and limited assets to cope with the impact of severe weather events. A loss incurs, if the average return of the insured crop falls below 40% of the recorded historical yield (kilogram per planted hectare). On average a premium of USD 18 is sufficient to cover an average sum insured of USD 165 per hectare.

#### Regional governments receive state subsidies to pay for insurance premiums

The government of Peru finances the insurance premiums through FOGASA (Fondo de Garantía para el Campo y del Seguro Agropecuario), a Guarantee Fund for Agricultural Insurance. Although the SAC is geared towards farmers, agricultural agencies enrol and validate those eligible to participate in the program based on pre-defined poverty criteria. In addition, they negotiate, contract and implement the scheme and directly engage with the insurance companies. Following a loss event, claims are paid directly to the savings accounts of the farmers.

#### Multiple benefits for participating insurance companies

The participating insurers have benefitted from the scheme beyond the pure receipt of the insurance premiums. They gained exposure to geographical regions where they did not operate before and thereby improved their diversification. In addition, with the launch of an weather-index -insurance for microfinance institutions, they were able to also broaden their product offering.

#### Promotion campaign supported the success of SAC

Initially, the awareness for the benefits of the SAC scheme was rather low among the eligible Peruvian farmers. La Positiva therefore started a campaign to explain the general benefits of insurance, but also to educate farmers about the immediate mechanisms of the scheme, such as claims payment procedures. The campaign was also supported by local radio and television spots as well as printed material, which greatly helped to improve the understanding of the cover.



Premiums paid the Government of Peru: approximately 11% of the average sum insured

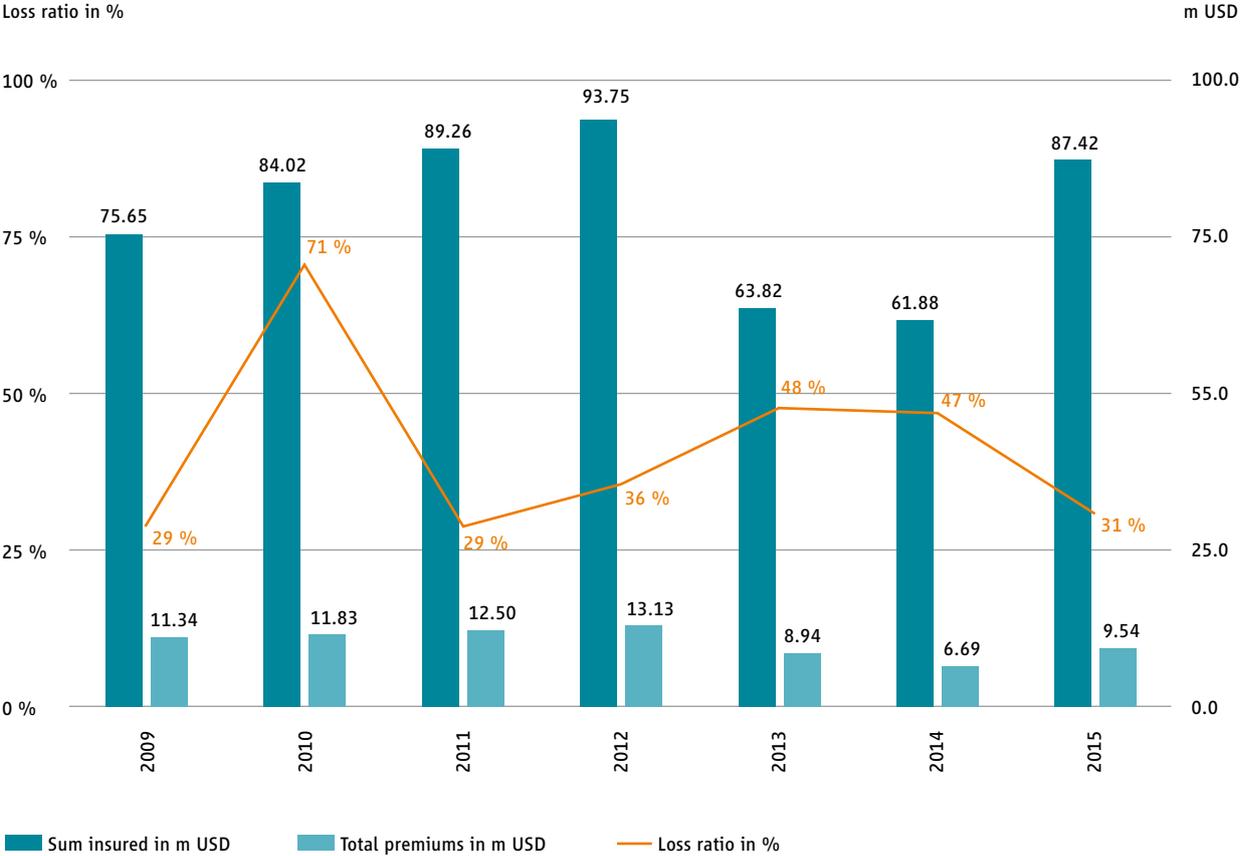


Farmers insured: approximately 130,000



Woman at lake Titicaca, Bolivia

### Seguro Agrario Catastráfico: Performance 2009 – 2015



## Asia

# SANASA Insurance Project – Sri Lanka

### Embracing all aspects of farm life

The SANASA Insurance Project, launched in 2011, aims to enhance productivity and living conditions of smallholding farmers in Sri Lanka, and thereby to improve the country's food security. The SANASA Insurance Company Ltd (SICL), which supports a network of 8,400 savings and credit institutions across Sri Lanka, runs the project and ensures that it embraces all aspects of farm life. SICL bundles crop insurance with life, property or health covers. Until today, the project has reached accumulated 45,000 insureds.

### Detailed grid and data for an exact weather index

In June 2011 the World Bank Group's Global Index Insurance Facility (GIIF) and SANASA Insurance partnered to develop an index-based insurance product for paddy and tea farmers. Based on 30-years of weather data and detailed agricultural maps they plotted tea growing areas for weather stations to ensure the measurement of accurate local weather data which vary significantly in the region. The project team also incorporated the local farmers' knowledge, tied-in their financial situation and enhanced their understanding for insurance products.

### Loss approximations determine the right premiums

After the launch of the initial pilot product to just over 100 farmers, the product was further re-calibrated to meet climatic variations and farmers' expectations. For the full launch in August 2012, tea was added to the portfolio of crops. Premium calculations are typically based on a burn-analysis whereby it is determined how a contract would have performed on prior year experiences, incorporating the index parameters and the assumed average pay-offs for the past 30 years. The calculated risk premium varied by 5-6 percentage points, according to the different weather stations. The weighted mean for all weather stations was taken to calculate a premium for the entire target region.



Rice planting, Thailand

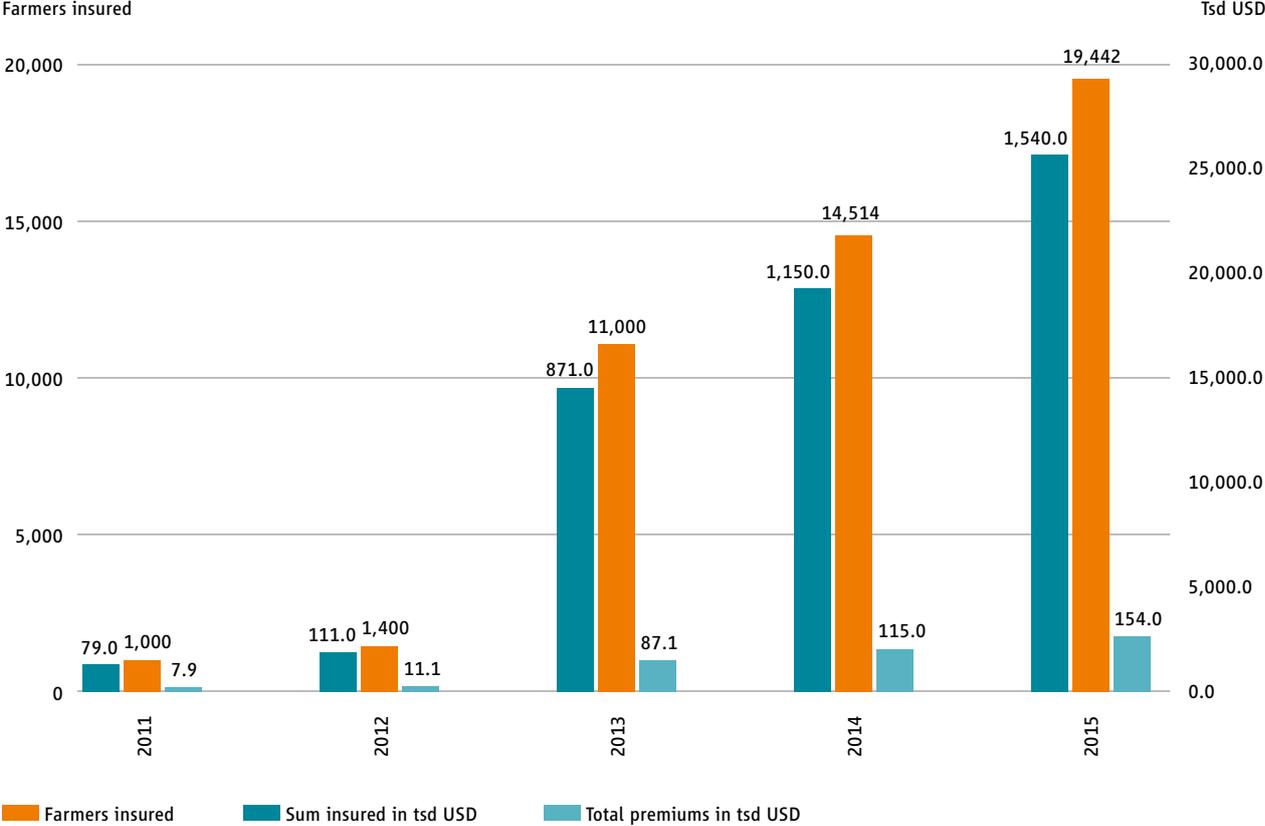
### Marketing as a prerequisite for success

SANASA's strong marketing of the program – at high cost though – was key to its success. Local representatives with influence on the farming societies were selected and promoted the project in road-shows, radio spots and even a docudrama to explain how index-insurance can serve as an effective risk-management tool. These initiatives were supplemented by activities to further build the capacity of the local SANASA Societies. In August 2013, SANASA was awarded with the first prize from the National Agribusiness Council of Sri Lanka for its index-based crop insurance product that has become an essential aspect in the firm's contribution to the development of Sri Lanka's rural community.

 Premiums paid by farmer:  
≈ 8.5% of the sum insured

 Farmers insured: 20,000

### SANASA: Performance 2011 – 2015



## Flood insurance – Bangladesh

### Meso-level parametric flood insurance

Oxfam, the Institute for Water Management (IWM), the risk advisory CIRM, Pragati Insurance Ltd., Swiss Re, Manab Mukti Sangstha (MMS), a local NGO, developed this meso-level index-based flood insurance program in 2013. It aims to assure that poor households exposed to flooding have access to financial resources immediately after a disastrous event. The flood risk is transferred to a formal risk carrier while public sector and development agencies are able to concentrate on risk reduction, instead of post-event catastrophe management.

### Simple and transparent trigger mechanism

The flood hazard model, developed for the project, solely focuses on flood water depths and not on potential losses, as flood loss data was not available for the region – making an indemnity based flood insurance product impossible to price. Instead, a parametric flood index determines if inundation is above a predefined flood water level trigger and pays out based on the number 'flood days' experienced.

### Local development organisation as the policyholder

Pay-outs start after eleven continuous flood days. The amount is calculated based on the data from the flood model. Final contracts between the partners and Manab Mukti Sangstha, the local development organization, which serves as the policyholder, were signed in August 2013. The premium rate is 10.3% of the sum insured, with the average insured sum per family of approximately USD 100. The project currently has 1,661 beneficiaries, the aggregate sum insured amounts to USD 163,000, with total premiums of USD 16,800 annually. The insurance already paid out once in 2014, when floods severely damaged several villages in the Sirajganj district.



Indian woman with child on the way to get water – Rajasthan, India

## Renown multi-country schemes

### Caribbean Catastrophe Risk Insurance Facility (CCRIF)

In 2007 the Caribbean Catastrophe Risk Insurance Facility was formed – the first multi-country risk pool in the world. It was also the first insurance instrument to successfully develop parametric policies backed by traditional and capital markets. Designed as a regional catastrophe fund, CCRIF limits the financial impact of hurricanes and earthquakes, by providing Caribbean governments with financial liquidity when a policy is triggered. Seventeen governments are currently members of the facility.\*\*

CCRIF offers earthquake, tropical cyclone and excess rainfall protection and helps to mitigate the short-term strain on cash-flow, which governments typically suffer following major natural disasters. In 2015/16, CCRIF's premium income totaled USD 11 million with an aggregate exposure of USD 659 million. Since the inception of CCRIF the facility has made 22 pay-outs after hurricanes, earthquakes and excess rainfall to ten member governments totaling approximately USD 69 million.

### African Risk Capacity Insurance Limited (ARC)

Since 2014 ARC enables participating African governments to insure themselves against drought and respond rapidly to harvest failure. ARC uses satellite information to track rainfall during a country's growing season and compares it to the local crop's water requirements. The model predicts whether the harvest has been successful or failed, and the likely humanitarian response cost to address that failure. When an insured event occurs, the insured government uses the ARC pay-out to launch early response activities as set out in a pre-agreed contingency plan.

In 2015 the total sum insured was USD 178 million. ARC transferred USD 72.7 million of the risk to the international risk markets. Seven participating countries paid premiums of altogether USD 24 million. In 2015, when three countries in the Sahel (Senegal, Mauritania and Niger) were impacted by drought, ARC paid out USD 26 million. In 2016 ARC paid out again USD 8 million to Malawi in support of drought-affected families.

\*\* Member countries of CCRIF are: Anguilla, Antigua & Barbuda, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Haiti, Jamaica, Nicaragua, St. Kitts & Nevis, St. Lucia, St. Vincent & Grenadines, Trinidad & Tobago, Turks & Caicos Islands

## Renown single country schemes

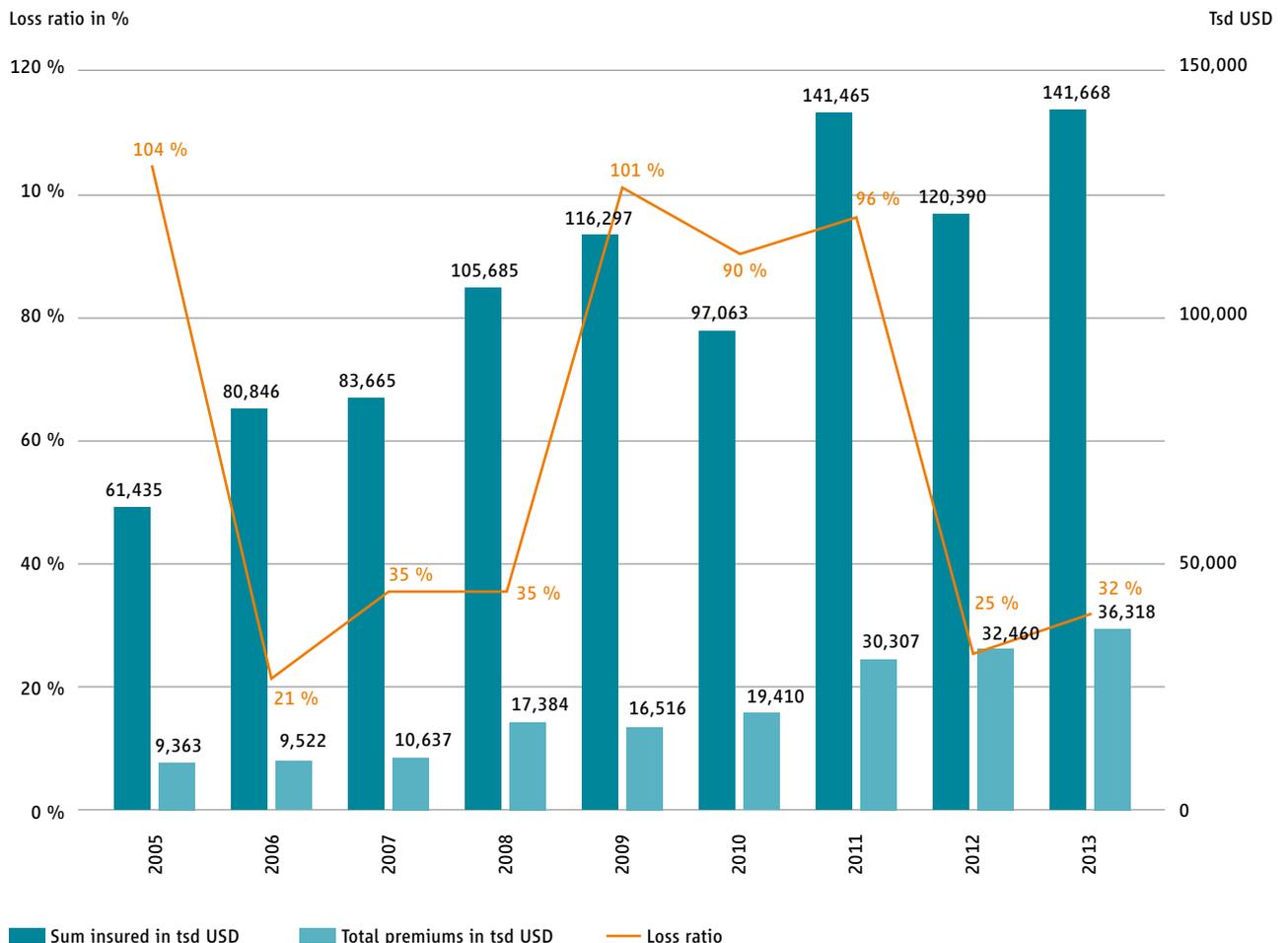
### Mexico CADENA

In 2003 the Mexican government launched CADENA, a large-scale government funded weather index insurance program. Small-scale or low-income farmers with no access to commercial crop, livestock, or aquaculture insurance are the beneficiaries of the coverage. The index insurance scheme currently insures farmers growing staple crops on less than 20 hectares of rain fed land. Following a major catastrophic event, the program provides a minimum compensation

to smallholder farmers and puts them back into production. Premiums are financed by the federal and state governments, with higher federal subsidies for areas with high degrees of marginalization. As individual farmers are not insured directly, state governments receive indemnity payments and distribute them to affected farmers.

In 2013, premium amounted to USD 36 million with the corresponding sum insured of USD 142 million. From 2005 to 2013 the scheme paid out a total of USD 104 million, equal to an average loss ratio of 57%.

### CADENA: Performance 2005 – 2013



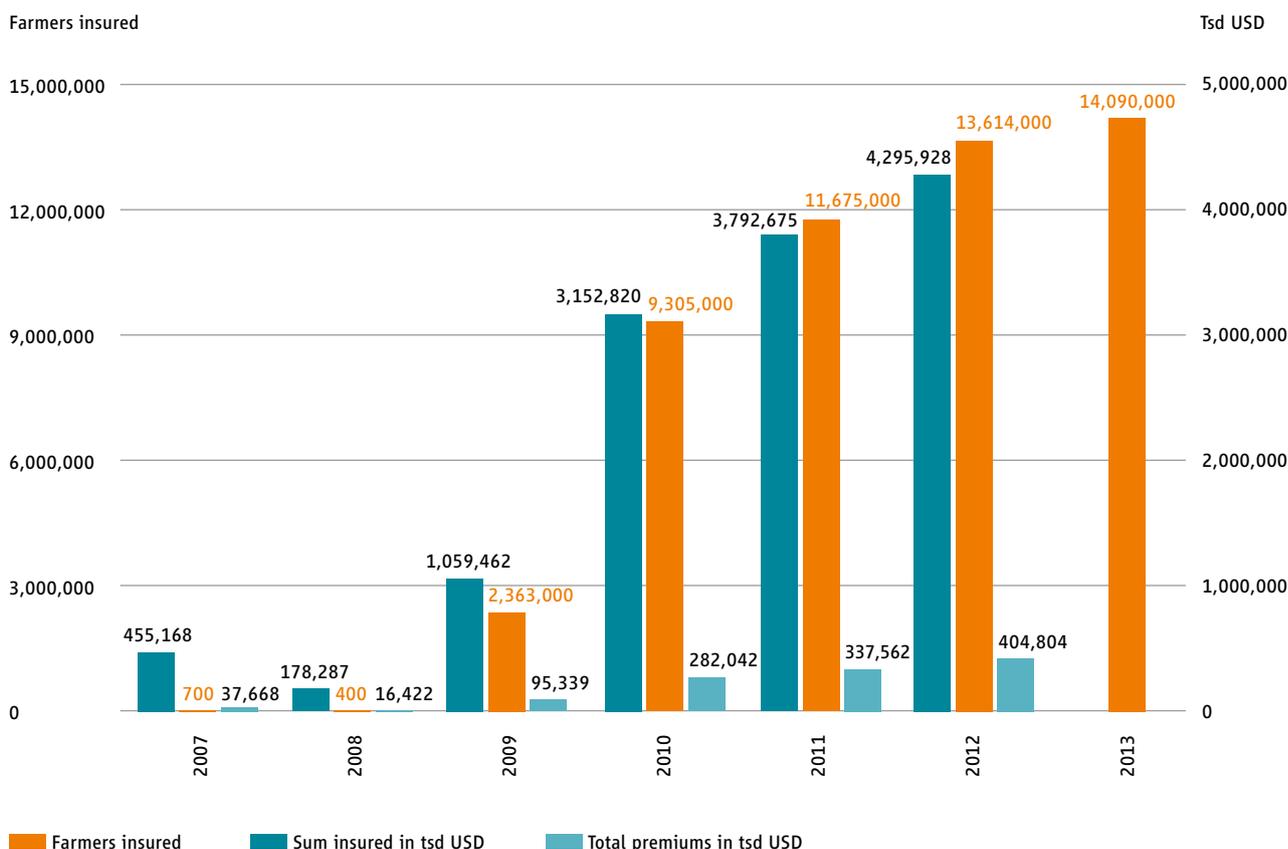
### India Weather-Based Crop Insurance Scheme (WBCIS) and Pradhan Mantri Fasal Bima Yojana (PMFBY)

In 2007, the Indian Government introduced the weather-based crop insurance scheme, WBCIS, covering 40 crops against a range of climate risks that are indexed at one of over 5,000 reference weather stations. The program receives a premium subsidy of 30-75%, depending on the crop and state. The scheme is offered by private insurance companies in competition with the government owned Agriculture Insurance Company of India (AIC). All farmers growing an insurable crop are eligible for coverage. The scheme is mandatory for all loanee cultivators of lending banks and other financial institutions which

have sanctioned credit limits for each particular crop. During the 2014-15 Rabi and Kharif seasons, WBCIS covered 9.6 million farmers with a total sum insured of USD 2.3 billion on an aggregate basis for both seasons. For the 2014 Kharif season, the scheme generated gross premiums of USD 246 million.

In January 2016, the Indian Government has launched the new crop insurance scheme "Pradhan Mantri Fasal Bima Yojana" (PMFBY), replacing the previously existing National Agricultural Insurance Scheme (NAIS) and Modified NAIS. The WBCIS will continue to operate. However, premiums to be paid under the WBCIS have been brought on a par with PMFBY.

### WBCIS: Performance 2007 – 2013



# Micro-, meso- and macro-level insurance programs

- ▶ **Macro-level** insurance covers a government’s risk, namely its responsibility towards its people, in case of a disaster or catastrophic weather-related event, and protects national and/or provincial budgets in years of a catastrophe.
- ▶ **Meso-level** insurance provides a portfolio or group-cover to an aggregator, such as a micro-finance provider, farmers’ association, input or loan supplier, local government or NGO. In turn the aggregator retails its benefits to beneficiaries through a variety of services.
- ▶ **Micro-level** insurance is a mechanism to directly protect poor and vulnerable households against risks in exchange for insurance premium payments tailored to their needs, income, and level of risk.

