Insuring crops of countries and states with weather index solutions
Crop shortfalls strike the economy of entire states and not only individual companies

Significant crop shortfalls observed in various parts of the globe in recent years have had an adverse impact not only on the agricultural sector of countries but also on many other economic sectors related to agriculture, such as logistics, storage and processing industries. Lower supplies of agricultural commodities push up domestic food prices, potentially leading to social and political tensions. This may require additional public budget spending, in particular on importing food, or may result in decreased government revenue due to lower taxable earnings. Instead of just reacting to such critical situations, governments can take proactive measures to mitigate and minimise the consequences of a crop failure. Given the number of market players and the diversity of crops and farming technologies, a state crop insurance programme may seem difficult to implement. Index-based solutions by Swiss Re Corporate Solutions allow addressing major concerns of governments in this regard, by cutting the administrative burden and ensuring prompt payout after a loss.

Traditional crop insurance products are often not best suited
Crop insurance traditionally tends to be indemnity-based, which means that potential perils to crops are defined in advance and, when an actual loss arises, the scale of the loss is measured in the field. This involves inspection, complicated loss assessment procedures as well as a hefty administration burden and increased costs. For an easy-to-administer coverage suited to their specific needs, states can now look to weather index-based insurance solutions.

Light administration and high efficiency of index-based solutions
Swiss Re Corporate Solutions offers various types of index-based insurance products. They can be structured in a number of ways and can be tailored to meet the specific demands of various states. The weather indices are based on weather parameters measured and reported by an independent party. Claims under weather index-based covers are settled in accordance with pre-agreed payout calculations that depend on one or several triggers. The trigger is set for each risk period, or a phase of the crop growing cycle. The most commonly used indices are based on weather data such as rainfall and/or air temperature tracked either directly, using weather stations, or indirectly via satellites. We also provide crop insurance based on other satellite data such as the normalised difference vegetation index (NDVI) that measures the chlorophyll content of the crop. Our weather index insurance covers can be tailored not only to the needs of states but also to those of businesses along the agricultural supply chain (input suppliers, crushers, millers etc).
How do we calculate the payout?
We jointly agree on a weather parameter, the method of measurement (weather-station or satellite data) and the risk periods during which the weather parameter is monitored. In a second step, we assess the historical weather data for a particular parameter, region and risk period to establish payout triggers (maximum and/or minimum benchmarks) and agree on a payout formula. This can be a sum of money per parameter unit (for example, mm) exceeding or falling below the benchmark, or a sum of money per hectare affected.

Client example: A federal state in Mexico

One of Mexico’s federal states takes part in the federal weather index-based insurance programme to protect its large farming sector from financial losses due to adverse weather conditions during the growing cycle.

The state selected 15 weather stations in its key crop growing regions. Each of the weather stations monitors a certain area of maize cultivation, with a total area of 200,000 ha covered by all stations combined. A risk period and cumulated rainfall benchmarks are pre-defined for each weather station. The risk period corresponds to a certain period in the crop growing cycle during which the crop is extra sensitive to adverse weather conditions.

At the end of the 2013 harvest season, Swiss Re Corporate Solutions validated the cumulative rainfall recorded during the observation period. Although it was an average year in Mexico in terms of precipitation, one weather station measured rainfall in excess of the agreed benchmark and triggered a payout for an area of 20,000 ha. For every hectare of cultivated land monitored by this weather station, the state received USD 100.

In sum, the state in Mexico received a payout of USD 2 million in compensation. This allowed the state to cover its losses and helped mitigate the crisis in the farming sector.

Key features of index-based insurance
- Index-based insurance protects states against a negative impact following adverse weather conditions
- Cover is structured using weather parameters impacting crop yield and/or quality
- Settlement is based on ground weather stations or satellite data provided by an independent third party
- No additional proof of loss or farm visits are needed to verify the crop condition
- Policy can be renewed annually or signed on a multi-year basis
- Clients can choose a structure (triggers, risk periods) that best meets their needs
Client example summary: A federal state in Mexico

Information provided by the client/insurance structure details
Risk period: 1 October – 15 November 2013
Weather parameter: cumulative precipitation [mm]
Number of weather stations: 15
Crop: maize
Total area under cultivation: 200 000 ha
Benchmark for risk period: 945 (lower) – 1 123 (upper) mm
Payout: USD 100/ha

Payout information
Cumulated rainfall during risk period: 1 203 mm
Area covered by weather station that triggered: 20 000 ha
Payout calculation: 20 000 ha × USD 100/ha = USD 2 million

Swiss Re Corporate Solutions payout to client: USD 2 million
Benefits for countries and states
Weather index-based insurance offers a number of advantages:

- The farming sector of a state is covered against adverse weather conditions during a pre-defined risk period
- Insurance cover can be applied independently of historical yield data
- The cover is easy to purchase and to administer
- The claims process is straightforward and transparent – third-party data are used for the weather parameters applied in determining the payout
- The payout is fast and based on a pre-agreed structure
- The cover allows states to stabilise the entire supply chain of the domestic farming sector
Swiss Re Corporate Solutions offers innovative, high-quality insurance capacity to mid-sized and large multinational corporations across the globe. Our offerings range from standard risk transfer covers and multi-line programmes, to highly customised solutions tailored to the needs of our clients. Swiss Re Corporate Solutions serves customers from over 50 offices worldwide and is backed by the financial strength of the Swiss Re Group. For more information about Swiss Re Corporate Solutions, please visit www.swissre.com/corporatesolutions or follow us on Twitter @SwissRe_CS.

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