



Lessons learned: structuring and pricing index-based insurance in developing countries

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Marcel Küttel, Weather Underwriter, Swiss Re Corporate Solutions





Swiss Re at a glance



Swiss Re is a **leading and highly diversified global reinsurer**, founded in Zurich (Switzerland) in 1863

The company offers **traditional reinsurance products and related services** that are complemented by **insurance-based finance solutions** and supplementary **services for comprehensive risk management**



Swiss Re is the industry leader in **insurance-linked securities and agriculture risk transfer**

Swiss Re is rated “**AA-**” by S&P’s, “**A1**” by Moody’s and “**A+**” by A.M. Best



Key Statistics

	FY2010 USD bn	FY 2011 USD bn
Premiums earned:	19.7	21.3
Net income:	0.9	2.6
Shareholders’ equity:	25.3	29.6
Return on equity:	3.6%	9.6%
Return on investments:	3.5%	5.1%



Swiss Re's role: Index-based insurance in emerging markets



- Swiss Re is a pioneer in index-based insurance with an established track record in India, sub-Saharan Africa, and other emerging markets
- Has been involved in index-based solutions on macro, meso, as well as micro level
- Technical Partnership with Global Index Insurance Facility (GIIF)



Technical Partnership with IFC

Global Index Insurance Facility (GIIF)

Established by the World Bank, in particular the International Finance Corporation (IFC) to **support index insurance product development and capacity building in emerging markets** benefitting farmers and people in agrarian communities.

Under the partnership agreement, Swiss Re Corporate Solutions provides technical services to the Global Index Insurance Facility projects and supports strategic objectives through its experience in developing innovative risk transfer solutions for emerging markets.

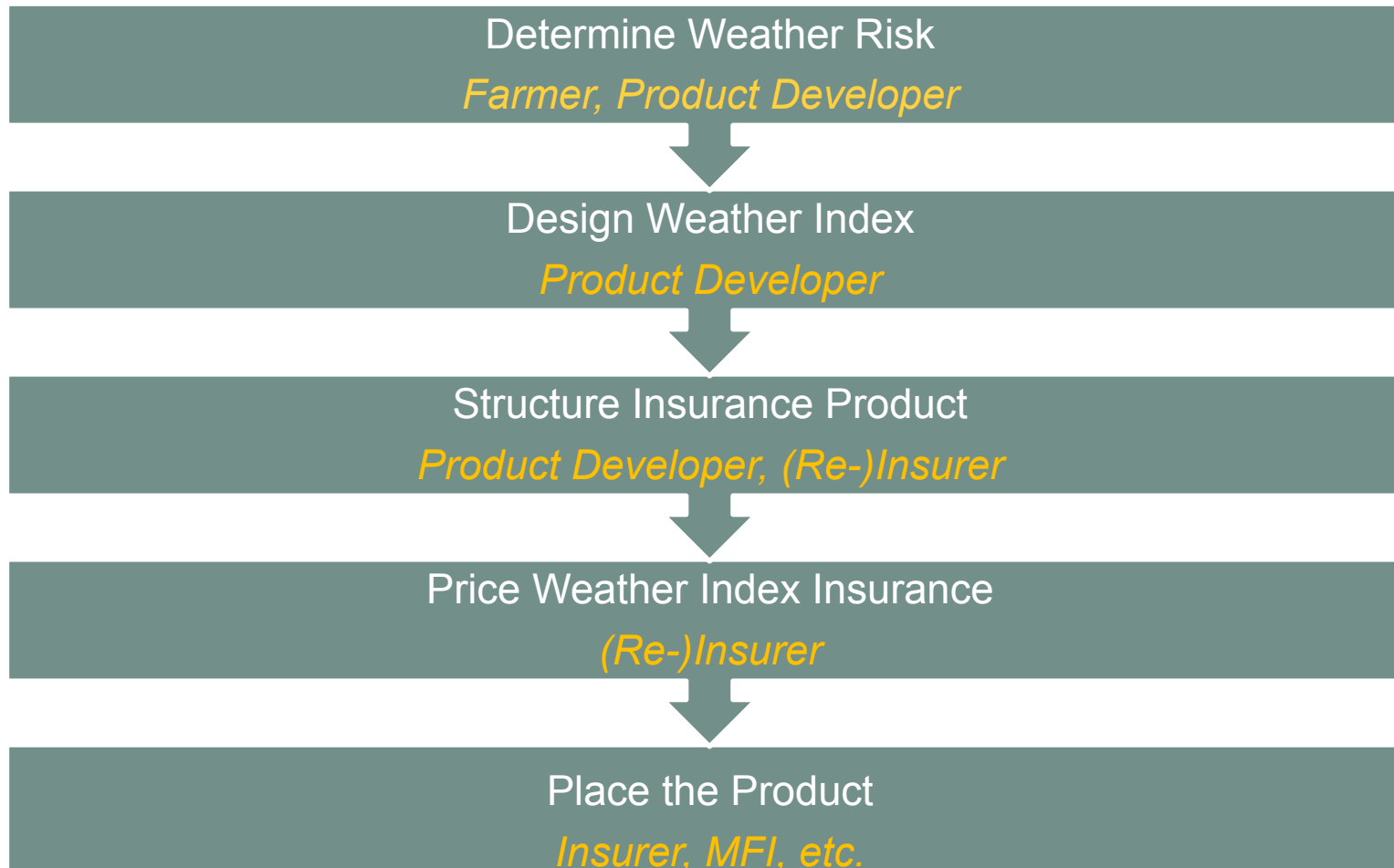


Index-based risk transfer solutions for the agricultural sector

Production shortfall (Volume / Price)	Weather/Satellite based Index
<p>Risk: Volatility in earnings due to low yield and related price fluctuations</p> <p>Production index = (planted area * ΔYield * Δ Price) in excess of retention</p> <p>Measure of shortfall:</p> <ol style="list-style-type: none"> 1. Official production statistics 2. Third party assessments (eg inspectors) <p>Indemnity: Deviations from yield and/or price from agreed values from agreed data</p> <p>Perils: Hail, flood, drought, excessive rainfall, frost, storm, fire, pests, diseases, lower quality, etc.</p> <p>Drawback: Historical data (area planted, yield) not always reliable or available, solution works best for large geographical areas.</p>	<p>Risk: Volatility in earnings due to weather exposure from measurable weather perils</p> <p>Weather index = ΔTemp/Precip * Price per Tick</p> <p>Measure of shortfall:</p> <ol style="list-style-type: none"> 1. Weather data 2. Satellite-based drought index <p>Indemnity: Deviations (“ticks”) from agreed weather parameters measured at agreed locations</p> <p>Perils: Usually rainfall and/or temperature with its extremes (excessive rainfall, drought, frost)</p> <p>Drawback: Weather data not accurately representing area of interest, short time series Correlation not as high as e.g. for the energy sector.</p>



Index-based insurance: process and stakeholders





Index-based insurance: standard vs reality

	DATA	STRUCTURE	TIMELINE
'Standard'	<ul style="list-style-type: none">▪ 15-20 years▪ no gaps▪ homogeneous▪ near real-time update	<ul style="list-style-type: none">▪ validated▪ low basis risk▪ understood by all stakeholders	<ul style="list-style-type: none">▪ final structure >1month prior to inception▪ no selling past inception date
'Reality'	<ul style="list-style-type: none">▪ lots of gaps / errors / excessive filling up▪ Inconsistent flagging, bugs▪ AWS distant from MWS	<ul style="list-style-type: none">▪ not validated▪ complex / misunderstood▪ unpractical▪ low premium vs high coverage	<ul style="list-style-type: none">▪ selling past inception date▪ no placement due to logistics▪ late selling figures



Major challenges / discussion points

- **Distribution:** insurance often linked to credit with the credits being given once planting season has started, that is *post-inception* > *adverse selection/bad practice*
- **Structure:** complex indices are not readily understood by farmers, insurers and other stakeholders > *simplicity and education is needed, particularly for scaling and local capacity building*
- **Basis risk (I):** validation with historical yield/loss often insufficient > *basis risk unknown*
- **Basis risk (II):** there will always be a basis risk (microclimate, sowing decision, structure itself imperfect, etc.) > *basis risk fund?*

Corporate Solutions

Swiss Re



Thank you

Marcel Küttel
Environmental & Commodity Markets

Swiss Re Zurich Ltd
Mythenquai 50/60
CH-8022 Zurich

Tel: +41 43 285 4479
E-mail: Marcel_Kuettel@swissre.com



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