



# Transferring Business Risk via Parametric Insurance

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**AXA CLIMATE**

Climate parametric insurance



Like 80% of **economic sectors...**



Agriculture



Renewables



Gas & Energy



Transport



Construction



Public Sector

... your business may be impacted by **climate risks**



FROST



EXCESS RAINFALL



DROUGHT



FLOODING



STORMS



HEAT WAVE



WILDFIRE



EARTHQUAKE

**80%**

of economic sectors are frequently impacted by weather anomalies<sup>(1)</sup>

**\$520 bn**

average annual **cost of natural hazards** to the global economy<sup>(2)</sup>

**US\$162.5 bn**

global **insurance gap** in 2018, leaving businesses and governments without insurance to rebuild and recover from natural disasters<sup>(3)</sup>

**90%**

of **economic losses** due to natural disasters in developing countries are not covered by insurance<sup>(4)</sup>



# Parametric insurance market

Climate parametric solutions are much more than an emerging “niche market”

Today, climate parametric insurance is about **€5bn GWP<sup>4</sup>** (80% are public-private partnerships reinsurance programs), with steady growth of **5 to 10% per year**.

Climate<sup>1</sup> parametric solutions emerged 20+ years ago. They moved from early innovation phase in energy markets to a **more mature multi-line market adoption**, driven by:

- The rising need for **filling protection gaps** against climate risks (\$162bn in 2018<sup>2</sup>).
- **Technological advances**, in particular in data processing, making it possible to reduce the “basis risk”<sup>3</sup> (main obstacle to a wide development of parametrics).

Today, reinsurers dominate the parametric insurance market

Swiss Re leads the market, with a **\$500m annual GWP<sup>6</sup>** on the corporate market (x10 **AXA Climate 2018**) of which **\$75m** is from US.



Munich Re, Sompo, Allianz, Berkshire Hathaway and AXA Climate (on behalf of the AXA Group) and many others are

Munich RE



SOMPO



[1] “Climate” encompasses weather (temperature, rainfall...) and natural disasters, including earthquake [2] Lloyd’s 2018 Underinsurance Report

[3] Basis risk is the difference between the index trigger and the real loss [4] AXA Climate market intelligence [5] AXA Emerging Risks Survey 2019



## Food

FROST Protection  
DROUGHT  
Protection  
YIELD Protection\*

## Natural

Catastrophes CYCLONE  
Protection EARTHQUAKE  
Protection WILDFIRE  
Protection\*

Product  
catalogue

## Energy

TEMPERATURE Protection  
SOLAR RADIATION  
Protection WIND  
Protection\*

## Transport

WATER LEVEL  
Protection RAINFALL  
Protection\*

## Construction

\*and more



# Parametric insurance: an **innovative** way to **complement**

**traditional  
insurance**

## **Customer's pain points**

"Claim payments take **too long**"



**FAST**

**Quick and automatic payout** whenever the index reaches the threshold

"I feel the payout is being **influenced by insurers**"



**TRANSPARENT**

Parameters involve **objective, independent measurement**

"Traditional insurance is **not available for some of my risks**"  
"No insurers accept to cover my **financial loss** when there is **no physical damage**"



**ADJUSTABLE**

Coverage made to match your specific needs **filling insurance gaps** to ensure operational continuity



# We use indices that measure those events to offer parametric insurance solutions

Parametric insurance relies on indices that are **correlated to your actual losses**



Temperature



Rainfall



Wind speed



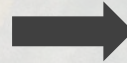
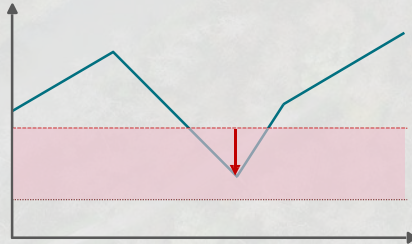
Yield



Magnitude

...

If the index reaches a **predefined threshold**...



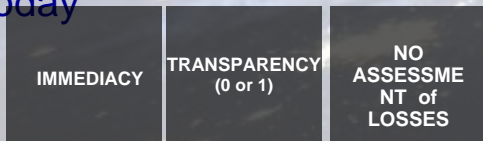
... You receive a **payout** of a predefined amount within a few days or weeks



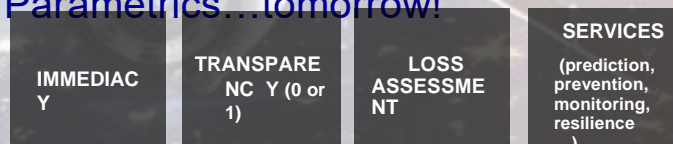


# From « index-based » Parametrics...

“Index-based” Parametrics  
today



“Augmented”  
Parametrics...tomorrow!



# ...to « augmented » Parametrics!





# Our solutions for rice

*Drought Protection & Yield Protection*





# The need for protection against weather perils for rice producers



- Rice producers have suffered from serious losses due to drought in the past
- Besides, climate change induces an increased risk of drought in the following years
- Mitigation measures are recommended to become more resilient to weather adversities



Parametric products provide a

- ✓ **Simple** (no claim process)
  - ✓ **Fast** (indemnity paid a few days after the risk period)
  - ✓ **Transparent** (payout based on rainfall data, available publicly)
- financial solution to the client



# Rainfall Protection for fruits

*Example of Durian*








# DROUGHT protection

Case study: durian producer in  
Malaysia

## CLIENT NEED

The durian producer wants to protect himself against the risk of drought in their plantations

 **Pain point: no existing cover for decrease in yield due to lack of rainfall – not included in property insurance**

## OUR SOLUTION

We offer drought insurance adapted to the client's needs, budget and risk location.

Our product is sold as a standalone policy that perfectly complements existing traditional property policies

## INSURANCE COVERAGE

Index	Cumulative rainfall during a specific period (e.g. Jan-Dec)
Trigger	Cumulative rainfall < 1200 mm
Payout structure	5,000 USD / mm below the threshold
Contractual compensation limit	3,000,000 USD
Payout	2018 : USD 1,000,000

Cumulative rainfall in mm (Jan-Dec)





# Aquaculture Protection





# AQUACULTURE PROTECTION uses objective and independent climate data

For each index and geography ...

We select reliable and accurate data sources



Air temperature



Speedwell Weather



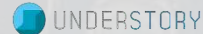
Sea surface temperature



Sea surface oxygenation



Rainfall



Wind speed/  
cyclone grade



...



# WAVE Protection







# WAVE protection



## Case study: offshore wind farm in Japan

### CLIENT NEED

The client is looking for a solution to protect themselves against Business Interruption or material damage due to high waves

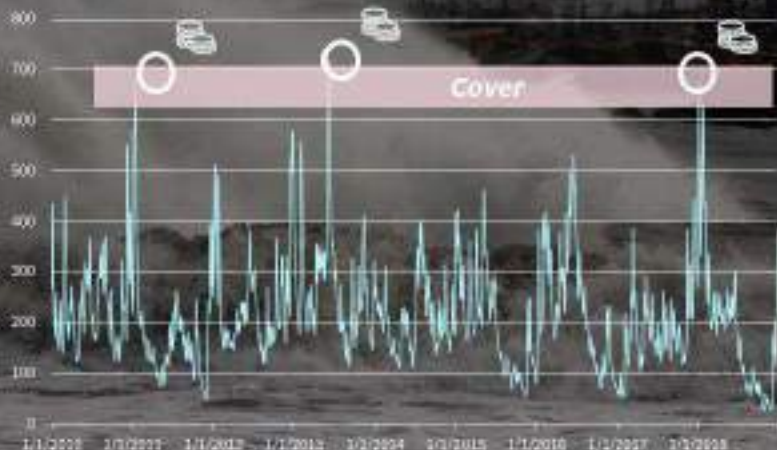
**Pain point: no existing coverage in traditional insurance - not included in property insurance**

### OUR SOLUTION

We offer an insurance adapted to the client's needs, budget and risk location. Our product is sold as a standalone policy that perfectly complements existing traditional property policies

### INSURANCE COVER

Index	Wave height measured by buoy or satellite
Trigger	Daily maximum wave height above 600 cm
Payout structure	Index above trigger (in cm) * notional
Notional	USD 10,000 per cm above 600 cm
Limit	Daily maximum wave height above 700 cm (corresponding to USD 1m payout)





# SOLAR

## protection solar panel farm in Vietnam



### CLIENT NEED

The client is looking for a solution to manage the reduction of energy production due to cloudy seasons – and thus protect the continuity of its revenue. Can be particularly useful for loan payback insurance.

**☀ Pain point: no existing coverage in traditional insurance – not included in property insurance**

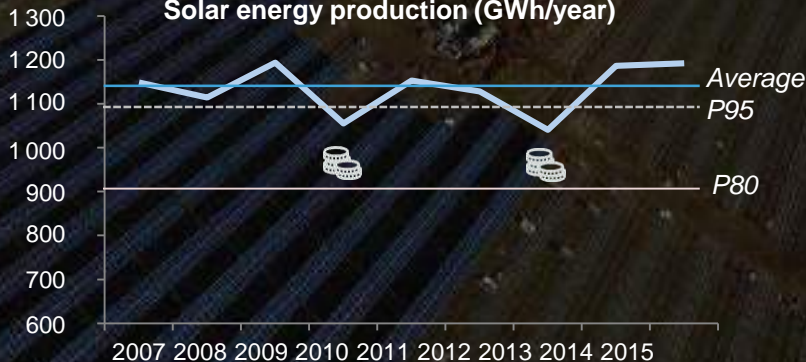
### OUR SOLUTION

We offer a solution that financially **protects solar farms against natural fluctuations**. We model the daily energy produced according to solar radiation to secure the financial equivalent of reliable solar production.

### INSURANCE COVER

Index	Modelled daily energy production
Trigger	Yearly production decrease below 5% (P95)
Limit	Yearly production decrease below 20% (P80)
Max payout	Production drop * Electricity price

### Solar energy production (GWh/year)





# SOLAR protection

Project name(s) and general description: MW size, exact location (lat / lon) etc.	
Description of the level of protection required, including limit desired	<i>e.g. P75-P99, or 300,000 MWh – 250,000 MWh</i>
motivation for acquiring solar risk cover	<i>e.g. risk aversion / recently suffered from lack of sun / loan insurance, etc.</i>
Power price per MWh to be covered	
Desired duration of coverage	<i>1-year coverage preferred. LTA are possible up to 3 years with exit clauses e.g. Excessive Loss Ratio &amp; Material change of risk</i>
Solar panel specifications (conversion factors etc.)	
transfer function from irradiance to power (aka 'power curve')	
Pyranometer/equivalent measurement data, or if operational, historical production data	

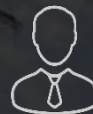


# AXA Climate: specialized in climate parametric insurance



**Team of  
experts**

Meteorologists, agronomists,  
data scientists,  
mathematicians, engineers  
and more



**Clients**

Corporations,  
governments,  
institutions



# Strong focus on Public-Private

## Partnerships

Involvement with the largest and natural catastrophes schemes in

the world, covering more than 200 million farmers





# Before, during and after the event

## Climate Insurance

In real time, AXA Climate triggers the payout that matches the damage suffered by communities

## Climate Services

In real time, AXA Climate allows communities either to avoid events or to reduce their impact by making anticipation and resilience services available

INSTANT PAYOUT

PREDICTIO

MONITORING  
&  
PREVENTIO  
N

RESILIEN  
CE

**Virtuous circle (at last!) between prevention and insurance**  
AXA Climate trigger immediate (and tracked!) actions from customers ...  
e. g.: infrastructure alerting service



# FASTCAT | Example of flood

1

- Event detection
- Precise area delimitation



2

- Customer's mapping



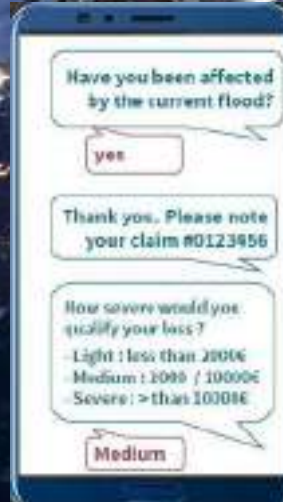
3

- BOT conversation with customers



4

- Fast payout
- Efficient claim settlement



The background of the slide is a photograph of a satellite in orbit above Earth at night. The satellite is a complex, cylindrical structure with various instruments and two long, rectangular solar panel arrays extending outwards. The Earth's surface is visible below, showing a dense network of city lights that appear as bright yellow and orange streaks against the dark blue and black of the night sky. The horizon of the Earth is visible as a thin, glowing line. In the upper left corner, a portion of the moon is visible in the blackness of space.

**Thank  
you**





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