Preparing and assessing an agriculture index insurance product proposal, *Singapore*, *14th March*, *2017*

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A) PRODUCT FEATURES

a) Suitability of product for targeted farmers/crops/value-chain;

b) Relevance of perils insured for targeted farmers/crops/value-chain;

c) Steps taken to reduce basis risk and any measurement of underlying basis risk and reasons;

d) Correlation between historical payouts and losses incurred by farmers (yield/ground-truthing);

e) Payout structure- partial payouts/binary/ step-wise/ linear/min-max payout/rate of payout;

f) Basis of Sum Insured e.g. Loan amount, Cost of Production, Expected Yield, Fixed Cash Amt etc;

g) Hybrid structures- compatibility with other types of cover e.g. WII + Indemnity/ WII + AYII;

h) Use of deductibles/ excess vis a vis use of triggers;

i) Rationale for coverage dates, waiting period, exclusions etc.

CASE STUDY ON PRODUCT FEATURES

Weather Index Insurance product has been developed for small-scale rice farmers in Sri Lanka. Features are:

a) Perils covered: Drought (dry spells over 20 days) and Excessive Rainfall (heavy rain over 3 days);

b) Relevant for rice under rain-fed production as well as minor and major irrigation;

c) Some historical data (yield and farmers' experience of bad years) has been collected;

d) Loan amount (for rice farming) is covered, which is approx. 80% of cost of production;

e) Coverage date is from 1st May 2017 to 31st July 2017;

f) Deductible of 5% of Sum Insured. Payout is from 5% to 70% of SI for drought and 5% to 30% of SI for excess rainfall;

WHAT FURTHER INFORMATION DOES A REGULATOR NEED REGARDING THESE PARAMETERS AND WHY?

B) UNDERWRITING AND PRICING

a) Source, accuracy and access to the weather data- weather stations or satellite;

b) Summary of underlying data for index- number of years/seasons/gaps/quality checks/statistics;

c) Method used to derive parameters e.g. trigger levels, payout levels;

d) Pricing method used- deterministic/ stochastic/ blended approach/loading for extreme events;

e) Pricing vs Payouts and Basis Risk for different options;

f) Pricing key assumptions (Burn Cost/Office Premium; Target Claims Ratio; Expense Ratio), CAT Loading;

g) Premium Rates compared to production cost, expected yield and farmer's expected margin;

h) Access to basic data requirements e.g. GPS coordinates of reference points, duration of season;

i) Different sources of data used e.g. weather station, satellite, yield, farmer's feedback etc.

CASE STUDY ON UNDERWRITING AND PRICING

- The WII in Sri Lanka for paddy has been developed using data from weather stations where available;
- Satellite data used as back-up when weather stations are unavailable;
- Mostly deterministic approach used for pricing with some stress testing for CAT loadings;
- Recommended premium was 9% (of Sum Insured) but farmers/aggregators wanted the 5% option;
- Data collected from farmers on historical bad years was taken into account for product design;
- Very limited use of yield data due to unavailability of reliable yield data;
- Target Claims Ratio of 60% and CAT loading of 20%.
- Location of farmers not known, so central point in every district used as reference points for products based on satellite data.

WHAT COMMENTS WOULD A REGULATOR HAVE ON THE UNDERWRITING/PRICING PROCESS?

C) DISTRIBUTION AND AGGREGATION

a) Insurable interest for aggregator and use of product as insurance instead of derivative;

b) Roles and responsibilities between insurer/aggregators/brokers/loss-adjustors etc;

c) Method used to enroll farmers for other business and for insurance;

d) Compatibility with other regulations e.g. mobile regulator/ Ministry of Agriculture;

e) Policy wording used for Group Policy and compatibility with any individual policy certificate;

f) Business case for aggregator e.g. reducing credit exposure, farmer incentive, marketing tool;

g) Method used to pay premium- pre-financing/ collection from farmers/subsidy;

h) Incentives used for enrolling policies- commission, administrative fee, profit-share etc;

i) Scope for delegation of claim payment with aggregators.

OPTIONS ON DISTRIBUTION/AGGREGATOR

The rice product can be distributed via the following aggregators:

a) **Farmer organization**, using insurance as collateral for accessing loans, after paying a deposit;

b) **Contract farming company**, giving farming inputs on credit to the farmer and buying the crop;

c) **Input supplier**, selling the rice seed only to the farmers on cash and sometimes on credit;

d) **Bank/MFI** disbursing agriculture loans to rice farmers;

e) **Government fertilizer subsidy scheme**, where insurance is mandatory and linked to the input subsidy.

WHAT FURTHER INFORMATION WOULD THE REGULATOR NEED FOR THESE AGGREGATORS TO ASSESS

THE DISTRIBUTION RISKS ASSOCIATED WITH EACH TYPE OF AGGREGATOR?

D) CUSTOMER AWARENESS/MARKETING

a) Methods used to raise awareness of product- farmer meetings, posters, training of trainers;

b) Content of any training of trainers done and qualifications of trainers;

c) Sample of marketing literature/poster/leaflet used;

d) General key messages on product and clarification that product insures specific index only;

e) Plan on raising awareness during season and at point of claim payouts;

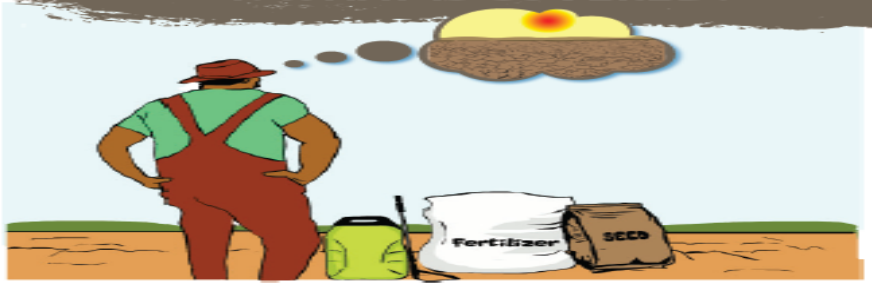
f) Monitoring process in place to monitor effectiveness of trainings implemented;

g) Process in place to answer farmers' and aggregators' (including field staff) questions and complaints;

h) Calendar and duration over which awareness raising has occurred and accessibility for farmers etc.

HOW DOES DROUGHT INSURANCE WORK?

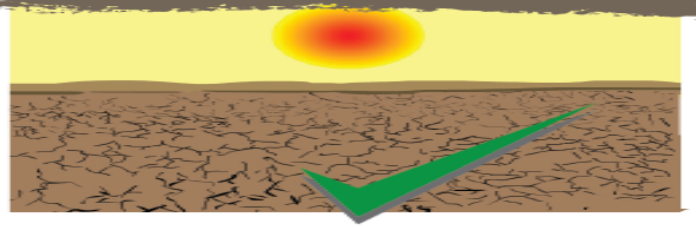
1. WHAT IS COVERED?



2. WHAT IS THE COST AND POSSIBLE BENEFIT?

COST (PREMIUM)	
MAXIMUM POSSIBLE PAYOUT	

3. EVENTS COVERED

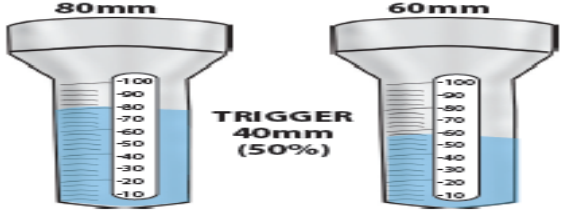


4. COVERAGE PERIOD

5. WHEN AND HOW DOES IT PAY?

LOCATION A

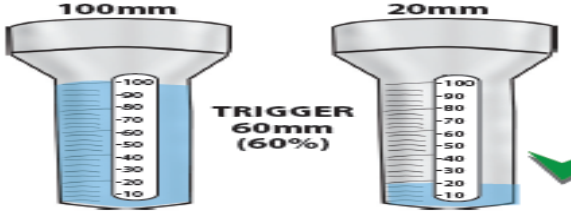
Normal Rainfall **80mm** | Observed Rainfall **60mm**



As weather conditions are different in different areas, triggers vary .

LOCATION B

Normal Rainfall **100mm** | Observed Rainfall **20mm**



How much will the payout for location B be?

1mm of rain below trigger = K 1.50

Observed rainfall was 40 mm below trigger = 60mm – 20mm = 40 mm

40mm X K1.50 = K60

WHAT ARE THE TRIGGERS IN MY LOCATION?

Trigger Period A ☐ Trigger Period B ☐

6. QUESTIONS AND COMPLAINTS

FIELD CONTACT .....

INSURANCE COMPANY .....

E) CLAIMS PROCESS

a) Frequency, process and reliability of weather reports;

b) Time taken to obtain underlying data e.g. weather, yield data;

c) Method used to derive yield estimates e.g. Crop Cutting Experiments, Survey, through aggregators

d) Basis of claims payment- First Loss, Lowest, Highest or Average Payout in case of multiple events;

e) Contingency plan for dealing with significant basis risk events e.g. 2nd trigger, field inspection;

f) Process followed to explain claim payouts to aggregators and farmers;

g) Sharing of claim information with aggregators and farmers and potential conflicts of interest;

h) Methods in place to ensure claim payouts via aggregators are paid/reflected for farmers.

OPTIONS ON CLAIMS PROCESS

The following claims settlement options are possible for rice in Sri Lanka:

a) Weather Index Insurance (WII) based on weather data from manual weather stations run by the meteorological department;

b) WII based on weather data from automatic weather stations run by a private sector provider;

c) WII based on satellite data sources, maintained by a university in the UK;

d) A national declaration of drought and flood, at the district level;

e) Scope to carry out yield assessments (for an Area Yield Index product) by the Ministry of Agriculture

using Crop Cutting Experiments and with the data verified afterwards by the Statistical Office.

WHAT ARE THE PROS AND CONS OF EACH OF THESE CLAIMS PROCESS?

F) REINSURANCE AND RISK MANAGEMENT

RISKSHIELD

a) Expertise of reinsurer with index insurance products and sharing of technical knowledge;

b) Type of reinsurance- Quota Share/ Aggregate XoL and rationale behind type used;

c) Method used for payment of reinsurance claims e.g. claim payments or adjust with future payments;

d) Reinsurance premium compared to insurer's own calculations on burn cost/risk premium rates;

e) Details on reinsurance treaty e.g. duration of coverage, renewal clause, dispute resolution;

f) Reinsurers' existing exposures in same country and region and exposure to systemic risks;

g) Contingency plan if exceeding reinsurance cover- other types of reinsurance, ceding to government;

h) Investment strategy employed by insurer and rationale behind investments.

OPTIONS ON REINSURANCE STRATEGY

The following reinsurance options are possible for rice in Sri Lanka:

a) Quota-Share with 20% retained by insurer and 80% reinsured;

b) Quota-Share with 5% retained by insurer and 95% reinsured (since insurer is new to this line);

c) Aggregate Excess of Loss with attachment point of 120% Claims Ratio and up to 250% Claims Ratio;

d) Co-insurance between 3 local insurance companies in a pooling arrangement;

e) Insurer offers an indemnity product to farmers but reinsures the portfolio based on an indexed insurance product based on satellite data, to capture major droughts.

WHAT ARE THE PROS AND CONS OF EACH OF THESE REINSURANCE STRATEGIES?