Managing risks to improve farmers’ livelihoods
High Level Policy Dialogue Workshop on Agricultural Risk Management

Volume II
PRESENTATIONS
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Agricultural risk management tools in Uganda

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Presentation 1:
The Finance, Information & Risk Management Model (FIRM)
Jaime Ter Linden, Founder, Agri Risk Analyzer
Robert M Kintu, Principal Consultant, Fit Uganda

The Problem

Farmers don't run their farms as a business:
- Average land ownership less than two acres
- Outdated production & storage technologies, poor seeds
- Low cashflow generation and profitability

High Risks in the Sector:
- High individual risks
- Farmers are highly exposed to risks (drought, pest & disease, market, etc.)
- Many risks are catastrophic
- Poor Risk Management knowledge and expertise

Service Providers shy away from the sector:
- Low purchasing power of farmers
- High risk of farmers (for banks and insurers)
- High operational costs to service the sector

Result: an underserved sector
FIRM – How does it work?

FIRM – Risk Analytics

The Agri Risk Analyzer will process the data and calculate:

- Risk Information:
  - A risk score (1-5 scale) indicating the farmers' risk exposure
  - A sensitivity analysis providing how risks contributes to the total risk
- Risk Mitigation Advice:
  - An overview (ordering) of most effective and efficient risk mitigation options, like insurance or irrigation
- Credit Score*:
  - A score based on 'distance to default'

* Sufficient financial farmer data needed in order to process a credit score
FIRM Partners

**Roles**
- **FIT Uganda**: Lead partner, operating the FIRM system
- **Agri Risk**: Providing risk analytics & advice
- **FINCA, Postbank**: Banking partners
- **Jubilee**: Insurance partner
- **Makerere University**: Development partner, technical support & training
- **MAAF**: Public partner, extension services
- **PARM**: Facilitator, stakeholder management

FIRM – Added Value for Users

**Farmers**
- Access to Finance, Market & Extension by Integrating:
  - Farming Information
  - Risk Analysis & Advice
  - Debit Card for Transaction
  - Linkage Financial Services
  - Linkage to Risk Solutions

**Extension Services, NGO & Policy**
- Individual and aggregated risk insights
  - Support Risk Analysis
  - Indicate most effective risk mitigation solutions
  - Aggregated overview of risk issues

**Banks, Insurers, Service Providers**
- Lower Barriers & Costs:
  - Reduce marketing costs with turn-key population of pre-screened farmers
  - Lowering the cost of collecting and analyzing data
  - Reduce transaction costs with Miti Card
  - Risk analysis on individual and systematic risks
  - Indication of need for risk mitigation products
Presentation 2:

National Agriculture Insurance Scheme

Munya, Agro Consortium

National Agriculture Insurance Scheme

Presented by Munya

UAIS

- The government of Uganda introduced the Uganda Insurance Agriculture Scheme (UAIS) in July 2016

- Insurance subsidy program for both small and large scale farmers

- to assist Ugandan farmers to reduce the effects of losses of their crops/livestock
Eligibility for the UAIS

- Both small and large scale farmers are eligible for this scheme and participation shall be at individual level or in farmer groups.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Farmer S/N Category</th>
<th>Either by Number of Acreage</th>
<th>Either by Annual Income Number/Quantity</th>
<th>Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Small scale</td>
<td>Less than 5 acres</td>
<td>Less than 20M seasonal income</td>
<td>50%</td>
</tr>
<tr>
<td>2</td>
<td>Large scale</td>
<td>5 acres and more</td>
<td>More than 20M seasonal income</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Item</td>
<td>Number/Quantity</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Small scale</td>
<td>Poultry</td>
<td>500 – 2000</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large scale</td>
<td>2000 and above</td>
<td>30%</td>
</tr>
<tr>
<td>2</td>
<td>Small scale</td>
<td>Cattle</td>
<td>1 - 30</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large scale</td>
<td>30 and above</td>
<td>30%</td>
</tr>
<tr>
<td>3</td>
<td>Small scale</td>
<td>Pigs</td>
<td>1 - 50</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Large scale</td>
<td>50 and above</td>
<td>30%</td>
</tr>
<tr>
<td>4</td>
<td>Fish</td>
<td></td>
<td>Mostly participants are large scale</td>
<td>30%</td>
</tr>
</tbody>
</table>
Agro Consortium

- The UAIS is managed by the Agro Consortium (AIC) which is housed under the Uganda Insurers Association (UIA)

Consortium Members

- APA Insurance (Uganda) Ltd.
- GoldStar Insurance Company Ltd.
- Lion Assurance Company Ltd.
- Phoenix of Uganda Assurance Company Ltd.
- Jubilee Insurance Company of (U) Ltd.
- UAP Insurance Uganda Ltd.
- LIC General Insurance Uganda Ltd.
- First Insurance Company Ltd.
- NIC General Insurance Company Ltd.
- Faz Insurance Company Ltd.
Crops & Livestock covered under the scheme

A. Crops
   - Coffee, Tea
   - Maize, Barley
   - Rice, Sorghum
   - Beans
   - Bananas
   - Fruits and Vegetables
   - Cotton, Oil Palm, Oil Seed and Cocoa
   - Irish potatoes

B. Livestock
   - Cattle (Beef & Diary)
   - Piggery
   - Poultry

C. Fish

Products

- Multi – peril Insurance
  a. Crops
  b. Livestock

- Drought indexed insurance
  a. Crops
  b. Livestock
### Crop premium rates

<table>
<thead>
<tr>
<th>Crop</th>
<th>Premium rate</th>
<th>Yield Guarantee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>5.0%</td>
<td>75%</td>
</tr>
<tr>
<td>Beans</td>
<td>5.0%</td>
<td>75%</td>
</tr>
<tr>
<td>Coffee</td>
<td>5.0%</td>
<td>75%</td>
</tr>
<tr>
<td>Bananas</td>
<td>5.0%</td>
<td>75%</td>
</tr>
<tr>
<td>Tea</td>
<td>4% (western region)</td>
<td>75%</td>
</tr>
<tr>
<td></td>
<td>6% (central region)</td>
<td></td>
</tr>
<tr>
<td>Cotton</td>
<td>6%</td>
<td>75%</td>
</tr>
<tr>
<td>Sunflower &amp; oils seeds</td>
<td>5%</td>
<td>75%</td>
</tr>
</tbody>
</table>

### Livestock premium rates

<table>
<thead>
<tr>
<th>Animal</th>
<th>Premium rate</th>
<th>Excess</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy Cattle</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>Exotic beef</td>
<td>4%</td>
<td>10%</td>
</tr>
<tr>
<td>Local Cattle</td>
<td>3.5%</td>
<td>10%</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>6%</td>
<td>15%</td>
</tr>
<tr>
<td>Pigs</td>
<td>6%</td>
<td>15%</td>
</tr>
<tr>
<td>Poultry</td>
<td>5%</td>
<td>15%</td>
</tr>
</tbody>
</table>
Presentation 3:
Capacity Development for pest and disease management for Uganda
Joseph Mulema, Plantwise Regional Support Manager, CABI
Dannie Romney, Program Manager, CABI

Objectives

- Cost-efficient information systems to detect and monitor plant pests and diseases
- Sustainable models to reach out to farmers with pest management services
- Capacities at MAAIF (and other relevant stakeholders) to analyze and combat the threat of plant pests and diseases
Coordination: National staff and office costs to oversee investment program

ICT for services: Integrate HH data collection database and data management system and collect farmer profiles

Pest management Advisory: Costs of setting up a clinic in every sub-county, including training extension as plant doctors, weekly operational costs and equipping clinics

General Surveillance – data collection: Equipping extension officers with tablets for pest monitoring and data collection and management – (in and out of clinics)

Specific surveys: Contingency costs of pest specific surveys

Farmer awareness: Rapid outreach campaigns using mass media and plant health rallies

High Quality inputs: Agro-dealer development, awareness raising on counterfeit products and importance of good seed; support seed inspection and regulation

DCP capacity building: Recruitment of new staff and staff training, refurbishment and running costs of main diagnostic lab, pesticide lab, seed lab and greenhouse
.Capacity Development

UNDP definition of capacity

The ability of individuals, organisations and societies to perform functions, solve problems, and set and achieve objectives in a sustainable manner (http://www.capacity.undp.org/).

Capacity is much more than the knowledge, skills and tools of individuals and organizations. It is a property of a system comprising a range of different actors and the formal and informal linkages between them.
## DCP Capacity Building

<table>
<thead>
<tr>
<th>Skills</th>
<th>DCP Staff</th>
<th>Skills</th>
<th>DCP Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Phytosanitary processes</strong></td>
<td></td>
<td><strong>Information Management</strong></td>
<td></td>
</tr>
<tr>
<td>Risk analysis</td>
<td>Senior staff</td>
<td>Database management</td>
<td>IT staff</td>
</tr>
<tr>
<td>Import controls</td>
<td>Senior staff</td>
<td>Data analysis, modelling</td>
<td>IT staff</td>
</tr>
<tr>
<td>Export certification</td>
<td>Senior staff</td>
<td>Presentation, visualization</td>
<td>IT staff/Ag inspectors</td>
</tr>
<tr>
<td>Surveillance</td>
<td>Ag inspectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnostics</td>
<td>Ag inspectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Regulatory functions</strong></td>
<td></td>
<td><strong>Management</strong></td>
<td></td>
</tr>
<tr>
<td>Impact assessment / regulatory</td>
<td>Senior staff</td>
<td>Strategic planning</td>
<td>Senior staff</td>
</tr>
<tr>
<td>good practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pest control products</td>
<td>Ag inspectors</td>
<td>Leadership</td>
<td>Senior staff</td>
</tr>
<tr>
<td>Seed systems</td>
<td>Ag inspectors</td>
<td>Quality management</td>
<td>Senior staff</td>
</tr>
<tr>
<td>Monitoring (pesticide analysis, seed testing)</td>
<td>Ag inspectors</td>
<td>Communication, advocacy, policy influence</td>
<td>Senior staff</td>
</tr>
</tbody>
</table>

**5-10 day; 3-4 mo courses; 1 month courses; Distance learning and mentoring; Study tours**
Presentation 4:
Finance Information & Risk Management
Jaime Ter Linden, Founder, Agri Risk Analyzer
Robert M Kintu, Principal Consultant, Fit Uganda

The Problem

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- Average land ownership less than two acres
- Outdated production & storage technologies, poor seeds
- Low cashflow generation and profitability

High Risks in the Sector
- High individual risks
- Farmers are highly exposed to risks (drought, pest & disease, market, etc.)
- Many risks are catastrophic
- Poor Risk Management knowledge and expertise

Service Providers shy away from the sector:
- Low purchasing power of farmers
- High risk of farmers (for banks and insurers)
- High operational costs to service the sector

Result: an underserved sector
Reasons for Underserving the Sector

<table>
<thead>
<tr>
<th></th>
<th>Financial Institutions</th>
<th>Insurance companies</th>
<th>Other service providers</th>
<th>Extension services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target group with limited purchasing power</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>High cost of identifying target group &amp; collecting farmer information</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
<tr>
<td>High marketing &amp; distribution costs</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Exposure to systematic risks</td>
<td>✓ ✓</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>High risk of default / non-payment / fraud</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓ ✓</td>
<td>-</td>
</tr>
</tbody>
</table>

Solution – the FIRM concept

**FIRM: Finance, Information & Risk Management**

- **Unlock Access to Finance and other Services by Integrating:**
  - Farmers Information
  - Risk Profiles & Analysis
  - Payment & Transaction Platform

- **Take away Barriers for Service Providers by:**
  - Provide turn-key farmer profiles
  - Provide risk analysis on individual and systematic risks
  - Payment & Transaction platform

- **Facilitate Risk Insights for Extension & Policy:**
  - Aggregated profiles on village, district & national level
  - Advice on Risk Mitigation policy & support
FIRM – How does it work?

FIRM step 1: Data Collection & Sharing

- Infotrade collect information from farmers in Infotrade
- 18 years experience in Uganda
- Mapping and profiling of farmers, traders and service providers
- Infotrade is the core of FIRM
  - Infotrade Basic: 500,000 farmers
  - Infotrade Premium / Basic plus: 26,000 and currently growing 33,000 / month
  - 409 in production information advisors (PIAs)
FIRM step 2: Analytics

The Agri Risk Analyzer will process the data and calculate:

- **Risk Information:**
  - A risk score (1-5 scale) indicating the farmers' risk exposure
  - A sensitivity analysis providing how risks contribute to the total risk

- **Risk Mitigation Advice:**
  - An overview (ordering) of most effective and efficient risk mitigation options, like insurance or irrigation

- **Credit Score**:
  - A score based on 'distance to default'

* Sufficient financial farmer data needed in order to process a credit score

---

FIRM step 3: Sharing Information & Trade

**FARMERS**
Access to Finance, Market & Extension by Integrating:
- Farming Information
- Risk Analysis & Advice
- Debit Card for Transaction
- Linkage Financial Services
- Linkage to Risk Solutions

**EXTENSION SERVICES, NGO & POLICY**
Individual and aggregated risk insights
- Support Risk Analysis
- Indicate most effective risk mitigation solutions
- Aggregated overview of risk issues

**BANKS, INSURERS, SERVICE PROVIDERS**
Lower Barriers & Costs:
- Reduce marketing costs with turn-key population of pre-screened farmers
- Lowering the cost of collecting and analyzing data
- Reduce transaction costs with MoAf Card
- Risk analysis on individual and systematic risks
- Indication of need for risk mitigation products
User Case: Farmers

1. Access to Information
   - Receive weather and market information
   - Get agronomical advice
   - Get insight into risk profile
   - Know risk mitigation options

2. Improve Practices
   - Improve agronomical practices
   - Get better prices
   - Improve risk profile

3. Link to Service Providers
   - Get access to providers of finance, insurance, services & products, extension
   - Further enhance productivity, access to storage, reducing post-harvest losses

4. Debit Card
   - Store, save, receive, send and spend money electronically with the Mauki Card

User Case: Financial Institutions

1. Identify Potential Customers
   - Identify customers in need for financial services
   - Identify creditworthy versus non-creditworthy farmers
   - Cost reduction for marketing and loan origination

2. Easy Processing, Better Loan Decisions
   - Transfer turn key data & analytical profile into internal loan process
   - Improve accuracy of credit decision based on credit scores

3. Packaged Loans
   - Based on risk mitigation advice, the loan can be packaged with insurance, or irrigation loans only, for example
   - This can significantly reduce the risk for FIs

4. Easy Processing
   - Distribute loan to Mauki Card
   - Collect repayment via Mauki Card
   - Receive transaction based credit information
   - Reduce cost on distribution
User Case: Insurance Company

1. Identify Potential Customers
   - Identify farmers who can benefit from insurance
   - Cost reduction for marketing and origination

2. Easy Processing & Better Underwriting Process
   - Transfer turn key data & analytical profile into underwriting process
   - Improve accuracy of underwriting process

3. Easy Processing
   - Distribute insurance and collect payment with Muali Card
   - Distribute payouts via Muali Card
   - Reduce cost on distribution

4. Package Insurance
   - Package insurance with other products, like loans or inputs
   - Increase marketing opportunities

User Case: Service / Input provider

1. Identify Potential Customers
   - Identify farmers who can benefit from service / product
   - Reduce cost for marketing

2. Improved Market Intelligence
   - Quantified insight in how farmers can lower their risk profile with certain products / services (e.g., improved seeds, agronomical practices, irrigation)
   - Custom made products & group discounts

3. Easy Transactions
   - Receive payments with Muali Card
   - Reduce cost on distribution

4. Package with other Products
   - Package own product with other products & services
   - Increase marketing opportunities
User Case: Extension Services & Policy

1. Understand Risk Profile
   - Get insight in the risk profile of farmers
   - Identify training opportunities
   - Increase effectiveness of programs

2. Identify Risk Mitigation Options
   - Identify risk mitigation options with farmers
   - Integrate in training & capacity building program
   - Link to providers of services
   - Improve risk profile of farmers

Policy

1. Portfolio Overview
   - Get an overview of farmers, risk and trade on village, district, national level
   - Identify weak spots in the system

2. Policy & Support
   - Improve policies on village, district and national level
   - Improve risk resilience of farmers
   - Support public & private sector in service delivery to farmers

Business Model

- Farmers
  - Annual Subscription
  - USD 10
- Banks & Insurers
  - Pay as you go (pay per view)
  - USD 3-5 per farmer record
- Service / Input Providers
  - Extension Services
- Extension Services

- Farmers
  - Buy Card for
  - UGX 15,000
- Banks & Insurers
  - Pay as you go
  - 0.5% of transaction
**Behind the Scenes: PIA Model**

- Based on Revenue Sharing Service Contract
- Self-sustaining service continuity and growth
- Free knowledge accumulation during the partnership

**BUNDLING SERVICES**

- Potential for Bundling of Services
  - Mobile Money Agents
  - Input Dealers
  - Commodity Aggregator/Buyers
  - Storage Business
  - Transport Business
  - Tillage Business
  - Value Addition Business
  - Commercial Extension Provider

**The Infotrade Maali Card Eco-System**

Card provides the opportunity for people to:
- **Store**
- **Save**
- **Receive**
- **Send**
- **Spend... money electronically**

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*Image: Infotrade*

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Money Agents model

Behind the Scenes II – Agri Risk Analyzer

- The Agri Risk Analyzer compiles a cashflow of the farmer
- This can be based on basic inputs like location, crops, land size, sales channels and household characteristics for more simple use
- It can also be based on a more enhanced profile of the farmer for advanced use (e.g. finance)
- A simulation of the cashflow is made, with scenarios based on what we know of:
  - Yield variability (insurance models)
  - Price volatility (market models)
  - Life & health events causing cashflow shocks (insurance models)
  - Pest & Diseases (forthcoming, I.e. Makerere University)
  - Other sources of cashflow variability (expert opinion possible)
Behind the Scenes II – Agri Risk Analyzer

- Within this methodology, we can also calculate the effect of risk mitigation.
  - For example: irrigation
  - Irrigation in general delivers higher yields and makes the farmer less vulnerable for drought. This is reflected in the scenarios.
  - Now we can compare the farmer with irrigation (red bars) and without irrigation (orange bars).
  - The difference between these graphs determines whether there is a 'business case' for irrigation.
  - This is repeated for other risk mitigants (e.g., insurance, improved seeds, agronomical practices, etc).

FIRM Partners
**FIRM Partners**

- **Infotrade**
  - Lead partner
  - Infotrade Database
  - Farmer field network
  - Maadi Card
  - Training of end users

- **Finca and PostBank**
  - Recipients of farmer risk profiles
  - Product development & innovation
  - Provide loans
  - Provide other financial services

- **Jubilee Insurance**
  - Recipient of farmer risk profiles
  - Provide insurance

- **Ministry of Agriculture, Animal Industry & Fisheries**
  - Strategic partner in R&D of ARA
  - Operate field research
  - Training partner of extension networks

- **Makerere University**
  - Strategic partner in R&D of ARA
  - Operate field research
  - Training partner of extension networks

- **PARM**
  - Driving ARM agenda
  - Stakeholder management
  - Facilitator

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**Timeline & Milestones**

- **H1 2017**
  - Further expansion into rural areas & expansion of PIA network
  - Maadi Card pilot
  - ARA adaptation for Uganda (including field research)

- **H2 2017**
  - Training of PIA network on risk profiling
  - Expansion of Maadi Card
  - Roll out payment terminals
  - ARA integration into Infotrade
  - Produce farmer risk profiles

- **2018**
  - Further expansion of farmer / PIA network
  - Further expansion of Maadi Card / POS terminals
  - Share integrated risk profiles with service providers
  - Product design and delivery in c.w service providers

- **2019 >>**
  - Further expansion & growth
Results in numbers

- 34,000 farmers access capacity building or extension services
- 60,000 farmers use risk mitigation advice
- 60,000 farmers access loans for the first time
- 60,000 farmers get offers from service/input providers
- 12,500 farmers access insurance for the first time

Gained in better prices due to information:
- USD 11/farmer

Increase in production:
- USD 135/farmer

Net value of reduction in post-harvest losses:
- USD 25/farmer

Saved on improved interest rates:
- USD 21/farmer

Saved on better offers from input providers:
- USD 10/farmer

Saved on improved insurance premium:
- USD 5/farmer

Total increase in income of USD 12m for 120,000 farmers in five years

What do we need

Donors
- FIRM: Funding need of USD 780k
- Additional funding needed for development of public services (extension)

Business Partners
- Financial Institutions
- Insurers
- Input/Service providers

Field Partners
- NGOs
- Outgrower Schemes
- Other farmer networks

Public sector
- Extension network
- Creating awareness
- Support and enhancement

Knowledge Partners
- Pest & Disease knowledge (i.e., Makerere)
- Political Risk Knowledge/Models

Infrastructure Risk knowledge
- Post harvest losses
- Farmer livelihood expertise
ANNEXES

ANNEXES
FIRM Partners: Agri Risk Analyzer

- A low-cost, easy-to-use risk-assessment tool for farmers, extension services, agribusinesses and financial institutions
- Provides insight into the systematic risk exposure of farmers
- Enables evidence-based decision-making on risk mitigation, for example:
  - Improved agronomical practices
  - Irrigation
  - Improved seeds
  - Insurance

FIRM Partners: Agri Risk Analyzer

For an Individual Farmer:
- A Risk Score per farmer
- A Sensitivity Analysis of the risk score (contribution of risks to the total risk)
- An analysis which Risk Mitigation options are the most efficient

For a Portfolios of Farmers:
- The Basic Tool +
- A Value at Risk analysis
- A Portfolio Analysis which enables portfolio management decisions
Annex

ANNEX: How does the ARA work?

- The following slides show how the Agri Risk Analyzer can work in the credit analysis process of a Financial Institution
- We follow the cashflow analysis banks usually conduct, and show how the Agri Risk Analyzer add to that analysis

Annex

Traditional cash flow analysis

A cashflow statement:
- Repayment Capacity is the key metric*
- The 1.61 is only one (1) assessment of the farmers' cashflow, given certain assumptions about farming income, expenditure, etc.
- There are many other scenarios possible.

* The Agri Risk Analyzer also works for other metrics, like liquidity, solvency or profitability ratios (though those ratios's usually need much more information input)
Annex

Traditional CF analysis reflects reality?

- The Agri Risk Analyzer calculates the cashflow based on many different scenarios.
- For example:
  - A drought will impact income from farming.
  - Input prices are rising.
  - Household expenditure rises due to hospital bills.
  - Many other scenarios possible.
- This significantly affects the Repayment Capacity.

Annex

Scenario Analysis

- The Agri Risk Analyzer calculates 10,000 different cashflow scenarios (both positive and negative scenarios).
- Based on statistical models for example:
  - Insurance models for weather events (e.g., droughts).
  - Insurance models for health and funeral costs.
  - Market models for price volatility.
- This delivers 10,000 different scenarios, thus 10,000 different Repayment Capacity figures.
Annex
Cashflow analysis vs scenario analysis

The Agri Risk Analyzer provides:
- a Probability Distribution instead of
- a single point estimate

• A probability distribution of the cashflow (i.e. repayment capacity) is more useful
• It provides the likelihood a borrowrs repayment capacity will fall under a certain threshold
• In this example, the probability that the repayment capacity falls under 1.5 is 13.2%
• The loan should therefore be rejected (given 1.5 is the threshold and a potential NPL rate of 13.2% is unacceptable)
Annex

Analysis of risk mitigation

- Within this methodology, we can also calculate the effect of risk mitigation.
- For example: irrigation.
- Irrigation in general delivers higher yields and makes the farmer less vulnerable for drought. This is reflected in the scenarios.
- Now we can compare the farmer without irrigation (as it currently is, orange bars in the graph) and in a potential situation with irrigation (red bars).
- The probability the farmers will fall below a minimum repayment capacity decreased to 3.0%.
- The loan can therefore be accepted.

Annex

Summary – the Agri Risk Analyzer

<table>
<thead>
<tr>
<th></th>
<th>Traditional Cash Flow Analysis</th>
<th>Agri Risk Analyzer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Includes 'traditional' cashflow items (farming, household CF)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Provides repayment capacity or probability of default (PD)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Includes systematic risks (droughts, price shocks, etc.)</td>
<td>✗</td>
<td>✔</td>
</tr>
<tr>
<td>Enables stress testing of cash flow (also non systematic items)</td>
<td>✗</td>
<td>✔</td>
</tr>
<tr>
<td>Enables calculation of risk mitigation solutions</td>
<td>✗</td>
<td>✔</td>
</tr>
</tbody>
</table>
**FIRM step 3: Sharing Information & Trade**

**FIRM Partners: Infotrade**

*Infotrade provides:*

- A farmer identification services;
- Farmer records of enterprises;
- Season ledger report, Balance Sheet, Profit and loss reports;
- Business Advisory;
- Market information;
- Business record storage;
- Business linkages to buyers, bankers and stores.
The Agricultural Risk / Poverty Cycle

1. High exposure to systematic risks
2. Farmers choose low risk - low yield strategies to prevent catastrophic loss
3. This keeps them unattractive for banks and providers of risk solutions
4. Farmers can’t invest in productivity improvement & risk mitigation

Banks / Insurers
Buyers / Input providers
Extension / NGOs

- **Finca**
- **PostBank**
- **Infotrade**

**Infotrade**:
- **Product Information**: Advisory services
- **Product**

**Finca**:
- **Extension & Advisory Services**
- **Production Information**: Advisory services
- **Link to farmers via NBSS**

**PostBank**:
- **Business partners**: Diversified lenders
- **Distribution of loans and insurance**: Dedicated offers to farmers based on their profile from selected partners

**Uganda Ministry of Agriculture**:
- **Service providers**: The Government of Uganda and NGOs can provide risk mitigation services & support to farmers based on their risk profile
- **Service providers**: The Government of Uganda and NGOs can provide risk mitigation services & support to farmers based on their risk profile

**Infotrade**:
- **Operational Point of Sale (POS) terminal**
- **Cover the “last mile”**
- **Advisory services**: 1 PK for 300 farmers
Logical Framework

- Improve Infotrade System & enhance with risk information & analytics
- Information system (IS) in place and used by the GoU and technical partners
- Farmers get access to knowledge and information to optimize production, reduce post-harvest loss, and conduct business
- Enhance the resilience of farmers in Uganda, improving their capacity to increase income and manage risks
- Increase outreach to farmers
- Increase in income for targeted farmers
- Farmers get access to risk management tools to increase safety
- Roll out Maasai Credit Card
- Access to financial and other services
- Farmers get access to risk management tools in order to invest more in risk resilient agriculture

VISION

Our vision is to create a vibrant agriculture sector through well connected, self-financed, business-oriented farmers.

Misión

FIT's mission is to become the leading facilitator of information, trade, and knowledge around finance and risk trade.

Strategic Objectives

- Leveraging the use of relevant ICTs
- Working with and other service providers in Strategic Business Alliances
- Create sustainable business revenue share advocates

Operates two brands:

- FIT - Knowledge & business insights
- Infotrade for direct farmer/trader services

Has a Network of Data Centers:

- 50 in Uganda for market information
- 400 in production information access

Builds a Database of Invoicing Small Holders:

- 10,000 farmers in Uganda
- 10,000 farmers in Kenya
- 5,000 farmers in Tanzania

Strategic Business Partners:

- Two financial institutions
- Payment gateways - for debit cards
- One Crop & animal Insurance
- Microsoft for closed sourcing & storage.

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**Investment needed**

**Financials:**

- Break-even within 2 years
- Investment needed for:
  - Further development of the Infotrade Platform
  - Further development of the Agri Risk Analyzer
- Negative Internal Rate of Return (IRR) if all investment costs are commercially funded (which makes the project not viable)
- Positive IRR if development costs are funded with grants / soft loans