



G R O O T S



Development of an innovative and scalable grass-roots data collection, financial education and product distribution channel for index-insurances

Final Feasibility Study Report

March 2023



SWISS CAPACITY BUILDING FACILITY
Innovating Financial Inclusion



Executive Summary

- The Feasibility Study aimed to develop an innovative and scalable approach to fundamentally improve data-availability for product design and client-communication for index insurance in suburban and rural parts of Sub-Saharan Africa. This is by adapting Groots' smallholder-shop based data-collection system "tabtap STATION," or data terminals, to a) collect relevant community data at very low marginal cost over long periods and in high geographical resolution and b) to run financial education campaigns through the interface.
- 1411 survey responses and more than 57,000 data points were collected through tabtap STATIONS.
- Agricultural Hybrid Insurance Products were successfully developed by Allianz RE based on the data collected by Groots within this feasibility study. The insurance products cover both, index based drought losses, as well as indemnity based fire including lightning, uncontrollable pest and diseases.
- 2129 cacao farmers were informed and educated about the newly developed insurance product and the advantages on their revenue and long-term financial stability.
- Through Allianz Cote d'Ivoire's and its sales channels, 1490 farmers registered for the insurance policies and 444 farmers paid and were insured in 2022.
- The adaptation of Groots' smallholder-shop based data-collection system "tabtap STATION" is proven to be capable of collecting data in the local context that yields relevant insights crucial for the design of index products. The products respond to the specific customers needs as shown by sales numbers achieved. It also helps equip farmers with necessary financial knowledge which plays a crucial role in supporting the insurance sales and distribution efforts. Lessons learned and success factors from the implementation have been derived.
- Due to the short evaluation period, long-term business operation benefits to farmers need to be proven further, despite initial results being quite promising.
- The project and the developed insurance products with its innovative approach and real life success rate – with about 450 policies sold in 2022 and over 1,000 in the first quarter of 2023 (almost 1,500 policies sold within 7 months) - was awarded first prize among 150 applicants in the Ambitious Insurer Award at the Insurtech Insights Conference in London on the 1st of March 2023. The award is presented to Allianz Re "for executing the most ambitious project over the past 12 months, creating the biggest positive impact on its customers, society, and driving the biggest business outcomes."

General Project Set-Up





Project Overview

Goal: To develop an innovative and scalable approach to improve data-availability for product design and client-communication for index insurance in suburban and rural parts of Sub-Saharan Africa

Challenges

In current context the main challenges for index insurance penetration are:

- a) Missing raw ground-data for targeted insurance product design and

- b) Appropriate and scalable channels for financial education and distribution.

Objectives

Test if through adaptation of its smallholder-shop based data-collection system “tabtap STATION,” it is feasible to:

- Collect relevant community data at very low marginal cost over long periods and in high geographical resolution
- Design an index insurance product based on the data collected

- Run financial education campaigns and sales support through the same interface.

Project Partners

IMPLEMENTED BY



G R O O T S

Groots is a data collection service sourcing grass-roots expertise and metrics in emerging markets through its digital network of small shops.



Allianz Cote d'Ivoire offers non-life and life insurance products. The distribution is handled through brokers and own tight agents.

ENDORSED BY



Allianz Re is the reinsurance arm of the Allianz Group. It tailors reinsurance solutions to the diverse business needs of customers worldwide. Allianz Re designed the index insurance products in this project.

FUNDED BY



Swiss Capacity Building Facility (SCBF) is a public-private development partnership (PPDP) that funds technical assistance (TA) for financial sector partners to develop and scale-up client-centered financial products, channels and services in developing and emerging countries.

Country Context: Ivory Coast

Population in million (2021)	27,478,249
GDP growth (2021)	7%
Inflation (2021)	4.1%
GDP per capita (USD) (2021)	2,549
Gini Index (0= equality 100= inequality) (2018)	37.2
International poverty rate (2018; at 2.15 USD/day)	11.4%
National poverty rate (2018)	39.5%
Economic Freedom Index (Rank among 186 countries) (year)	66.1



Country Context: Ivory Coast

- “Ivory coast economy is dependent on climate-sensitive sectors— agriculture, livestock, aquaculture, and energy. In July 2018, the world Bank evaluated the losses to GDP associated with climate change at between \$681 million and \$1.4 billion in constant 2017 \$ between now and 2040.”*
- Only 8 percent of adults have insurance — medical insurance being the most common.
- The financial inclusion rate is lowest among historically disadvantaged groups, including women, the poor and people in rural areas.
- Agri insurance shows a very low penetration in Ivory Coast. Only two companies deal with the topic and not more than 2mn USD premium are estimated (<0.5% of market).
- Beyond these market based constraints, key corporate-constraints to up-scale financial services massively to low-income clients are the “last mile” distribution to the customer which is too expensive and tedious.



Groots' smallholder-shop based data-collection system



tabtap STATION

Small shops are central points of local knowledge where community members meet and exchange information. We build digital networks of these shops. Through their owners and customers, valuable data can be collected. We maintain relationships over the long term and close our partners' primary data gaps quickly and flexibly.

tabtap STATIONS are interactive data terminals installed at agricultural input sales points (e.g. farmer cooperative shops), which are frequent points of contact for smallholder farmers. Through these terminals, farmers can:

- answer surveys about their crops, economic activity and perils and get fairly rewarded for sharing their knowledge,
- receive financial education content relevant to their needs,
- and learn about the index insurance products.

The operators of the agricultural input businesses support the farmers in the use of the data collection terminals. The approach allows for instant and primary data gathering given the existing trust base and sometimes leverage. It also allows for bi-directional communication between the target audience and businesses. Members of rural communities and shop-owners can monetize their local expertise as well as learn about financial products.



Project Activities





Activities: Overview



Concept Validation &
Technology Localisation

Data Collection

Index Insurance Design

Financial Education &
Distribution of Crop
Insurance

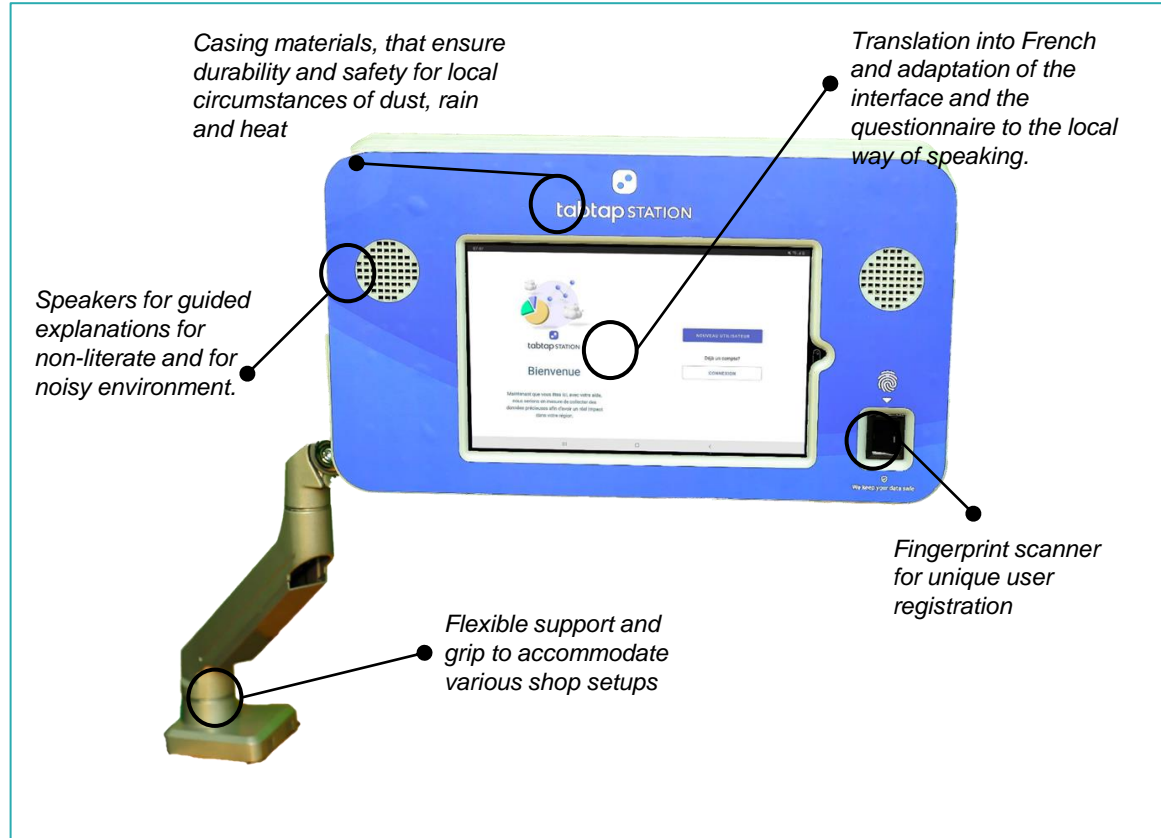
- Desktop research
- Field research and software testing
- Questionnaire design and testing
- Localisation of existing hard- and software
- Install 25 terminals

- Collect a minimum of 1000 responses of required data through installed terminals at agricultural input providers
- Clean and analyse collected data

- Translate insights from the data collected to a robust index insurance product to cover the most important crop(s) and the most important perils

- Interact with a minimum of 2000 farmers through financial education content
- Distribute 400 insurance policy subscriptions
- Conduct M&E survey on the products

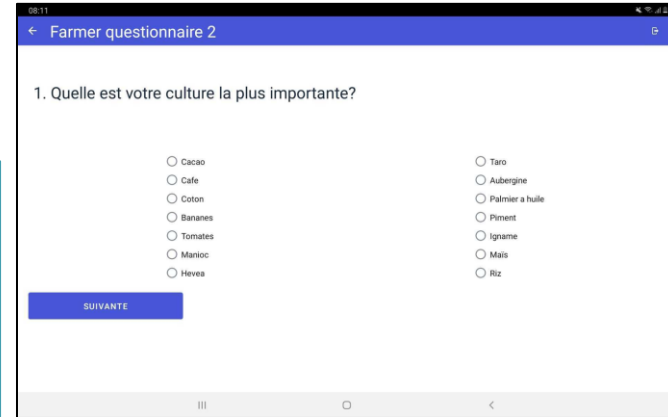
Activities: Concept Validation & Technology Localisation



- Hardware adjustment requirements were implemented into a terminal prototype which takes into account the local conditions at the shops and the usage of the users both shops and farmers (literacy levels, noisy surroundings, etc.)
- Data requirements from the PFI (Allianz) were translated into a set of questionnaires that addresses the local realities on the ground and that of the data providers based on thorough and iterative questionnaire design and testing.

Activities: Concept Validation & Technology Localisation

- Two surveys were developed. The first one is a one-time survey asking about the basic data of the farmer, his/her crops and the dangers they normally face. The second one is a monthly survey keeping track of the expenses and profits that the crops generate monthly. The surveys were designed in this way due to the lack of regular record keeping of farmers which results in short recall period of their profits or expenses.
- This was possible thanks to the flexibility tabtap STATION allows. It is possible to schedule recurring follow-up surveys with minimal increase in cost and due to the operating location at shops that farmers frequent on a regular basis.
- 100 agro-dealers and mom-and-pop shop owners have tested the final software. These shop owners are spread across six locations: Adzope, Agboville, Akoupe, Alepe, Azaguie and Yakasse Attobrou
- During the test, the respondents were asked to perform specific tasks, to see whether they would be able to navigate around the application. The overall feedback from the testing is positive and that the users were able to perform the testing successfully.



The main results of the evaluation and testing are as follows:

- Literacy levels among farmers were found to be lower than anticipated, necessitating the provision of audio support and additional guidance from shop owners.
- The shop environment was found to be noisy and chaotic, indicating the need for a suitable audio system.
- An appropriate incentives structure was determined to be 300 FCA per survey.

Activities: Concept Validation & Technology Localisation

- Informative materials were developed so that the store owners were well informed about their role in the project, the questionnaires and their purposes, and the compensation that they and their customers would obtain.
- 36 agro-shops and 30 mom & pop shop owners (66 in total) confirmed their interest to use the software.



Information material for shop owners



Information material for farmers



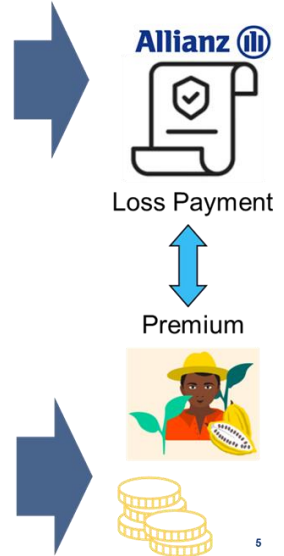
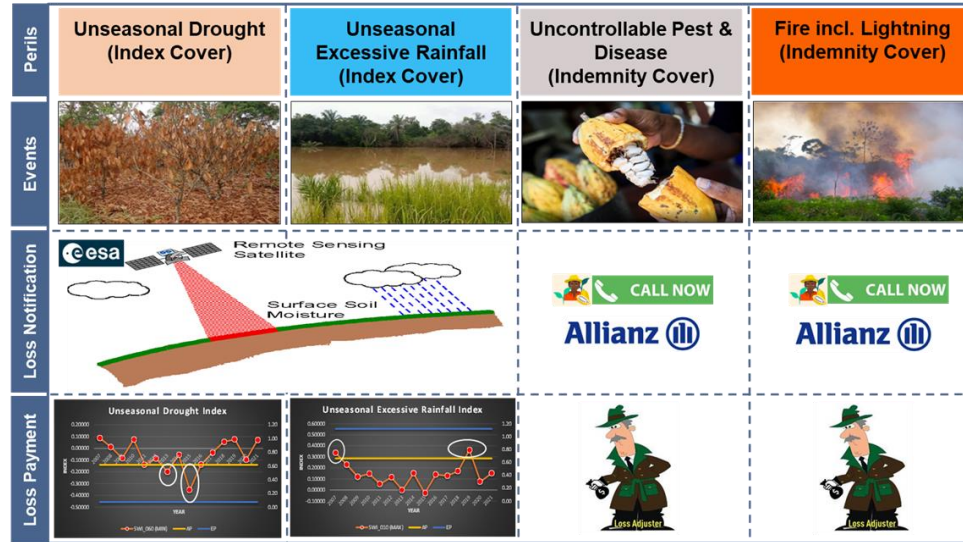
Activities: Data Collection

- **25 tabtap STATIONS** were installed targeting cacao regions. 15 were installed at agroshops, 4 at mom-and-pop shops and 6 at agricultural cooperatives. They were installed in 6 different departments and in 10 sub-departments.
- A total of **1411 survey responses** were collected from a total of **1200 farmers***.
- The collected data was cleaned and analysed. The final dataset was prepared and shared with Allianz as input for insurance product redesign.
- A more in-depth description and analysis of the collected data will be presented in the "Outcome" section.

Activities: Index Insurance Design

- Agricultural Hybrid Insurance Products were successfully developed by Allianz RE (based on the data collected in the previous activity by Groots.)
- This product covers both indemnity based fire including lightning, uncontrollable pest and diseases as well as an index based drought losses.
- Product is highly adapted to the specific farmer needs and possibilities due to the data collected and the knowledge of local experts.

Agri Hybrid Insurance for Growers



Activities: Financial Education & Distribution of Crop Insurance



- Groots prepared a 1-minute educational video explaining, in a simple and interactive way, the new index insurance product, how it works, and the advantages of insurance on farmers' revenue and business in the long term, and how it can protect insurance holders against certain risks and provide financial stability. The video was displayed through the terminals targeting farmers coming in for their purchases at local agri-business, neighborhood stores as well as cooperatives where they were installed.
- **2129 cacao farmers were informed** and educated about the newly developed insurance product and the advantages on their revenue and long-term financial stability.
- Through Allianz Cote d'Ivoire's and its sales partner channels, **1490 farmers registered** for the insurance policies and **444 farmers paid and were insured**.

Project Outcome: key figures and
selected findings from the data collection



Outcome: +57,000 data points captured

25

Shops collecting data

56.4

Average surveys per shop

1,200

Farmers reached

1,411

Survey responses collected

+57,000

Data points

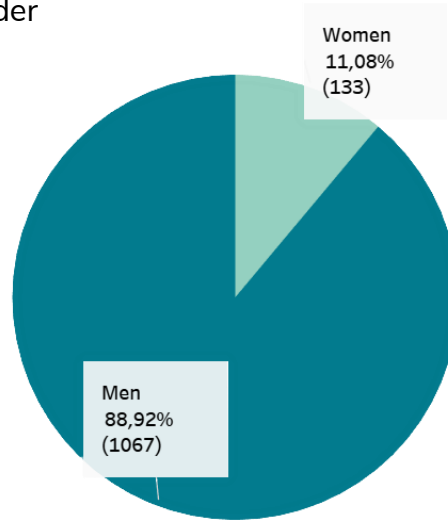


Outcome: (selected) insights for product design - demographics

The collection of basic demographics served the following purposes:

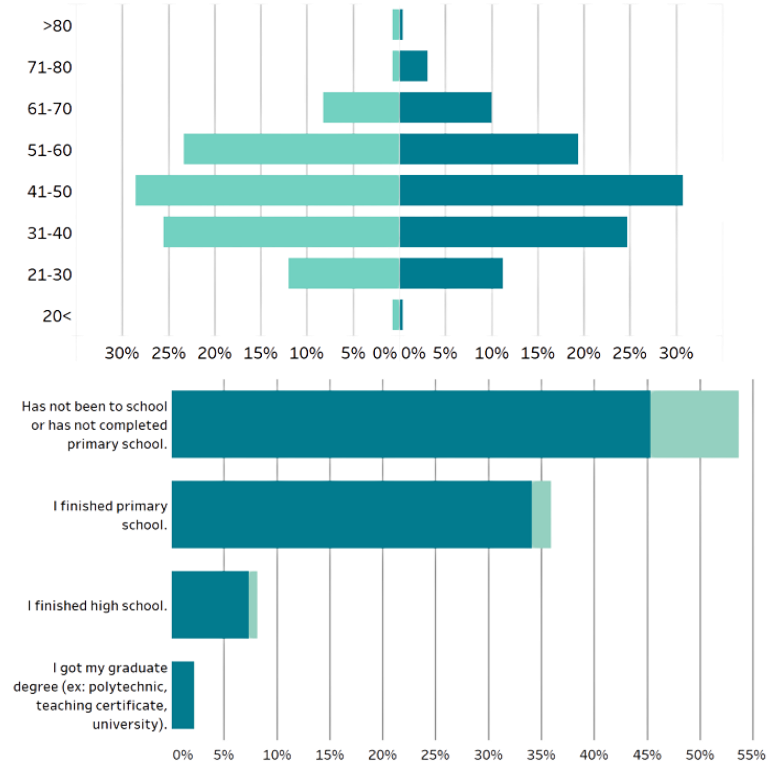
- To ensure that the sample was representative of the reality of the ground
- To adapt the product to the desired target audience
- To tailor the advertising and sales efforts to the target population

Gender



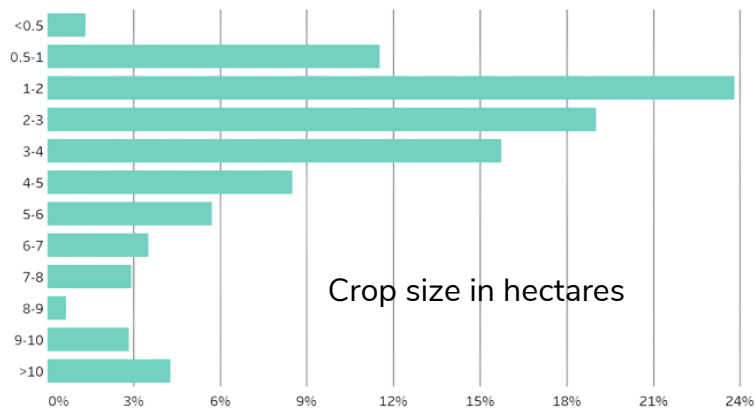
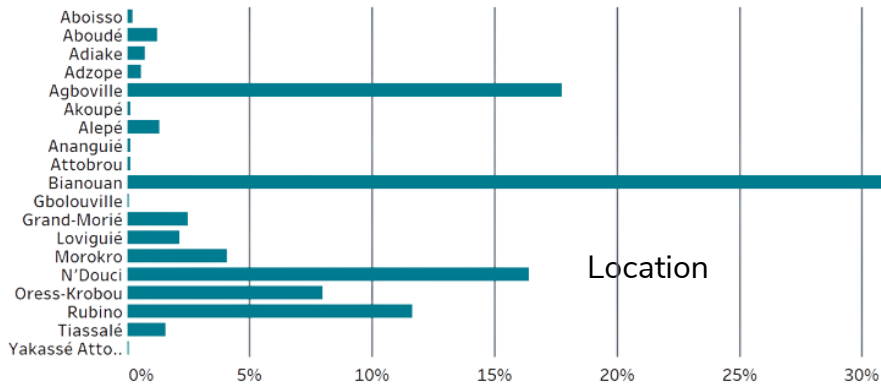
The gender disparity observed in the survey results can be attributed to the requirement of surveying the "managers" of each farm to gather precise information on expenses and profits. This observation reflects the challenges that women face in occupying decision-making roles on farms in this context.

Age % by gender

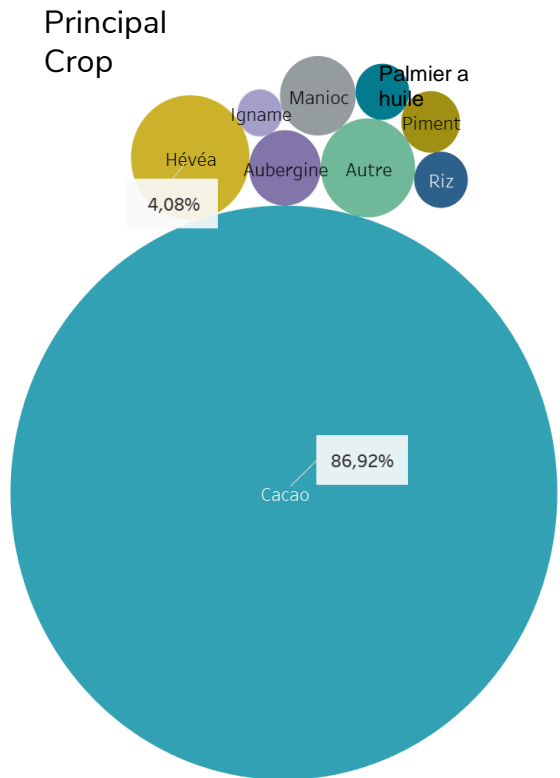


Schooling by gender

Outcome: (selected) insights for product design - key crop info



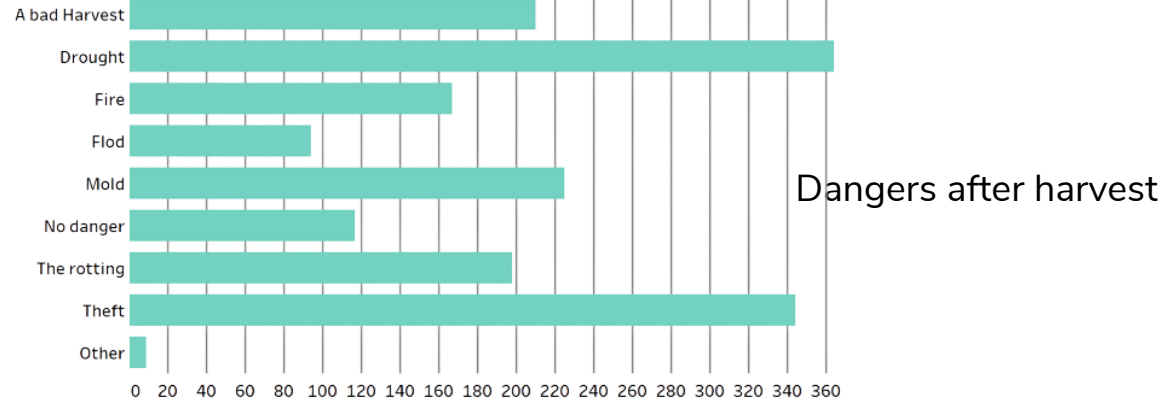
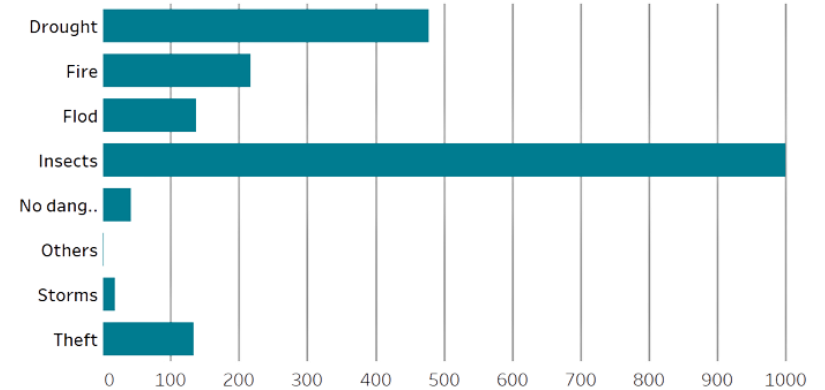
Data on key crops and their characteristics was valuable for designing the index insurance, as it helped identify the significance of the cacao crop in the region, the average size of farms, and the areas with the highest concentration of cacao fields.



Outcome: (selected) insights for product design - perils

Several other factors were also indispensable in the design of the index insurance, such as pre- and post-harvest hazards, harvest and planting seasons, average expenses for cocoa crops, among others. This information helped to determine the coverage period, insured amounts, and the risks covered by the insurance policy.

Dangers before harvest

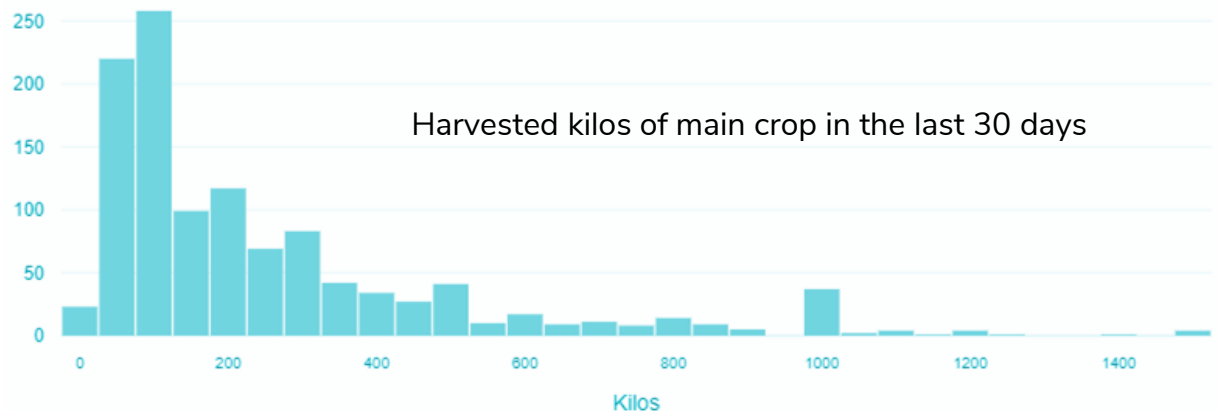
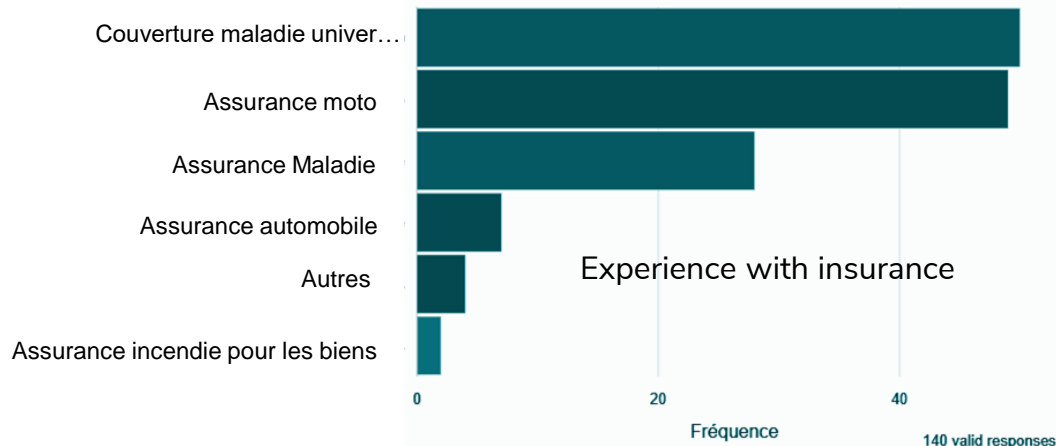


Outcome: data types covered

The questionnaires were made up of more than 36 questions that covered the following areas:

- Demographic characteristics of farmers
- Previous experience with insurance
- Main dangers for crops
- Basic characteristics of crops
- General expenses & earnings
- Added value to harvest
- Monthly behavior (last 30 days)

With the combination of all these areas, a comprehensive knowledge of crop management can be obtained, but also by exploring each area, specific aspects for product design can be understood.

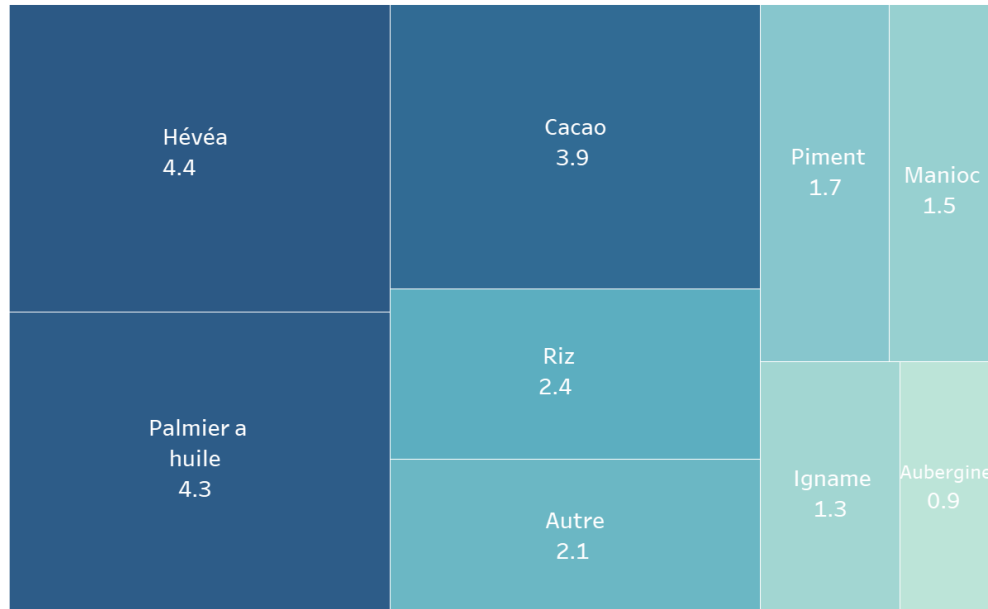




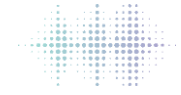
Outcome: power of big data

With more than 57.000 data points, the possibilities to perform different kinds of comparatives and **multivariate analyses** of the data is almost limitless, to delve into any particular metrics or topics of interest. Examples are as follows:

Average size of crop in hectares

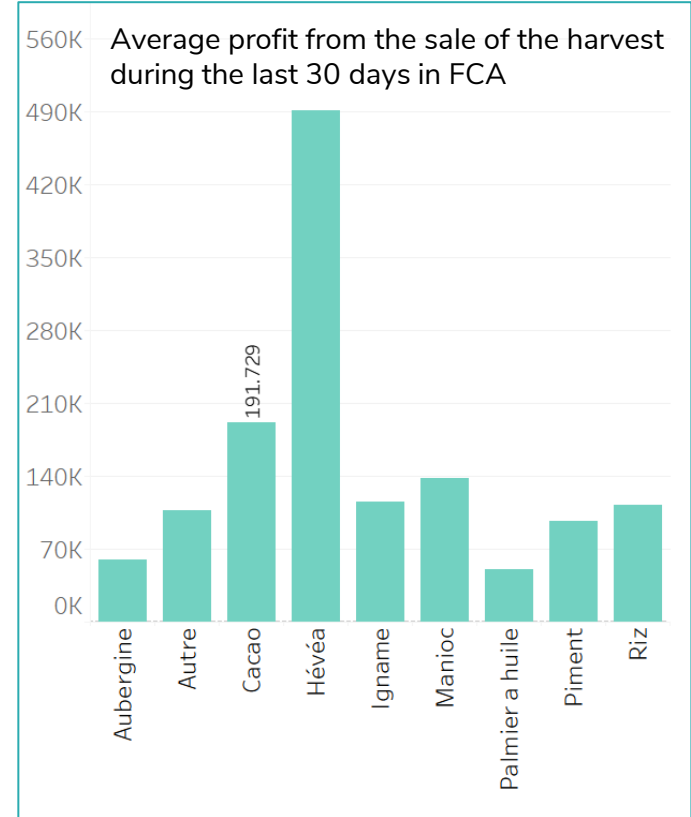
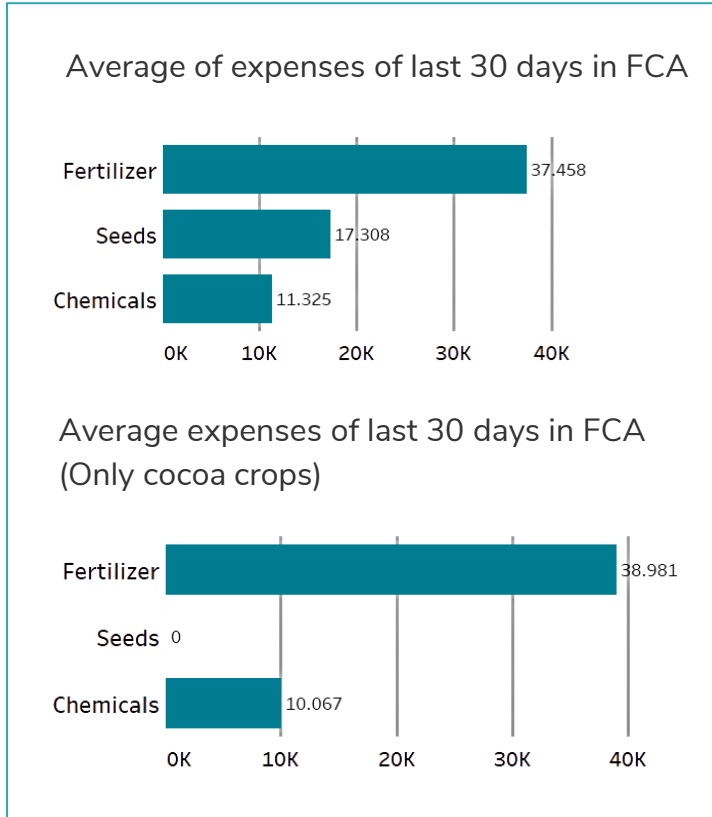


Although cocoa was the target crop, information on other crops was also collected which provides not only a comparison of cocoa productivity but also an indicator of other potential crops to be insured in the future. For example, we can see that rubber tree farms, although cultivated by smaller number of farmers compared to cacao, have an average size of 4.4 hectares which is slightly larger than cocoa farms on average, making them an interesting crop to be further considered for insurance product design.



Outcome: power of big data

These graphs illustrate the difference between the expenses and revenues of cacao plantations compared to other crops.

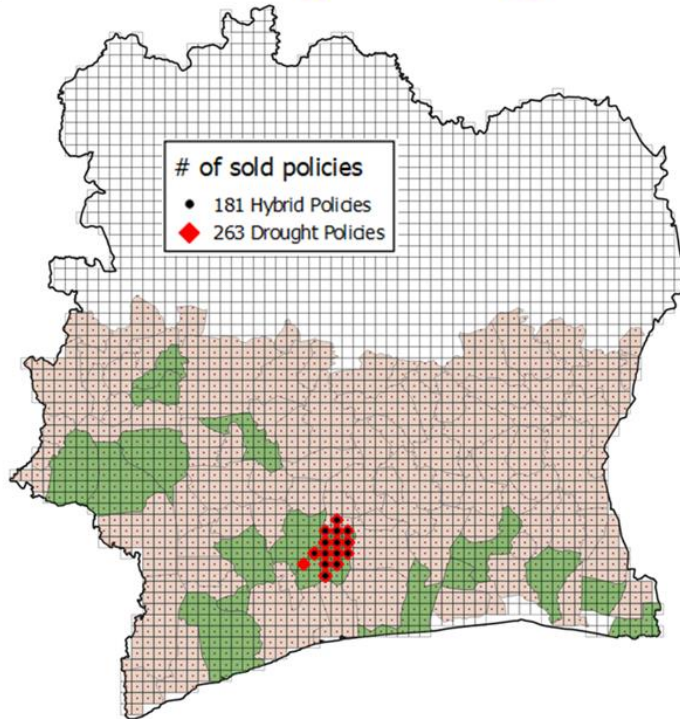


Project Outcome: Product Design and Distribution



Outcome: insurance product term sheet

2022 Target Region & 444 policies sold



Target area: **brown** + **green** = 1,387 grid cells

Sub-prefectures: **green** = Touton's potential cocoa producers

1) Hybrid Insurance

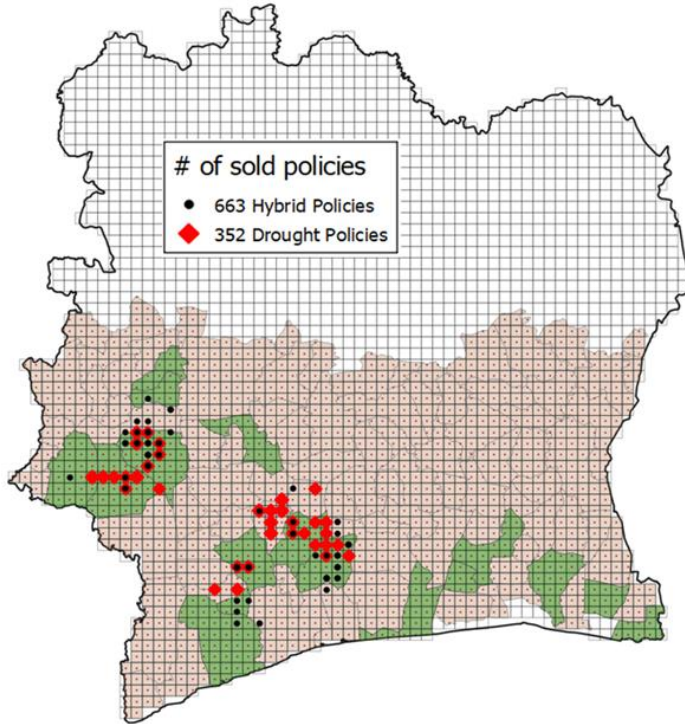
Risk Period	1-Aug-2022 – 31-Oct-2022
<i>Insured Perils</i>	- Fire incl. lightning (indemnity) - Uncontrollable pest and diseases (indemnity) - Unseasonal drought (index)
Deductible	10% for indemnity perils
Data Product	Soil Water Index 60 cm soil depth (ESA)
Drought Index	Minimum of decadal soil moisture anomaly
Sum Insured / ha	CFA 128,510
Premium Rate	~5.1%, varies by grid cell

2) Drought Insurance

Risk Period	1-Aug-2022 – 31-Oct-2022
<i>Insured Peril</i>	- Unseasonal drought (index)
Data Product	Soil Water Index 60 cm soil depth (ESA)
Drought Index	Minimum of decadal soil moisture anomaly
Sum Insured / ha	CFA 181,790
Premium Rate	~3.8%, varies by grid cell

Outcome: insurance product term sheet

2023 Target Region & 1015 policies already sold



1) Hybrid Insurance

Risk Period	1-Jan-2023 – 31-Mar-2023
Insured Perils	- Fire incl. lightning (indemnity) - Uncontrollable pest and diseases (indemnity) - Unseasonal drought (index)
Deductible	10% for indemnity perils
Data Product	Soil Water Index 60 cm soil depth (ESA)
Drought Index	Minimum of decad soil moisture anomaly
Sum Insured / ha	CFA 208,050
Premium Rate	~7.9%, varies by grid cell

2) Drought Insurance

Risk Period	1-Jan-2023 – 31-Mar-2023
Insured Peril	- Unseasonal drought (index)
Data Product	Soil Water Index 60 cm soil depth (ESA)
Drought Index	Minimum of decad soil moisture anomaly
Sum Insured / ha	CFA 199,430
Premium Rate	~6.1%, varies by grid cell

Target area: **brown** + **green** = 1,387 grid cells

Sub-prefectures: **green** = Touton's potential cocoa producers



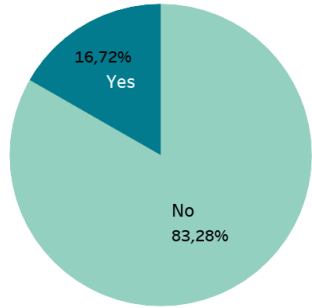
Outcome: insurance product sales 2022

- The sales pilot activities were conducted from July 1st to July 31st.
- Insured crop : Cocoa
- 1490 registered policies
- 444 farmers paid and insured
- 544.5 ha of land covered
- Type of product : drought and multi risks index insurance
- Coverage period : 21st August to 31 October

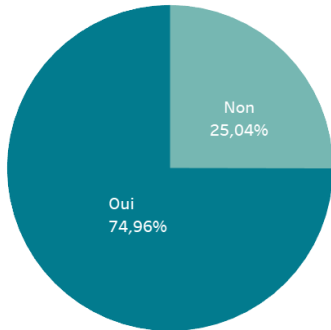
	Insured	Covered Area in ha	Total premium	Total sum insured
Option 3 insured perils	181.0	240	1,588,207	30,842,703.79
Option drought index only	263.0	304.5	2,129,785.0	55,355,007.7
	444.0	544.5	CFA 3,717,992.0	CFA 86,197,711.7
			EUR 5,577.0	EUR129,296

Farmers' feedback and evaluation

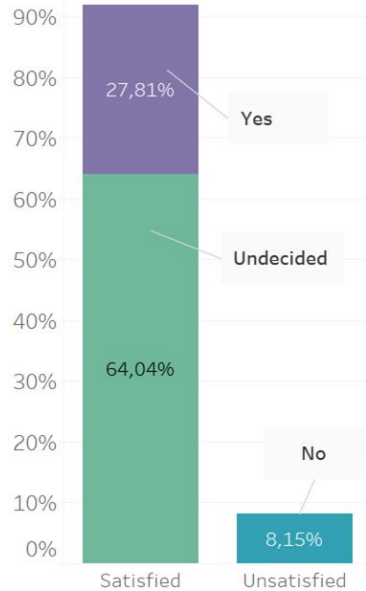
Did you subscribe to the insurance?



Are you interested in subscribing to the product?



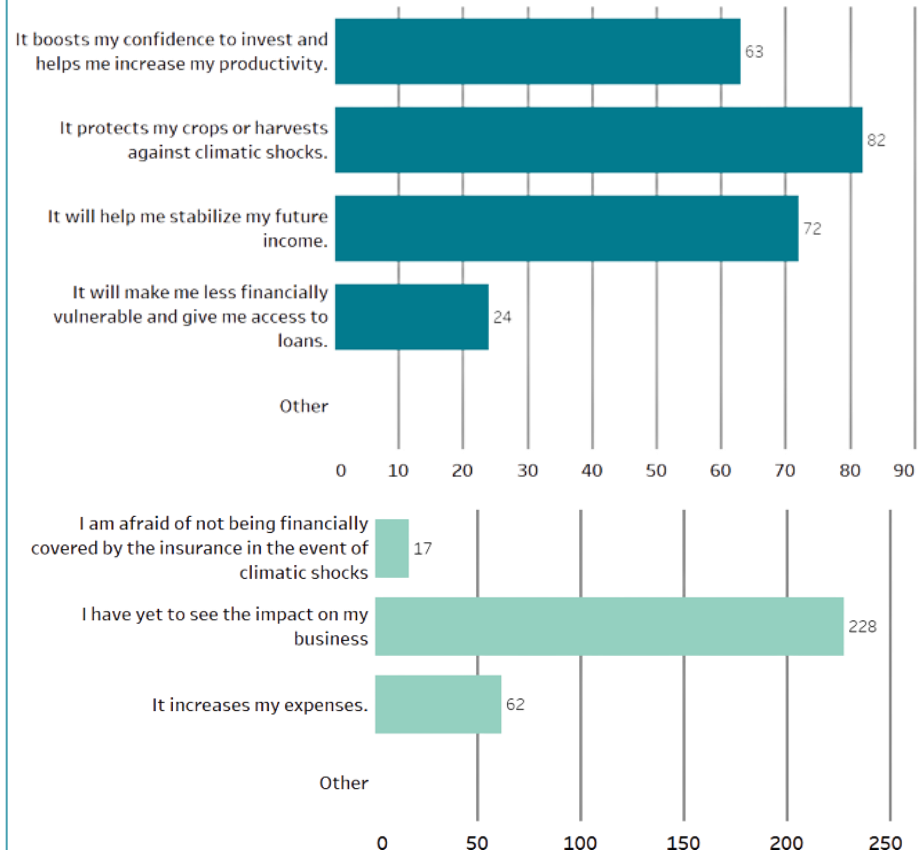
Do you believe that insurance has had a positive impact on your long-term business?



- A M&E survey was conducted right at the end of the covered period to ask about customer satisfaction towards the insurance products.
- 2129 farmers responded to the survey. It includes both customers and non-customers of the index insurance.
- 16.72% or 356 farmers said they have subscribed to the products.
- 83.28% of the respondents said that they did not subscribe to the products.
- 74.96% of those who did not subscribe to the products, or 1329 farmers said that they are interested in subscribing in the next round.
- 91.85% of the sample who subscribed were satisfied with the products, while 8.15% were unsatisfied.

Farmers' feedback and evaluation

- When drilling further into motivations of farmers, they were able to select more than one reason for their behaviour. Reasons for positive impact were: 1) It protects my crops or harvests against climate shocks.; 2) It will help me stabilize my future income.; 3) It boosts my confidence to invest and helps me increase my productivity.; 4) It will make me less financially vulnerable and give me access to loans.
- Among those who were undecided, their reason is that they did not yet see a long-term benefit. And among those who were unsatisfied, their main reasons were: 1) It increases my expenses.; and 2) I am afraid of not being financially covered by insurance in the event of climatic shocks.
- The reason behind why 64.04% of the respondents were undecided was that they were yet to see a peril comes into effect and thus experience the benefits. This was not the case within the implementation period because of the limited monitoring time span right after the coverage period without excessive climate risks.
- **In conclusion, 91.85% of the respondents are satisfied with the products (27.81%) or they still cannot tell and have yet to see the long-term impact (64.04%).**
- Although long-term business operation benefits to farmers needs to be proven further due to the evaluation period, 1015 policies have already been sold within two months in 2023.



Challenges

Significantly low literacy level of farmers requiring support from shop operators

Initially, the data collection system aimed at engaging the farmers directly through the terminals. However, the field research results showed that the illiteracy level among farmers is higher than found in initial desk research conducted on national level. Having farmers putting in the information on the interface directly would risk the quality of data. Therefore, adaptation in the data collection process and facilitation role of the shops within this context is required.

Delayed hardware production and delivery

Due to COVID and global logistics interruption, hardware production in China and delivery to Ivory Coast experienced delays and thus the start of rollout was eight weeks behind schedule.

Some mistrust from the farmers

Despite clear communication on the purpose of data collection, some shops owners had difficulty approaching farmers because some farmers mistrusted that the the survey might be shared with the government.

New product on the market

The project develops, launches and introduces crop index-insurance products for the first time to the Cote d'Ivoire market. There were no established processes and know-how within Allianz's local sales unit to work with new index insurance products that differ from the traditional products they are familiar with. Additionally, the agricultural sector, farmers in the rural areas, are the new customer segment that Allianz Cote d'Ivoire are working with for the first time . The local sales and distribution team needed time to set up the sales strategy, identify channels and relevant partners for the newly-created products.



Delays due to local circumstances and extraordinary events

Throughout the project, timelines had to be adjusted due to local circumstances and extraordinary events e.g. political unrest following the national election, excessive rainfalls and floods, and prolonged electricity cuts.

Success and innovation factors

Flexibility of the data collection approach that accommodate the reality of the target group

One key data requirements is crop harvest data over a long period of time e.g. one year or more. Most farmers do not keep this record and struggle to recall harvesting volumes and weights over such long periods.

With this insight, the team breaks the data collection into monthly interval to match with the farmers' harvest cycle and their short recall period to get the most accurate information possible.

This was possible due to the flexibility that the terminals offer to make recurring follow-up surveys with a minimal increase in cost and due to its operating location at shops where farmers frequent on a regular basis.



Multimedia educational campaign and onboarding of local sales partner

Farmers were informed and educated about the new insurance products and their benefits through a short and concise multimedia content on the terminals. This builds up the knowledge and supports the sales activities of the local sales partner.

Reciprocal incentivisation mechanism with data providers

The success of data collection is possible due to the fair and direct incentive that is rewarded to data providers for their knowledge. They can benefit from the financial payout directly in the form of discount to the purchase they make at the location.

This motivates both shop owners as key data collection partners and farmers as direct data providers throughout the collection period.

Customized insurance product design

The new index insurance products were designed based on the insights obtained from the data collected. Therefore, the products take into account and reflect the reality of the farms and the needs of farmers in the target regions e.g. the risks and perils that the products covered resonate with climate risks perceived and experienced by farmers and the coverage period.

Conclusion of the Feasibility Study

- The Feasibility Study is successfully completed. The goal to develop an innovative and scalable approach to improve data-availability for product design and client-communication for index insurance in suburban and rural parts of Sub-Saharan Africa was met.
- The adaptation of Groots' smallholder-shop based data-collection system "tabtap STATION" is proven to be capable of collecting data in local context that yields relevant insights crucial for the design of index products. The products respond to the specific customers needs as shown by sales numbers achieved. It also helps equip farmers with necessary financial knowledge and plays a crucial role in supporting the insurance sales and distribution efforts.
- Due to the short evaluation period, long-term business operation benefits to farmers needs to be proven further, despite initial results being quite promising.
- The project and the developed insurance products with its innovative approach and real life success rate – with about 450 policies sold in 2022 and about 1,000 in the first quarter of 2023 (almost 1500 policies sold within 7 months) - was awarded first prize among 150 applicants in the Ambitious Insurer Award at the Insurtech Insights Conference in London on the 1st of March 2023. The award is presented to Allianz Re "for executing the most ambitious project over the past 12 months, creating the biggest positive impact on its customers, society, and driving the biggest business outcomes."





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