Proof of concept pilot project in Togo: Providing index-based insurance to smallholder farmers

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Conducted by Lorica, Togo in partnership with SUNU Assurances, Togo, Allianz, and eLeaf.

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ACRONYMS AND ABREVIATIONS

ATP	Availability to pay
CLIN	Centre Local d'Incubation Numérique
DFS	Decentralized Financial Services
DSID	Direction des Statistiques Agricoles, de l'Informatique et de la Documentation
GIS	Geographic information system
MFI	Microfinance Institution
MAPTO	Mouvement Alliance Paysanne du Togo (Farmers)
MIFA	Mécanisme Incitatif de Financement Agricole
NPK	Nitrogen, Phosphorus, Potassium
RE	Relative Evapotranspiration
WTP	Willingness to Pay

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Executive summary

Objective:

The present pilot project was conducted to prove with a new insurance product that parametric target group oriented insurance products for small scale farmers are feasible and that there is sufficient demand for agricultural insurance in Togo as a sustainable instrument to protect farmers against climate risks. There is currently no offer of agricultural insurance products for small farmers in Togo.

Lorica's partners in the preparation and implementation of the pilot product were:

CLIN:	Data collection and administration partner
eLEAF:	Product development partner
Assilassime:	MFI
MAPTO:	farmer's cooperative
SUNU:	Local insurer
Alliance Re:	International reinsurer

Tasks and Methodology:

Study

A study was conducted prior to the pilot project of implementation of an index-based insurance in collaboration with MAPTO, a farmer organisation who identified the need of an index-based insurance among its members. The envisaged product was designed to cover input costs of small scale farmers against drought. The product relied on an RE (relative evapotranspiration) index.

A survey[1] was conducted on 459 MAPTO farmers located in all 5 economic regions of Togo to analyse the target group and adjust, if necessary, the envisaged crop insurance product bundled with a loan.

The methodology used was structured in three parts: document review, institutional interviews and field survey. The field survey took place from August 5 to August 12 and allowed the administration of 459 questionnaires to agricultural households throughout the country, and conducting interviews with MAPTO regional representatives.
In order to ensure that the data to be collected on all farm households are representative of the target population of over 23000 farmers in Togo, an initial selection of 3885 farmers was made out of the 5 regions, to highlight producers with fairly complete data available on their area of production, years of farming activity, the number of crops grown, gender and telephone contacts. Another sampling was then made to make sure that all crops were considered in addition to the criteria of

[1] A survey report was issued in September 2020 prior to this final report

gender, spatial distribution over the territory, farm size and the budget available to carry out the surveys. . Thus, 459 agricultural producers, representative of the 5 economic regions of Togo, were selected in the end.

The main results of the surveys are the following:

- 25% of farmers had stopped their activity temporarily for an average period of 18 months because of a climate hazard (flood or drought)

- Among farmers who have experienced credit defaults, 21% couldn't reimburse their loan because of loss of yield due to climate hazards, and 75% couldn't find a market outlet for their products.

- Only 18% of the farmers said they have already heard of crop insurance before, mainly from awareness campaigns. When asked about their apprehension about insurance, 19% of surveyed farmers had a good opinion about it, and 81% said they didn't have any opinion.

- However, 64% of the farmers expressed their intention to subscribe to crop insurance, as they have been facing more frequent climate hazards these past 10 years.

- For the great majority of the surveyed farmers who farm less than 5 ha (97%), the ability to pay (ATP) for crop insurance ranges from 3508 FCFA (5 euros) to 33 584 FCFA (51 euros); whereas their annual net income (stemming from farming activities as well as other income generating activities) ranges from 70152 FCFA (107 euros) to 671681 FCFA (1024 euros).

Based on the ratio of ATP on production costs, we set the target average premium rate at 5% of the sum insured (production costs average is 281074 FCFA, i.e. 428 euros), with the following specifications:

Farmers with over 2 ha can afford premium payments for an insurance which covers 100% of their production costs

- Farmers who cultivate less than 2 hectare don't have the ability to pay for an insurance which covers 100% of their production cost, assuming that they use agricultural inputs.
- Even if they do not use inputs (except for seeds) and therefore have lower production costs, many farmers may not be able to afford weather index insurance premium that covers totally their production costs.

However, after testing the contract parameters with the proposed target rate of 5 to 6%, we recommended a higher premium rate (9 to 10%) in order to provide a higher level of coverage and more frequent pay-outs to the target group, provided premium financing mechanisms such as bundling insurance with agricultural loans or premium subsidies are also in place.

Given the constraints related to smallholder farmers' ability to pay for crop

insurance, the distribution channel to be prioritized would be via decentralized financial services (DFS) such as Microfinance institutions (MFI), with the dual advantage of supporting the growth of the agricultural production, and therefore farmers income, but also allowing them to afford insurance premiums, by prefinacing them. Temporary insurance premium subsidies to farmers could also be considered in order to reduce the burden of insurance costs while giving them the opportunity to become accustomed to insurance products and the benefits they could get from them. However, the study also showed certain categories of farmers can afford the product.

Implementation

Based on the study results, an index based insurance product was designed by our partner calculator agent eLeaf, covering cost of inputs of smallholder farmes cultivating soy against drought, at a portfolio average premium rate of 9,9%. The product was designed to allow more frequent pay-outs at the lowest premium possible.

The developed index insurance policy provides cash payouts in the event of a drought emanating from low average RE levels during one or both phases of the coverage period. A typical crop insurance policy can be expected, based on our models, to trigger a pay-out approximately 24% of the time (return period of 4.2 years). The end beneficiairy of a payout depends on the product chosen. If the farmer chose the loan-insurance bundle, in case of an insurance event, the partnering MFI is the direct beneficiary of the compensation, which will be used as (partial) loan repayment. The farmer will be eligible for another loan the next season. If the farmer purchased the insurance only, compensation is paid directly to the insured farmer unless otherwise agreed.In this case payment is made to the farmer trough mobile money.

The information, awareness and registration campaign started in September 2020 ahead of the minor season which starts in October. We had a quite narrow sales window as the insurance policy coverage started on 1st October 2020.

525 farmers in 2 regions were registered, and 202 farmers were enrolled, representing a conversion rate of 38%. 211 Registered farmers from Plateau Region, and 112 from Maritime Region finally desisted to sow during this minor season given the delay of the first rains observed in August and September in their localities. So we did not enrol any farmer in Plateau region. All enrolled farmers are from Maritime region.

For the majority of farmers enrolled (202), the farm size cultivated during the minor season was relatively small (0.75 ha in average), due to the same weather related uncertainty, resulting in lower production costs (value insured).

However, farmers showed great interest in the product, as many of them have been facing adverse weather conditions in the past years.

The sales summary is as follows:

	in FCFA	*In euros*	Uptake ratio
Registered farmers*	525		85%
No of covered farmers (policies sold)	202		38%
Average premium	13 347	20,35	
Highest premium paid	126 405	192,70	
Lowest premium paid	859	1,31	
Average Value insured	138 226	210,72	
Maximum value insured	900 000	1 372,04	
Minimum value insured	18 000	27,44	
Average farm size (ha)	0,76		
Total premium paid	2 696 099	4 110,18	
Total value insured	27 921 600	42 566,20	

** 615 informed farmers*

The Relative Evapotranspiration (RE) index monitoring during the coverage period gave the following results:

No of locations with pay-outs	7	
Total No of locations covered	23	
No of farmers eligible for pay-outs	67	
Average pay-out rate	14,78%	
Maximum pay-out rate	27,82%	
Minimum pay-out rate	6,05%	
Average pay-out amount (XOF)	20 675	31.52 €
Highest pay-out amount (XOF)	120 330	183,44 €
Lowest pay-out amount (XOF)	5 178	7,90 €

The present pilot project's results show that there is demand for index insurance products for small scale farmers in Togo and the respective implementation is feasible. Moreover, the frequency of triggered pay-outs certainly helps prove the value of our product and the sustainability of our model.

Lessons learned for future products

- **Room for location adjustments in product design and reinsurance agreements necessary to accommodate local realities**
  Product design and pricing was based on locations that were targeted for product promotion and distribution, ahead of the insurance coverage period. The reinsurer approved the premium pricing and target risk ratio based on

those locations and their specific historical loss simulation. When entering into the sales period, some registered (i.e. targeted) farmers desisted from sowing in some locations, while other, previously not targeted farmers in some new locations decided to purchase the product. In order to maximise sales, the new farmers were added to the portfolio, with the approval of the partner calculation agent eLeaf, with some impact on the target risk ratio (62.5% to 65%). However, the reinsurer considered the late update of locations not ideal and a formal breach of agreement. However, reinsurance coverage was maintained in the mutual interest of a successful pilot[2]. For future insurance products, reinsurance agreements need to account for minor adjustments to enable reaching as many farmers as possible during the sales period.

- **Designing a product that is affordable and allows frequent pay-outs is key for market penetration**
  The objective with the partner calculation agent was to offer a product with the highest possible pay-out frequency at the lowest possible price.
  Out of 525 registered farmers during the information campaign, 202 farmers purchased the product, for a conversion rate of 38%. 67 farmers (38% of covered farmers) coming from 7 locations were eligible for pay-outs. The average pay-out rate was 17% of the value insured with a premium average rate of 9.7%. These pay-out figures contribute to the ongoing trust building among farmers with regards to agricultural insurance and give a positive outlook for the upcoming seasons.

- **Relying on "legacy" insurance companies to underwrite the product presents challenges**
  Existing insurance companies are not servicing farmers as they usually consider this market at this point in time as not part of their core business. The main reasons for such reluctance to tap into this market are small value contracts, no expertise with index-based insurance, and perceived high distribution costs.
  The designed product approval process from the insurer, policy underwriting and reinsurance agreement negotiations did not always live up to our expectations in terms of responsiveness. As we want to serve this market adequately, and after proving the sustainability of this model as a broker, other solutions might have to be considered. One option would be to graduate from a broker into a micro-insurance company that clearly differentiates itself from the current players and fully serve smallholder farmers by protecting them against climate risks, thus rendering the service provision independent from insurance companies with differing target group profiles. Similar to dedicated microfinance / agrofinance institutions, a dedicated microinsurance / agroinsurance would bundle the sector know-how and concentrate on serving the target group in a more focused way, not having

[2] the missing 2,5% were amicably recovered by accepting a cut down in commissions (1.5% from Lorica and 1% from Allianz Re)

to balance strategic expectations predefined by regional headquarters interested in serving classic insurance customers with new and unusual (in the eyes of the regional headquarter) local market opportunities.

- **Ability to pay levels recommend prioritization of distribution via DFS**

  The distribution channel to be prioritized would be decentralized financial services (DFS) such as Microfinance institutions (MFI), with the dual advantage of supporting the growth of the agricultural production, and therefore farmer's income, but also allowing them to afford insurance premiums, by prefinancing them. The use of temporary premium subsidies to support scaling up should also be considered.

  Prefered perils to be covered should be excessive rainfall, added to the already piloted drough insurance, as farmers have signalled the need of that coverage during our awareness campaigns. Apart from soy which was covered during this pilot project, the crops to be covered are maize, wich is the most cultivated crop among farmers in Togo. Cotton and rice should also be considered as their sectors, as well as soy, are relativey well organized and benefit from increasing funding from the government in terms of modernization and increased yields.

1. Goal and objectives of the pilot project

Although agriculture accounts for more than 40 percent of Togo's Gross Domestic Product (GDP), there are still major obstacles to improving agricultural productivity, because farmers lack the resources to invest in fertilizers, seeds and other factors of production. So far the financial needs of farmers in Togo are only partly met by MFIs. Most financial institutions consider agriculture's exposure to climatic shocks as a major constraint to credit development.

Against this background, demand for agricultural insurance has also been voiced by

MAPTO[3], an agricultural cooperative with more than 22.000 members as well as MFIs, amongst others Assilassime (100.000 clients of which abt. 1.200 farmers) and SOGEMEF (1.000.000 clients, of which more than 160.000 farmers), two MFIs willing to partner with Lorica.

There is currently no offer of agricultural insurance products for small farmers in Togo. For this agricultural season 2020, Lorica implemented a new package of insurance coverage for farmers that are members of MAPTO, with the following goal:

- To prove with this new insurance product that parametric target group oriented insurance products for small scale farmers are feasible and that there is sufficient demand for agricultural insurance in Togo as a sustainable instrument to protect farmers against climate risks.

In order to reach that goal, we set the objective to provide weather index insurance to 300 smallholder farmers to cover them against the loss of yield due to drought.

It is in this context that Lorica has run a survey on 459 MAPTO farmers located in all 5 economic regions of Togo to:

- Conduct target group analysis by assessing the following: farming practices (planting periods, use of herbicides, pesticides, fertilizers, etc.); sources of funding for agricultural activity; willingness and ability to pay, poverty level/ income situation (sources and seasonality of income, expenses), household size, education, geography, history of climate related loss of yield , mobile phone penetration
- Analysis of the strengths and weaknesses, opportunities and risks likely to influence the implementation of the pilot
- Verification and adjustment of the envisaged product (crop insurance bundled with a loan)
- Assess the opportunity of providing crop insurance to MAPTO farmers through other channels (agricultural service providers, food processing companies, etc.).

2. Methodology used for data collection and analysis

2.1. Methodologic process

The study was structured in three parts: literature review, interview with MAPTO board members, and field surveys.

[3] The representatives of MAPTO that have been met during the mission were very much aware of the potential benefits of insurance, but at the same time had no unreasonable expectations as to the functioning of an insurance product.

The literature review served as a basis for orienting the research of the data collected in the field and also served as guidance in the design of the crop insurance package to be offered to farm households. The following were used in particular:

- The Fourth National Census of Agriculture (2011-2014) - produced by the DSID (Ministry of Agriculture),
- The feasibility study for the implementation of agricultural insurance in Togo conducted by Barac Consulting in 2019, commissioned by the government of Togo

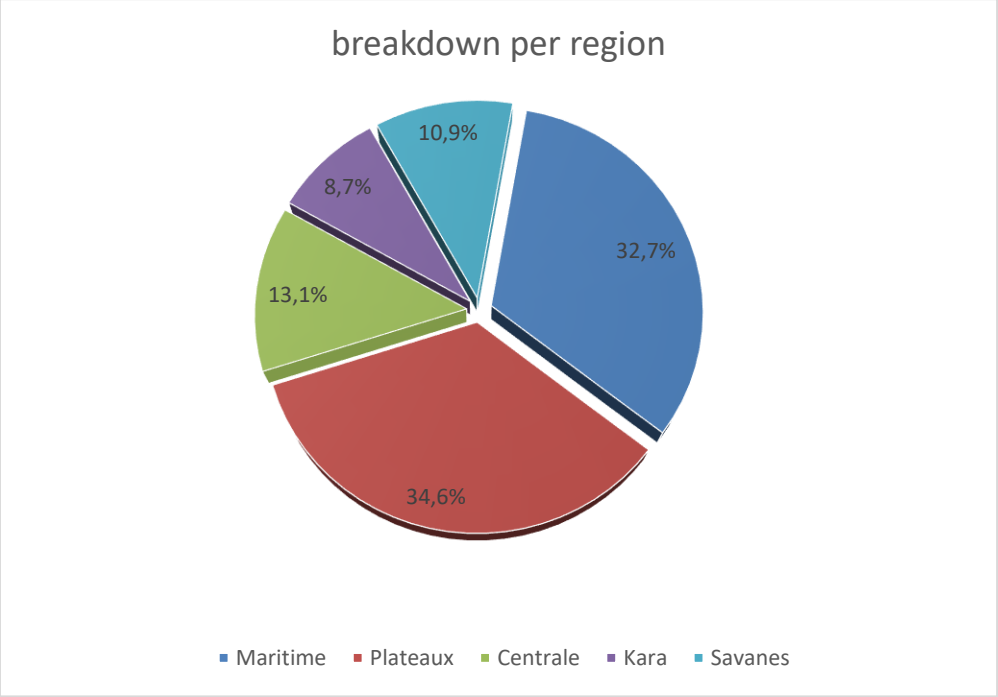
Interviews with MAPTO representatives and technical team were also conducted, particularly in order to collect information on the agricultural activity of their members in the areas visited and the challenges they are facing (climate, economic and socio-cultural issues).

Sampling method

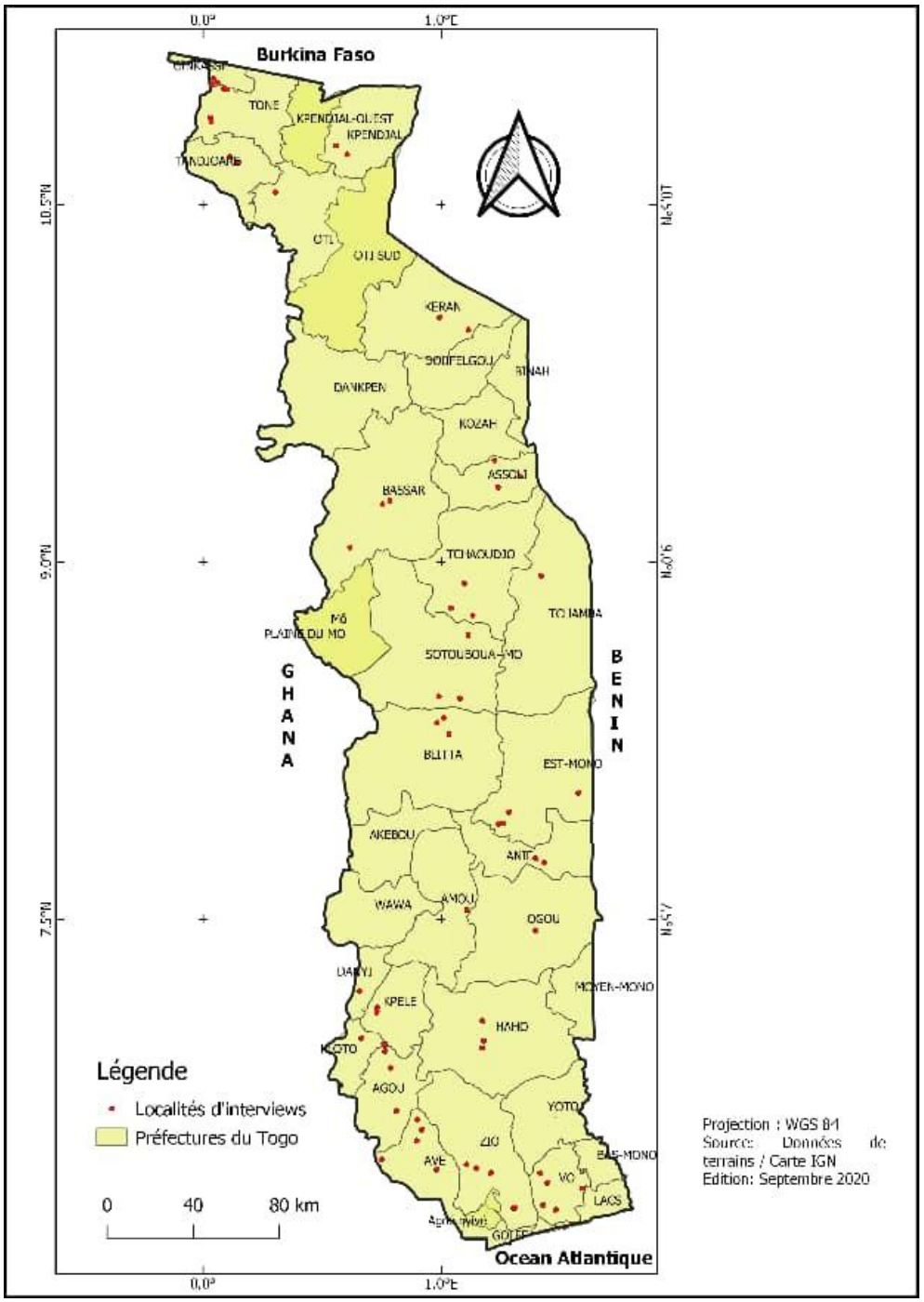
In order to ensure that the data to be collected on all farm households are representative of the target population, a systematic random sampling method based on sampling steps and proportional to the different categories of agricultural producers in the regions was established. This method made it possible to select 459 agricultural producers out of the 5 economic regions of Togo (See the list in annex A).

The pilot project was focusing on 2 southern regions (Maritime and Plateaux) where there is a small season from September to December, which made project implementation at this time of the year possible. Therefore 2/3 of farmers selected for interviews come from these 2 regions. See the **survey map and farmers repartition by region graph** bellow:

Graph 1: Surveyed farmers distribution by region


breakdown per region
10,9%
8,7%
32,7%
13,1%
34,6%
Maritime
Plateaux
Centrale
Kara
Savanes

Survey map*



**Red dots represent the villages where farmers where interviewed*

Table 1: Farmers distribution by region

Regions	Number of surveyed farmers	Distribution of surveyed farmers by region %	Total number of MAPTO farmers [4]	Distribution of MAPTO farmers by region %
Maritime	150	33%	2274	10%
Plateaux	159	35%	3621	16%
Centrale	60	13%	8139	35%
Kara	40	9%	5153	22%
Savanes	50	11%	4064	17%
Total	459	100%	23251	100%

Survey process timing

PHASES	TIMING
1. Elaboration of the questionnaire*	10-15 June 2020
2. selecting the sample of groups to be surveyed	15-20 June 2020
2. Development of data collection tools**	15-20 June 2020
3. Preparatory mission with the survey team	03 August 2020
4. Surveys and data encoding	05-12 Aug 2020
5. Data analysis	10-31 Aug 2020
6. Report writing and validation	01-18 Oct 2020

**See the questionnaire in ANNEX 1*

2.2. Data collection tools

A data collection system using smartphones (Android) with the DATAWISE application was developed by our IT partner CLIN. The questionnaire was uploaded in a digital form and this tool allowed field agents to collect data through their smartphones during the survey

The implementation of a GIS (Geographic Information System) administration interface for the management of field agents who collect data allowed Lorica and CLIN administrators to follow the work done by agents, the number of data collected during the day, extract data and analyse it.

Data quality was monitored by Lorica's validation team according to well-defined criteria such as, for example, the coherence between the size of the farm and the declared income of the farmer…etc.

[4] These are registered farmers (breadwinners), representing their households; it is about 6% of the total farming households in Togo (410 000).

2.3. Survey team preparation

Fourteen surveyors coming from different regions, including the capital Lome were prepared for survey during a one day training session in Lomé. Five of them are agricultural technicians from our partner MAPTO and the nine others are surveyors with proven experience in conducting field surveys in rural areas. The objective of the preparatory mission was to:

- Re-specify the general objective of the study mission and the expected objectives
- Learn and be able to explain the basic principles of insurance in general and agricultural insurance in particular
- Train interviewers on the data collection tool, including the DATAWISE application, and provide them with the GIS platform login credentials
- Ensure a good understanding of the questionnaire to be administered to farmers
- Conduct tests on the data collection tools and make adjustments
- Proceed with the territorial organization of the teams and the chronogram of the surveys' implementation.

Table 2: Repartition of surveyors by region and number of farmers to interview

Regions	Number of farmers to interview	Equivalent number of surveyors	Number of surveys by surveyor
MARITIME	150	5	30
PLATEAUX	159	4	40
CENTRALE	60	2	30
KARA	40	1	40
SAVANES	50	2	25
TOTAL	459	**14**	33

2.4. Survey and data encoding

The farmer's survey was conducted from August 5th to August 12th 2020. Coding took place simultaneously and no particular implementation problems are to report.

The MAPTO farmers were interviewed individually by an interviewer in a fixed location, on the basis of appointments. The frequency of interviews was estimated at six per day. Interviews were conducted in French as well as local languages if

necessary. Interviewers had been recruited accordingly.

Data were automatically sent to the GIS platform and encoded in csv and excel format for exploitation by the validation team.

2.5. Data exploitation and analysis

The exploitation of the data was carried out by the technical team of Lorica composed of the insurance consultant, a junior actuary and data analyst, and an expert in crop insurance and food security.

The database was assessed to identify minor incoherencies due to a misunderstanding of the questions asked or a data entry mistake into the digital questionnaire. No records were eliminated.

The analysis that led to the validation of the results was based mainly on two standard statistical parameters: the mean [which gives information on the data set in all its diversity] and the median [which gives information on the central tendency of the data set]. When the values of the mean and the median were close, the mean was used.

The data that seemed the most important in our view were those concerning the incomes of farm households in all their specificities and their willingness to pay, in order to better assess their ability to subscribe to the crop insurance package.

We considered that these results can be validated and transposed to all agricultural producers in Togo because the sampling methodology based on the analysis of farm household incomes allowed us to have a fairly representative group of this population.

2.6. The main axes of data analysis

- Income

The following information was used to determine the income level of the farmers surveyed:

- Average annual farm expenses for crops
- Average annual revenue (sales) from sales of the crops grown by the farmer
- Annual gross revenues generated on other income-generating activities (IGAs)

These data allowed us to estimate the average net income of the farm households surveyed and also to correlate the level of these incomes with the size of the farm.

- Farmers ability to pay (ATP)

The willingness to pay was recorded and evaluated according to the annual net income of these households. The threshold of a maximum of 5% of annual income was used to estimate the contributive capacity of households.

- The proposed pricing of the insurance package

Based on the ratio of ability to pay with regard to average production costs, we proposed a target premium rate for weather index insurance for the group.

3. Principal results of the survey

3.1. Characteristics of the surveyed farmers households

➢ The respondent

The respondent is 56% male, and he is married or in a relationship. Women who count for 44%, are well represented among MAPTO farmers, with regards to the national average rate of 18% in agricultural households.

Table 3 below shows the distribution by age groups:

Table 3: Breakdown of respondents by age group

Age groups	breakdown %
[16years, 25years [	0,48%
[25years, 35years [	13,01%
[35years, 45years [	27,71%
[45years, 55years [	36,87%
[55years, 65years [	13,98%
65 years, plus	7,95%
TOTAL	100,00%

Table 4: Distribution of the number of spouses in the group of farmers surveyed

Number of spouses	breakdown %
0	0%
1	55%
2	17%
3	9%

4	5%
>=5	14%
TOTAL	100%

The vast majority of farmers are polygamous and 45% of them have 2 spouses or more. It is common in rural areas where having a bigger family means more manpower and a greater production.

- **The household structure**

The average number of persons per farming household, including the respondent and all dependents, is 7 persons. The table below shows that 65% of farming household have at least 6 members.

Table 5: Distribution of household size in the farmers group Respondents

Household size groups*	Number of households	Distribution %
1 person	45	9,80%
2-3 persons	25	5,45%
4-5 persons	90	19,61%
6-9 persons	206	44,88%
10-14 persons	74	16,12%
15+ persons	19	4,14%
TOTAL	459	100,00%

**familial structure = breadwinner+spouse+children and dependant adults*

3.2. The farm: cultivated crops, farming practices, size

- ***Crops***

In the group of farmers surveyed, 78% grow maize as their principal crop. Almost 9% of them grow soy as their principal crop.

Table 6: Distribution of major cultivated crops among surveyed farmers

Crops	Number of farmers	Distribution %
Maize	358	78,00%
Soy	40	8,70%
Rice	33	7,20%
Yam	11	2,40%
Groundnuts	6	1,30%
Sorghum	4	0,90%

Cassava	2	0,40%
Bean	2	0,40%
Cotton	2	0,40%
Millet	1	0,20%
TOTAL	459	100%

Table 6 b below shows the distribution by crops and regions.

Table 6 b: Distribution by crops and regions among surveyed farmers

Crop	Maritime	Plateaux	Centrale	Kara	Savanes
Maize	93%	83%	53%	28%	88%
Soy	0%	2%	40%	30%	2%
Rice	3%	14%	2%	10%	4%
Yam	0%	1%	0%	25%	0%
Groundnuts	4%	0%	0%	0%	0%
Sorghum	0%	0%	2%	3%	4%
Cassava	1%	0%	0%	3%	0%
Bean	0%	0%	2%	3%	0%
Cotton	0%	0%	2%	0%	2%
Millet	0%	1%	0%	0%	0%

It is important to note that the majority of farmers cultivate other crops beside their principal crop. We observed that almost all of them grow maize if only for consumption.

Table 7 bellow shows that 56% of farmers grow between 2 and 3 crops.

Table 7: Distribution of number of crops grown in the group of farmers

Number of crops grown	Distribution %
1	36,84%
2	38,35%
3	17,79%
4	4,76%
5	1,75%
7	0,25%
8	0,25%
	100%

➢ *The farming activity*

The sustainability of the envisaged agricultural micro insurance project in cooperation with MAPTO depends largely on the farmers' long-term commitment to farming. The reasons why a farmer started farming activities can help to determine their level of commitment to this project in the medium and long term:

Table 8: Reason for choosing farming as principal activity

reasons for the choice of agricultural activity	Distribution %
Out of frustration	8,3%
By desire	12,2%
Following failure at school	12,4%
By heritage	66,0%
Other reasons	1,1%
TOTAL	**100,0%**

The majority of farmers (82%) operate by inheritance or desire, which allows for stability in their long and medium-term commitment to this activity.

Among surveyed farmers, 8% have temporarily stopped their activity in the past for the following reasons:

Table 9: Reasons for temporary cessation of activity in the group of farmers

Reasons for temporary cessation of activity	Distribution %
Sickness	61%
Drought	15%
Flood	10%
Death/funerals	8%
Others	7%
Total	**100%**

25% of farmers stopped their activity temporary because of a climate hazard (flood or drought). Weather index insurance will surely reduce the impact of the adverse consequences of climate hazard on farmers, by protecting their investment in the farm.

The table below shows the duration of activity interruption among farmers who are concerned:

Table 10: Duration of cessation of activity among farmers group

Duration of interruption	Distribution %
1 - 2 years	71%
2 - 4 years	21%
Over 4 years	8%
TOTAL	**100%**

We can see that health issues and climate hazards (who count respectively for 61% and 25% of the reasons of activity cessation among farmers) cause long interruptions of activity; it took over 2 years for 30% of farmers to recover from these events and get back to work.

Regarding the households member's contribution to the family income, table 9 bellow shows the distribution of the number of members of the household involved in farming (crops or livestock), and who participate in the household's workforce and income.

Table 11: Distribution of household members involved in farming (crop or livestock breeding)

Household workforce groups	Number of households	Distribution %
1 persons	48	10%
2-3 persons	183	40%
4-5 persons	122	27%
6 persons and more	106	23%
Total	**459**	**100%**

These household members might have their say in the household decisions, and may possibly help in providing joint and/or several guarantees for agricultural loan applications. Moreover the potential for growth of the household's production is also guaranteed if they are financially supported with inputs.

Regarding the agricultural seasons, Table 10 below shows the distribution of farmers who work during both the major season and minor season in the southern part of the country (Maritime and Plateaux).

Based on this information we can plan farmer's enrolment for both seasons at once in those areas of the country.

Table 12: distribution of farmers by agricultural season

Agriculture season	Number of farmers	Distribution %
Major season only	270	59%
Minor season only	0	0%
Both seasons	189	41%
TOTAL	**459**	**100%**

There are two agricultural seasons in Southern Togo[5]; the major season and the minor season; whereas, in Northern Togo, farmers can only work during one major agricultural season.

Based on the total of surveyed farmers in Southern Togo (Maritime and Plateaux regions) which is 309, we note that:

- 61% (189/309) of Southern farmers plant during both season
- So, 39% of them do not plant during the minor season, despite the opportunity to do so

Based on this information, we will be able to make more accurate sales projections during the second season in the south. Financing may also encourage more farmers to work during the minor season.

- ***The size of the farms***

On the basis of the information provided by the respondents, the average size of the farms was estimated:

Table 13: Distribution by size of cropland in the respondent group

[5] In the southern Togo, the major season starts from March-April to July; and the minor season, from Mid-september-October to Mid-december. In the North, the only raining season start from June to September

Farm size groups	Number of farmers	Repartition %
< 0,5ha	52	11,3%
[0,5ha ; 1ha[	139	30,3%
[1ha ; 2ha[	144	31,4%
[2ha ; 3ha[	68	14,8%
[3ha ; 5ha[	40	8,7%
[5ha, 8ha[	15	3,3%
8ha+	1	0,2%
TOTAL	459	100,0%

73% of the group farm less than 2 ha. Over 60% of them farm between 0, 5 ha and 2 ha.

Table 13 below shows the distribution by field size and by regions:

Table 13 b: Distribution by field size and by regions

	SOUTHERN		NORTHERN		
Surface area of cultivation	**Maritime**	**Plateaux**	**Centrale**	**Kara**	**Savanes**
< 0,5ha	28%	3%	0%	8%	4%
[0,5ha ; 1ha[	27%	33%	20%	38%	40%
[1ha ; 2ha[	29%	40%	23%	23%	30%
[2ha ; 3ha[	10%	18%	22%	20%	6%
[3ha ; 5ha[	5%	4%	22%	13%	18%
[5ha, 8ha[	2%	3%	13%	0%	0%
8ha+	0%	0%	0%	0%	2%

Among surveyed farmers, very small farms (less than 0,5ha) are in majority in the Maritime Region (South). Bigger farms of over 3 ha are in majority in the northern regions. Farms of over 5 ha are located in majority in Region Centrale.

- ***The use of agricultural inputs***

The use of agricultural inputs other than seeds, such as fertilizers or external labour, is not widespread among surveyed farmers as it was expected, just because most of them cannot afford it. Many of them, especially those who farm small croplands only buy seeds and prepare their land for the agricultural season.
Depending on the utilisation of agricultural inputs other than seeds, the production costs may even vary among farmers who grow the same crop in the same cropland size category.

Table 14: Use of inputs among surveyed farmers (excluding seeds)

Inputs	Number of farmers	Distribution %
NPK (chemical fertilizer)	182	40%
Urea (chemical fertilizer)	140	31%
Pesticides	115	25%
Organic fertilizer	84	18%
External labour	226	49%

3.3. Farmers income

The following information was used to determine the income level of the farmers surveyed:

- o Average annual farm expenses for major crops
- o Average gross revenues (sales) from sales of the main crops
- o Annual gross revenues generated on other income-generating activities (IGAs)

These data allow us to estimate the average net income of the farm households surveyed and also to correlate the level of these incomes with the size of the farm.

Analysis of the size of the farms shows that the larger the area, the greater the household income, as illustrated in the following tables. The area farmed therefore seems to us to be the most relevant criterion for classifying households, analysing the income of each class, and deducting their ability to pay their insurance premiums.

The estimated income for each class of household (class by farm size) is calculated by summing their average net income from the main crops they farm and the additional income from income-generating activities.

Tableau 15: Farmers household estimated annual monetary[6] net income from crops ; principal activity

Farm size groups	Annual monetary net income from	in Euros

[6] Monetary income stemming from sales of agricultural production. Most farmers also consume part of their production themselves.

	major crops in FCFA	
<0,5ha	18 545	28
0,5-1 ha	99 326	151
1-2ha	131 181	200
2-3ha	431 671	658
3-5ha	569 306	868
5-8ha	1 085 758	1 655
8ha+	1 730 000	2 637

Income from secondary activities

The vast majority of the farmers surveyed engage in income-generating activities other than the main crop they grow. These are small-scale animal breeding, fishing, small-scale trade of processed food products, sale of non-food products, and small service trades, etc.

Table 16: Estimated annual income from secondary activities (in FCFA)

Farm size groups	Income from other activities in FCFA	in Euros
< 0,5ha	51 606	79
[0,5ha ; 1ha[	40 556	62
[1ha ; 2ha[	79 246	121
[2ha ; 3ha[	97 544	149
[3ha ; 5ha[	102 375	156
[5ha, 8ha[	129 293	197
8ha+	700 000	1 067

To summarize our analysis of the income of the farm households surveyed, we considered:

- The net income from the main activity, i.e. income from the main crops exploited by the household (gross turnover - operating expenses, see table 15)
- The net income from other income-generating activities (see table 16), since this income could be used to pay insurance premiums for example.

Table 17: Estimate of total annual net income of farmer households

Farm size groups	Net income from major crops in FCFA	Income from other activities in FCFA	Total Net Income in FCFA	Total net income in euros
< 0,5ha	18 545	51 606	70 152	107
[0,5ha ; 1ha[	99 326	40 556	139 881	213
[1ha ; 2ha[	131 181	79 246	210 428	321
[2ha ; 3ha[	431 671	97 544	529 215	807
[3ha ; 5ha[	569 306	102 375	671 681	1 024
[5ha, 8ha[	1 085 758	129 293	1 215 052	1 852
8ha+	1 730 000	700 000	2 430 000	3 705

It should be noted that households farming less than 0,5 ha earn more money in secondary activities. Its means that the income generated from the farm is not enough for their basic needs, except for their own consumption.

For those who farm between 0.5 ha and 1 ha, their complementary income from other activities represents 51% (in addition) of their main income.

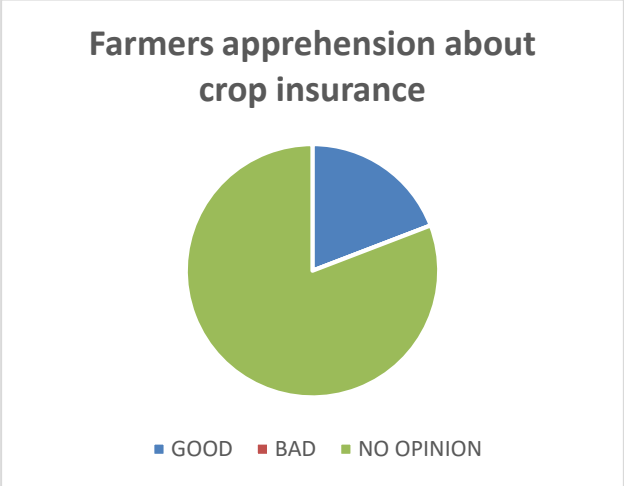
However, the data collected also show that for those who farm 1 ha and more, the secondary income generated is relatively low compared to the main income. We deduce from this that the secondary activity for this category of households allows them to meet certain secondary needs and that the main activity allows them to meet the primary needs of the household.

3.4. Farmers willingness to pay and ability to pay

- ***Willingness to Pay for crop insurance***

18% of the farmers said they have already heard of crop insurance before, mainly from awareness campaigns.

When asked about their apprehension about crop insurance, 19% of surveyed farmers had a good opinion about it, and 81% said they didn't have any opinion.



This corroborates our view that the majority of farmers don't know much about crop insurance. Awareness and information campaigns are really necessary to get farmers to understand the product and its advantages.

However, 64% of the farmers want to subscribe to crop insurance, as they face more frequent climate hazards these past 10 years.

The following table shows the annual average contribution that farmers declare that they want to pay (Willingness To Pay) for crop insurance, compared to their annual income (table 17):

Table 18: Willingness To Pay (WTP) among farmers (FCFA)

Cropland size groups	WTP (in FCFA)	Annual net income	WTP in % of annual net income
< 0,5ha	6 064	70 152	8,64%
[0,5ha ; 1ha[	8 222	139 881	5,88%
[1ha ; 2ha[	8 769	210 428	4,17%
[2ha ; 3ha[	12 289	529 215	2,32%
[3ha ; 5ha[	7 809	671 681	1,16%
[5ha, 8ha[	19 364	1 215 052	1,59%
8ha+	5 000	2 430 000	0,21%

These estimates are calculated taking into account the distribution of household income and by class farm size (Table 17),

The main information to be drawn from the data in Table 18 is that the expressed

willingness to pay by the farmers does not necessarily depend on the level of their income. In fact, producers farming less than 1 ha estimate that they can pay an average of 6064 FCFA per farming household which represent 8,64% of their income, whereas those who farm between 3 ha and 5 ha and who nevertheless earn higher incomes are willing to pay 7 808 FCFA, which is just 1,16% of their annual income.

- ***Ability to pay for crop insurance***

The ratios of amounts willing to be paid to Annual Net Income (see tables 18) are quiet high for some households, especially those who farm less than 0,5 ha. Although these farmers indicated these amounts during the survey, thus expressing their willingness to contribute to the insurance system, it would be difficult for them to meet this commitment which represents over 8% of their annual income.

Given the primary needs to be met such as food, housing, clothing, education, transportation, etc., it is undesirable for households to spend over 5% or more of their income on crop insurance.

The following table 18 takes into account their Ability to pay, based on their net annual income:

Table 19: Ability to pay among farmers

Cropland size groups	Annual Net income (FCFA)	ATP (in FCFA) (5% of annual net income)	ATP in euros
< 0,5ha	70 152	3 508	5
[0,5ha ; 1ha[	139 881	6 994	11
[1ha ; 2ha[	210 428	10 521	16
[2ha ; 3ha[	529 215	26 461	40
[3ha ; 5ha[	671 681	33 584	51
[5ha, 8ha[	1 215 052	60 753	93
8ha+	2 430 000	121 500	185

Now that we estimated farmer's ability to pay, it is important to see if those estimated amount are enough to cover them properly against climate related loss of yield. Crop insurance generally consider the production cost of the farm as the value to be insured; so, covering a farmer against drought is actually protecting him against the loss of his production cost or his investment due to drought.

The table 19 below shows average production costs, and related farmers ability to pay, assuming that all groups of farmers use agricultural inputs other than seeds.

Table 20: Ability to pay on production cost per field size ratio

Field size	Production cost (FCFA)	ATP (FCFA)	ratio ATP/ production cost
<0,5ha	99 509	3 508	4%
0,5-1 ha	177 563	6 994	4%
1-2ha	237 715	10 521	4%
2-3ha	334 545	26 461	8%
3-5ha	556 036	33 584	6%
5-8ha	673 408	60 753	9%
8ha+	804 000	121 500	15%

These ratios should be considered as guidance for the crop insurance product's premium rates, as we see in table 19.

If we consider the ratio "ATP/production costs" (table 20) of the great majority of farmers, 90%, who farm less than 3 ha (see table 13), the average target premium rate for weather index insurance would be 5 to 6%.

Based on the ATP estimates in table 18, and with a target premium rate of 5% of the insured value (production cost), we can make the following projections:

- Farmers with over 2 ha can afford premium payments for an insurance which covers 100% of their production costs Farmers who cultivate less than 2 hectare may have difficulty to pay for an insurance which covers 100% of their production cost, assuming that they use agricultural inputs.
- Even if they do not use inputs (except for seeds) and therefore have lower production costs, many farmers may not be able to afford weather index insurance premium that covers totally their investment.

This implies that financing farmers for inputs must go hand in hand with insurance premium financing, especially for small farmers who cultivate less than 1 hectare, thus the importance of binding weather index insurance with agricultural credit.

Another option is to provide premium subsidies over a limited period of time to small farmers, so they can be covered for 100% of their investment until their income generated from farming allows them to fully cover 100 % insurance of their investment on their own.

In sum, both tools, i.e. agricultural financing with subsidies for weather index insurance can be used to increase their production, and therefore their income, and also get them to be more familiar with insurance.

3.5. Testing of contract parameters with proposed target premium rate

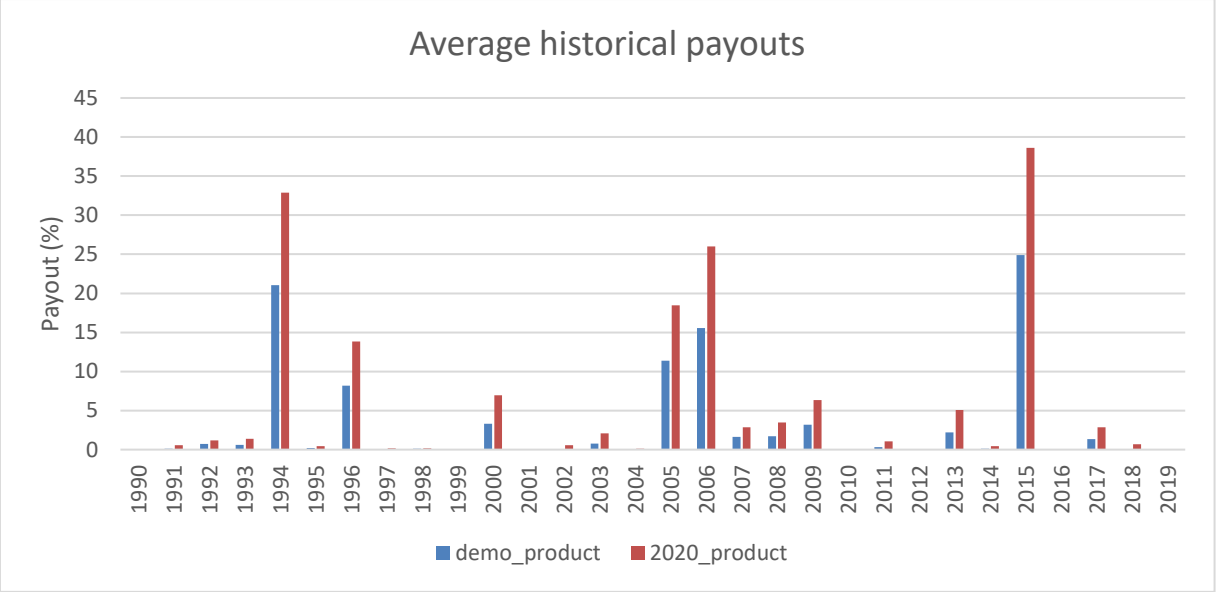
Although the proposed rate (5 to 6%) takes into account the ATP of the target group, it is important to check whether this rate provides a satisfactory level of risk coverage, i.e. a good frequency of compensation and at the highest level possible.

While designing the product, we (Eleaf and Lorica) found out that, at this rate of 5 to 6%, coverage rate is quite low, which produces less pay-outs.

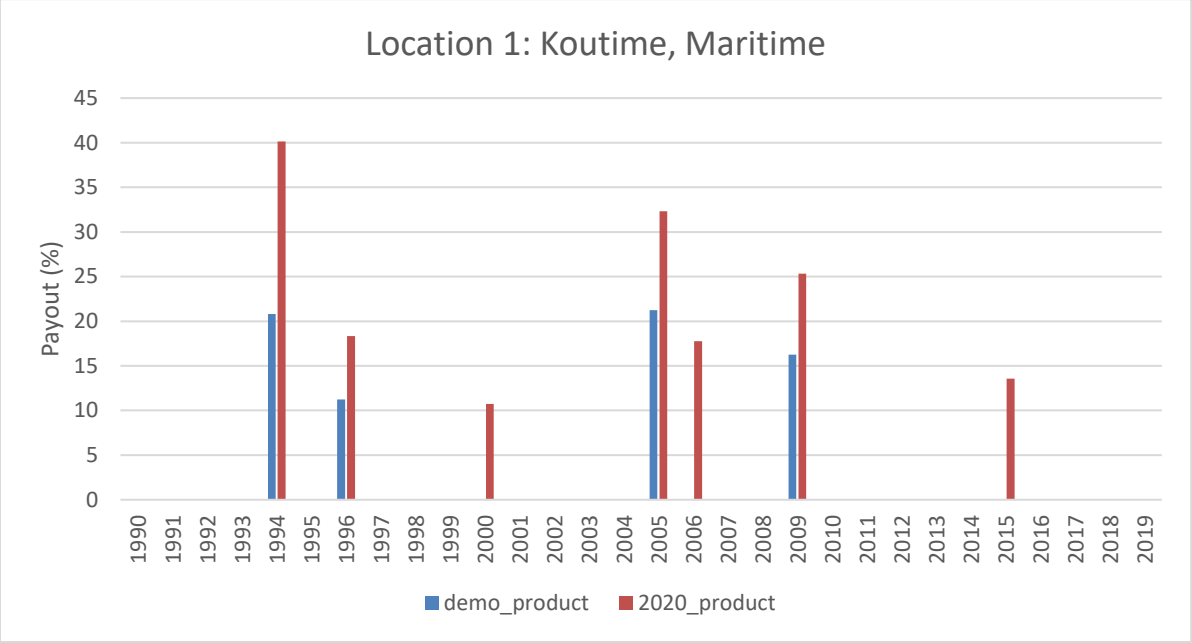
The following table shows the differences between the current index which is sold on average at 9.7% (2020 product) and the same index if the premium would be around 5-6% (demo product).

	2020 final product	demo product
Premium (%)	9.7%	5.8%
Risk Rate (%)	6.4%	3.8%
Pay-out frequency	1 every 4 years	1 every 5 years
Damage Covered per phase	70%	50%

Already from this table, it is obvious that the coverage of the product is decreased, but the following graphs illustrate the difference between the two premium/coverage levels in more detail. The first chart compares the two products at an average portfolio level, while the second focuses on the effect on one particular example location (Koutime, Maritime).



On the average level it is already clear that lower and less pay-outs are expected were the premium rate is lower, but the actual difference on location level can be much more significant. In this location, we can see that the current product would have provided pay-outs in 7 out of 30 years, while the low-cost product only in 4 years. At the same time it can be noticed that the difference between the pay-outs in those 4 common years, ranges from 7% to 19%, with an average of 13%.



Based on these simulations, we would recommend a higher premium rate (9 to 10%) in order to provide a higher level of coverage and more frequent pay-outs to the target group, provided premium financing mechanisms such as binding with agricultural loans or subsidies as proposed earlier are in place. Product structure with more frequent pay-outs will convince more farmers to subscribe the next seasons

When asked about the source of financing of their production, we had the following responses:

Table 21: Source of financing of agricultural production among surveyed farmers

Source of financing	Distribution %
Self-financing	63%
Credit from MFI	19%
Credit with merchants (informal)	3%
Association/tontine[7]	7%
Other (family loans etc.)	8%

Most of the farmers who have benefited from credit have obtained it through a joint guarantee. Overall, self-financing and credit from MFI are the most common source of financing over all categories of farmers.

[7] Tontines are informal mutual savings groups popular thoughout the region.

9 farmers (2% of the surveyed farmers) acknowledged having experienced credit defaults, due to 2 principal reasons:

- loss of yield due to climate hazards for 21% of them, and
- Lack of outlet for their products for 75% of them

Access to inputs was not a challenge for interviewed farmers, as they are members of MAPTO and thus benefitting from MAPTO's activities in this regard.

Based on this information, we may consider that that weather index insurance has the potential to reduce credit risk. However, this assumption must be confirmed later with further analysis on case studies based on the designed product's contract parameters and agricultural credit's terms and conditions.

But, another issue to consider in this project, and not the least, is the guarantee of outlets for farmers' production.

➢ *Mobile payment penetration*

40% of the surveyed farmers said they were able to pay their loan instalment through mobile money. During the survey, we also found out that the vast majority were using mobile phones (98%).

Table 22: Mode of payment by surveyed farmers

Mode of payment	Distribution %
Cash	48%
Mobile Money	40%
Bank account (MFI)	10%
Other	2%

4. Strengths and weaknesses, opportunities and risks regarding the implementation of the pilot

Based on the results of the survey, information gathered from the exchange with our implementation partners and the assessment of the economic and insurance environment, the chart below summarizes our strengths and weaknesses, and opportunities and risks that can hinder the implementation of the pilot:

STRENGHTS	WEAKNESS
- Good level of organization and types of services provided to members of the MAPTO farmer organization -Partnership with an MFI for binding insurance with credit -Good IT solutions enabling efficient data collection, and product distribution	-Insurance penetration is very low and farmers don't know the product -delayed reactivity from the local insurance partner SUNU, as weather index insurance is not yet a strategic priority on the company's group level
OPPORTUNITIES	**RISKS**
-The regulatory environment in Togo is favourable for insurance; the government has repeatedly expressed interest in the nationwide introduction of agricultural insurance 64% of the farmers are generally willing to subscribe to crop insurance as 25% of activity interruption and 21% of credit defaults among farmers are due to climate hazards;	-More frequent climate hazards these past 10 years, may result in higher premium rates -Lack of market outlets for products may deter Microfinance institutions from financing farmers, whereas we consider them as one of the distribution partners -Covid 19 health crisis may affect the project in case of new outbreaks and lockdown: Field operations such as awareness raising, customer registration may be slowed down.

5. Recommendations regarding the implementation of the weather index insurance pilot project

We made the following recommendations for the success of the pilot project:

1. Design a drought insurance product for maize or soy which are the top crops grown among the group of farmers, as principal activity.

2. The target premium rate should be between 9 and 10% of the value insured (production cost), to produce more frequents and higher amounts of pay-outs.

3. The product must be designed to allow more frequent pay-outs, as described in chapter 3, because the majority of farmers have never heard about crop insurance before. A product structure with more frequent (partial) pay-outs will convince more farmers to subscribe the next seasons

4. Awareness and information campaigns on how the weather index insurance product works, and how claims are assessed must be conducted during the pilot. (See in **Annex 1** : Awareness campaign plan)

5. Distribute weather index insurance through agricultural credit to allow small farmers to pay their premium out of the loan amount and increase their income

6. Also distribute weather index insurance directly to farmers (without credit) through Lorica's sales network (field agents). Indeed, based on the survey farmers cultivating more than 2 ha can pay for weather index insurance at an average premium rate of 5 to 6%. So, even though the average premium rate is 9,7% at portfolio level, direct sales should target locations with premium rates below 6%. (See **annex 1**: Distribution strategy)

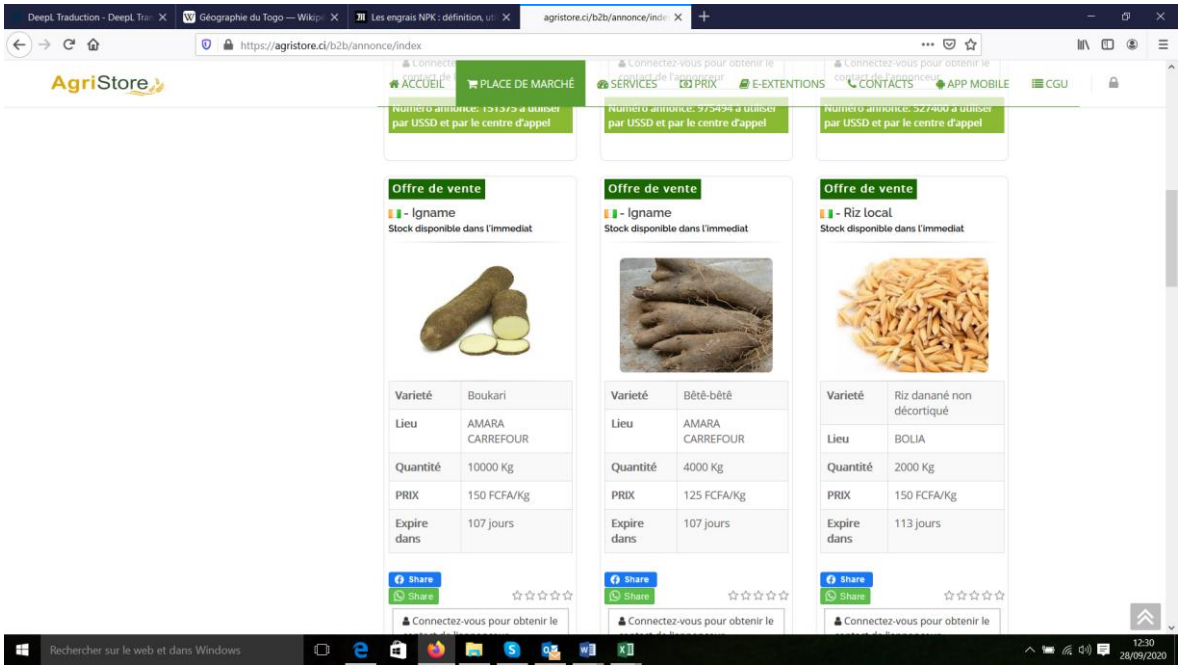
7. Connect farmers with aggregators (food processors, exporters of agricultural products etc.) who can buy their products at the end of the season. Our partner CLIN-E-agribusiness has a database of aggregators for all crops and is already addressing the issue of market access for farmers.

To begin with, an exchange ("bourse") for agricultural products and services is created on their "e-agribusiness" platform with the following options (see screenshot bellow):

- Any actor (farmer, buyer) can subscribe to the service and pay for its publications via mobile money.
- Farmers can publish their harvests (Offer to sell), subscribe to services (weather, advice, etc.), receive notifications, etc.
- Buyers can publish their needs (Offer to purchase), subscribe to services (transport, advice, etc.), receive notifications, etc.

Over 200.000 farmers are identified and enrolled on this platform to date.

In the pilot project, enrolled farmers will benefit from this service with no charge in order to connect them to buyers.



8. Premium collection and pay-outs should be possible trough mobile devices as 40% of surveyed farmers use mobile money.

6. The pilot project implementation

6.1. Partners involved

The pilot project implementation started in September 2020, with weather index based insurance design and information awareness and registration campaign in 2 regions in the South, ahead of the small raining season (October-December 2020).

Distribution strategy and awareness campaign plan are detailed in **annex 1**.

Table 23: Partners involved in the pilot project

Category	Party	Role
Farmers' cooperative	MAPTO (Togo)	Farmers organisation with 23000 members in all 5 regions of Togo, providing access to farmers
IT support	CLIN (Togo)	Designer of a platform with IT solutions to enable us to register customers, distribute our products. Enable customers to register and pay premium through mobile phone, and receive pay-outs trough the same channel. Provider of IT network equipment
MFI	Assilassime	MFI with abt. 100.000 clients, signed an agreement with Lorica to offer agricultural loans bundled with weather index insurance
Weather index product design	eLEAF (Netherlands)	Crop insurance design, actuarial services, risk analysis and pricing services. Index based on Relative Evapotranspiration (RE) data
Local Insurer	SUNU (Togo)	Product submission for approval by the regulator, Insurance policy underwriting
Reinsurance	ALLIANZ Re (Switzerland)	Insurance portfolio reinsurance coverage
Operations	LORICA (Togo)	Project coordinator; data analysis and processing, awareness campaign, field operations, agents training, product distribution

6.2. The designed product

The Weather Index Insurance policy provides Drought Benefits payable in the event of a drought emanating from low average RE levels during one or both phases of the coverage period. Soy was the selected crop for this pilot project implementation.

The amount of benefit payable is predetermined and varies with the severity of the drought measured by the average RE level observed at each phase. Each policyholder is assigned a Latitude and Longitude location, which is matched to a corresponding pixel. An area of 3x3 pixels around that pixel is used as the spatial

basis for the index as the location coordinates provided usually correspond to the village location of the farmer and not the location of the farm itself. So including a broader area (9x9 km) minimizes the probability that the actual farm location falls outside those boundaries.

For a given location (3x3 pixels) and the coverage period as defined above, eLEAF designed a policy with a claims schedule that satisfies the following criteria:

- Smallest claim amount is 5% of the sum insured
- Largest claim amount is 100% of the sum insured
- Expected claim at portfolio level (year over year) 6.2% of the sum insured.

A typical crop insurance policy can be expected, based on our models, to trigger a pay-out approximately 24% of the time (return period of 4.2 years).

The crop insurance policy pays a predetermined amount as stated in the sample Benefit Schedule below in the event of the occurrence of any of the trigger events during the coverage period whilst the policy is in force. The proceeds payable in the event of a drought varies with the severity of the drought. The thresholds that define the severity of the drought vary in absolute values from location to location.

Principal characteristics, coverage period, and pricing are summarized below:

Product characteristics

Growing season start:		Fixed start date
Start date:		**01-oct**
Season length:		92 days
Phase 1:	Emergence-Flowering	41 days
Phase 2:	Flowering - Maturity	51 days
Spatial resolution		9x9 km
RE Detrending		Linear
Loss methodology:		linear using statistical method (percentiles) for strike and exit
Deductible		variable per location: check corresponding tab
Franchise		5%
Target Loss Ratio		65%
Target Rate:		9% to 10%

Drought Index

Data	RE time series since 1990	
Index:	Phase Average RE per sub county	
RE Strike (per phase)	12th percentile (per phase)	
return period of 8.3 years per phase, ~4 years return period in total		
RE Exit (per phase)	minimum (capped to max: strike-10)	
RE Coverage (per phase)	Phase1	70%
	Phase 2	70%
Pricing		
Average risk rate:	6,44	%
Average premium:	9,92	%
Premium Variance:	8,69	%
Min premium:	3,75	%
Max premium:	18,00	%

A full description of the designed product and a sample policy document (approved by the insurer SUNU and the reinsurer Allianz Re) are included in **Annex 3**.

- ***Product approval process***

The final version of the designed product (version 5) was submitted to SUNU Togo in September 2020, with a proposed sample policy document (see annex 3 attached). Some minor adjustments were made and the final policy document was forwarded to the local regulator (Direction Nationale des Assurances) for a visa. A full product approval process with the CIMA regional regulator was not necessary as SUNU is already licenced to distribute products in the category of “Harvest loss”. The product was approved by the regulator within 3 weeks.

7. Index insurance pilot results

7.1. Sales

The information and awareness campaign started in September 2020 ahead of the minor season which starts in October. We had a quite narrow sales window as the insurance policy coverage started on 1st October 2020.

211 Registered farmers from Plateau Region, and 112 from Maritime finally desisted to sow during this minor season given the delay of the first rains observed in August and September in their localities. So we did not enrol any farmer in Plateau region. All enrolled farmers are from Maritime region.

For the majority of farmers enrolled (202), the farm size cultivated during the minor season was relatively small due to the same weather related uncertainty resulting in the lower production costs (value insured).

However, farmers showed great interest in the product, as many of them have been facing tricky weather conditions in the past years.

Sales summary

	in FCFA	*In euros*	Uptake ratio
Registered farmers*	525		85%
No of covered farmers (policies sold)	202		38%
Average premium	13 347	20,35	
Highest premium paid	126 405	192,70	
Lowest premium paid	859	1,31	
Average Value insured	138 226	210,72	
Maximum value insured	900 000	1 372,04	
Minimum value insured	18 000	27,44	
Average farm size (ha)	0,76		
Total premium paid	2 696 099	4 110,18	
Total value insured	27 921 600	42 566,20	

** 615 informed farmers*

The full sales report (listing) is added in **annex 4**.

7.2. Index monitoring and pay-outs

57 locations were identified during index design for pricing. However insurance policies were sold in 23 locations in Maritime region.

The RE (relative evapotranspiration) index monitoring on the insured farmers locations gave the following results:

Location N°	ZONE	LOSS
1	Afagnagan	0%
2	Agbelouve	6,05%
3	Agbleta	0%
4	Agbossou kope	0%
5	Amblesso kope	0%
6	Ataregbe	0%
7	Avedze	0%
8	Ayakope	0%
9	DOGLOBO	0%
10	Fulanycondji	0%
11	Game	0%
12	Gamegble	10,29%
13	Gape tsingoe	0%
14	Kondacope	0%
15	Kouni-kpota	0%
16	Kpetsu	0%

17	Lonvo	14,91%
18	Nyative	0%
19	Togba	0%
20	Tomefa	22,99%
21	Tove	13,37%
22	Yotokope centre	27,83%
23	Yotovillage	23,97%

Payouts Summary

No of locations with pay-outs	7
Total No of locations covered	23
No of farmers eligible for pay-outs	67
Average pay-out rate	14,78%
Maximum pay-out rate	27,82%
Minimum pay-out rate	6,05%
Average pay-out amount (XOF)	20 675
Highest pay-out amount (XOF)	120 330
Lowest pay-out amount (XOF)	5 178

The pilot project's technical performance is as follows:

Account Performance Summary

		(XOF)
Premium w/ 6% IPT		2 696 099,40
Premium w/o 6% IPT	**6%**	**2 543 490,00**
Fixed Commission	15%	381 523,50
Brokerage (Lorica)	8,50%	216 196,65
Net Premium to Reinsurer	**100%**	**1 945 769,85**
Africa Re	*95%*	*1 848 481,36*
Final RE Loss	**100%**	**1 385 257,42**
Africa Re	*95%*	*1 315 994,55*
Loss Ratio		54,5%
Combined Ratio		78,0%

The combined ratio on this insurance operation is 78%, which is below 100%. The risk taker (here, the reinsurer who accepted 100% of risk portfolio) has had positive results, as expenses and claims made were lower than premiums received. It shows that the product pricing has been set up efficiently with regards to historical loss ratios on the targeted locations.
However, it will take several years to confirm the viability of the product, as high payouts are expected every 4 to 5 years (See product testing in chapter 3).

Assessment of the accuracy and appropriateness of the product design with regards to the comparison between payouts and actual losses is also necessary, and adjustments should be made to ensure the viability of the product.This analysis is been conducted with the support of MAPTO farmers organisation's prefectoral delegates who meet farmers ahead of the coming agricultural season 2021. The results are expected by the end of March 2021.
Moreover, distribution costs (including awareness and information campaigns) were not considered in this cost analysis (as they had been financed by ISF), thus the need to scale up the model in order to reach long-term profitability without external funding.

Payouts distribution

Based on the calculator agent's RE observation on insured farms locations and loss results shown above, we elaborated individual payouts listing with final RE loss amounts, as shown in **annex 5**.

Payouts were distributed to farmers in cash by Lorica from the 21st to 22nd of January 2021, wich is 1 week behind schedule, due to unexpected delays in processing claim payments with the partner insurer.

Payouts beneficiary depends on the product's distribution channel:

- Indemnities are paid to the insured if he purchased directly the weather index insurance (direct sales).
- The MFI is the beneficiary of the compensation if the weather index insurance is purchased through an agricultural loan.

Below is the outcome of product distribution channel and related payouts repartition during the pilot project:

	Direct sales	Agric Loans	Total
Enrolled farmers	80	122	202
Payouts	22	45	67

Even though 45 affected farmers were covered through loans, our partner MFI Assilassime, which is actually the beneficiary of payouts in this case, allowed us to distribute compensations directly to the farmers for this pilot project, as a way of raising awareness on the index insurance product and its benefits, and encouraging more farmers to purchase the product next seasons.

It should be specified that the agreed duration of credit on this pilot project is 9 months (Oct 2020 - June 2021), with repayment at the end ("In fine"). However, farmers have the possibility of making early repayments at their convenience before the end date.

During payouts distribution, we did not received any complaints regarding the amount received or claims from farmers who lost their yield but did not get any payouts.
However, we have started a quick assessment on customer satisfaction and feedback, and also on how payouts have been used by the smallholder farmers, especially with regards to their loan payment obligations. Further information will be shared at a later point in time.

9. Lessons learned

- **Room for location adjustments in product design and reinsurance agreements necessary to accommodate local realities**
  Product design and pricing was based on locations that were targeted for product promotion and distribution, ahead of the insurance coverage period. The reinsurer approved the premium pricing and target risk ratio based on those locations and their specific historical loss simulation. When entering into the sales period, some registered (i.e. targeted) farmers desisted from sowing in some locations, while other, previously not targeted farmers in some new locations decided to purchase the product. In order to maximise sales, the new farmers were added to the product design, with the approval of the partner calculation agent eLeaf, with some impact on the target risk ratio (62.5% to 65%). However, the reinsurer considered the late update of locations not ideal and a formal breach of agreement. In the mutual interest of a successful pilot, the missing 2,5% were amicably recovered by accepting a cut down in commissions (1.5% from Lorica and 1% from Allianz Re). For future insurance products, reinsurance agreements need to account for minor adjustments to enable reaching as many farmers as possible during the sales period.

- **Designing a product that is affordable and allows frequent pay-outs is key for market penetration**
  The objective with the partner calculation agent was to offer a product with the highest possible pay-out frequency at the lowest possible price.
  Out of 525 registered farmers during the information campaign, 202 farmers purchased the product, for a conversion rate of 38%. 67 farmers (33% of covered farmers) coming from 7 locations were eligible for pay-outs. The average pay-out rate was 14,78% of the value insured with a premium average rate of 9.7%. These pay-out figures contribute to the ongoing trust building among farmers with regards to agricultural insurance and give a positive outlook for the upcoming seasons.

- **Relying on "legacy" insurance companies to underwrite the product presents challenges**
  Existing insurance companies are not servicing farmers as they usually consider this market at this point in time as not part of their core business. The designed product approval process from the insurer, policy underwriting

and reinsurance agreement negotiations did not always live up to our expectations in terms of responsiveness. As we want to serve this market adequately, and after proving the sustainability of this model as a broker, other solutions might have to be considered. One option would be to graduate from a broker into a micro-insurance company that clearly differentiates itself from the current players and fully serve smallholder farmers by protecting them against climate risks, thus rendering the service provision independent from insurance companies with differing target group profiles.

- **Ability to pay levels recommend prioritization of distribution via DFS**

  The distribution channel to be prioritized would be decentralized financial services (DFS) such as Microfinance institutions (MFI), with the dual advantage of supporting the growth of the agricultural production, and therefore farmer's income, but also allowing them to afford insurance premiums, by prefinancing them. The use of temporary premium subsidies to support scaling up should also be considered.

10. Next steps

We want to apply for co-funding from ISF for implementing the following tasks:

- Design products for other crops, especially maize, rice and cotton as high demand from farmer's organizations has been communicated

- Create a version of the product at the same premium level, to which excess rainfall coverage only for very catastrophic events would be added, while only slightly limiting the drought coverage.

- Implement a micro insurance software and a data centre that enables to fully administrate the product from customer enrolment to pay-outs processing, including customer relation management and digital solutions for premium collection and pay-outs disbursement via mobile phone

- Get additional partner MFI's and farmers cooperatives on board to scale up the model

- Maintain ongoing product awareness and information campaign among farmers and register them.

- Look for potential funding partners in order to co-finance development and implementation of new products (including, as the case may be, premium subsidy elements) as well as accompanying information campaigns and training of insurance staff

We are also looking for potential funding partners that can back Lorica for micro

insurance company license process. Indeed, being a broker, we have not much leverage on the insurance companies, in terms of underwrinting and claims processing time, which is potentially harmful for the beneficiaries. Being a dedicated microinsurer, bundling our experience with the target group and being able to focus on servicing the target group without having to bend to differing strategies imposed by a regional headquarter would ultimately lead to better, timely customized service for the target group.

Conclusion

The insurance environment in Togo is favourable for implementing a weather index insurance project for smallholder farmers because the regulation allows relatively fast index insurance products licensing, the necessary data for index insurance product development is available as well as a cost efficient distribution infrastructureMost importantly, the demand for protection against the adverse consequences of climate hazards is high among surveyed farmers. Even though the majority of surveyed farmers (83%) have not heard about crop insurance before, they expressed their concerns about the climatic disturbances that affect their production: late raining season, longer droughts, irregularities in the seasons, floods, etc. Moreover, distribution partners such as MFis are willing to serve the smallholder farmers when index indurance is provided.

Given their ability to pay for crop insurance, the distribution channel to be prioritized would be decentralized financial services (DFS) such as Microfinance institutions (MFI), with the dual advantage of supporting the growth of the agricultural production, and therefore farmer's income, but also allowing them to afford insurance premiums, by prefinancing them. However, direct sales are also feasible, as the study showed that certain categories of farmers can afford the product even without prefinancing.

The present pilot project's results show that parametric target group oriented insurance products for small scale farmers are feasible in Togo. Moreover, the triggered pay-outs certainly contribute to proving the value added of our product and the sustainability of our model.

ANNEX 1: DISTRIBUTION STRATEGY, ADMINISTRATION PROCESS AND AWARENESS CAMPAIGN PLAN

Proof of concept pilot project in Togo : Providing weather index-based insurance to smallholder farmers

DISTRIBUTION STRATEGY AND INSURANCE ADMINISTRATION PROCESS

The designed weather index product will be distributed through 2 principal channels:

- Binding the product with agricultural loans with MFI Partners Assilassime, and FUCEC Togo.[8]
- Direct sales through our field agents for farmers who don't apply for agricultural loans

1. Binding the product with agricultural loans

- Farmers are registered by Lorica as members of their farming cooperative, with data on their location (including GPS coordinates), crops, farm size, and production cost estimate.
- Lorica prepares a listing of registered farmers, with production costs including the corresponding weather index insurance premium.
- The sum of production cost and weather index insurance premium constitute the amount of the loan to be granted to the farmer
- The listing is shared with Assilassime for credit approval process (eligibility requirements checked by Assilassime)
- Farmers are then trained during 6 weeks on basic modules by Assilassime (MFI) technical field agents, such as: the importance of regular savings, role and responsibility of the cooperative's board members, accessing and managing a credit fund, loan agreement and reading the repayment schedule, rights and duties of the beneficiary.
- Individual accounts are opened and the loan is disbursed: The amount corresponding to the production cost goes into the farmer's account and the amount of the corresponding weather index insurance is paid into Lorica's account. (Loan disbursement and repayment will be possible through mobile phone next season).

[8] FUCEC Togo is the leading microfinance institution in Togo. We've reached an agreement with them in September 2020 for distributing weather index insurance through their network. Total clients: over 1 million; outstanding credit: 145 million euros; they had **8 056 outsanding agriculturals loans in 2019**. Discussions on distribution process and credit terms and conditions parameters are underway

- Listing of paid premiums is generated and shared with SUNU Assurances for insurance policy documents issuance.

Targeted geographic areas

Our partner MFI Assilassime has started operating in the capital Lome and its surroundings in 2016, and is now serving in Plateau Region, with its 2 branches of Amlame and Anie. They are planning to open branches in the northern regions in the next 2 to 3 years. As a result, this distribution channel is available only in Plateau region for now, with 3621 registered MAPTO farmers.
However, partnership agreement is underway with FUCEC Togo, the leading MFI in Togo, with branches in all regions of Togo. We expect to implement this distribution model through their network as early as 2021.

2. Direct sales through our field agents

Direct sales are made during awareness and information meetings prior to the planting season. However farmers can deposit money throughout the year during or after information meetings held by Lorica field agents in their community. The money is collected by Lorica through our field agents or prefectural delegates. Mobile payments will be available next season.
MAPTO's prefectural delegates[9] are trained by Lorica and are in charge of collecting money from registered farmers cooperatives already visited and informed on the weather index product.
Based on the survey farmers cultivating more than 2 ha can pay for weather index insurance at an average premium rate of 5 to 6%. So, even though the average premium rate is 9,7% at portfolio level, direct sales will be prioritized in locations with premium rates below 6%.
Prior to the coverage period, listing of paid premiums is generated and shared with SUNU Assurances for insurance policy documents issuance.

3. Claims management process

It is not necessary for the farmer or his cooperative to inform us that a payment is required, since at the end of the period, the loss and its amount are known to all. The existence of the claim can be traced from the data provided by the Relative Evapotranspiration calculation agent.

The relative evapotranspiration data observed by the calculation agent (eLEAF) on each reference location will be communicated to all cooperatives and to the Insurance Department (Regulator) at the end of each phase.
At the end of Phase 2 (expiry), the data will be reconciled with the compensation schedule table to determine the amount of the claim to be paid. This amount is

[9] Prefectoral delegates are member of the staff of the MAPTO farmer's organisation coordination. They are agricultural technician in charge of training farmers, advising them on good farming practices, collecting their periodic membership fees…etc.

immediately communicated to the farmers' cooperative.

At that stage, we have 2 scenarios:

a) **The farmer purchased directly the weather index insurance (without agricultural loan):**
Indemnities are paid directly to the insured, or unless otherwise agreed, to his beneficiaries if the insured is deceased at the time of payment. Payment must be made by 10 days after the expiry date of the contract, unless contested. The farmer has 14 days after the compensation to contest the amount paid by the insurer.

b) **The weather index insurance is purchased through an agricultural loan**: The MFI Assilassime is the beneficiary of the compensation. The compensation will be used as loan repayment, and the farmer would be eligible for another loan the next season.

Below is the outcome of product distribution channel and related payouts repartition during the pilot project:

	Direct sales	Agric Loans	Total
Enrolled farmers	80	122	202
Payouts	22	45	67

4. Compensation contestation and dispute resolution

As said earlier, at the end of Phase 2 (expiry), the data will be reconciled with the compensation schedule table to determine the amount of the claim to be paid. This amount is immediately communicated to the farmers' cooperative, with individual compensation amounts.
The farmer who feels aggrieved can contact Lorica directly, at a number provided for this purpose, either to the president of his cooperative, or to the Prefectural delegate (MAPTO coordination) of his zone.
Out of Lorica, only prefectoral delegates are trained and authorized to manage contestations. The first step is to explain to the farmer, in the presence of the president of the cooperative (or his representative), how the compensation was calculated, with regards to the compensation schedule in the policy document, the relative evapotranspiration data observed by the calculation agent (eLEAF) on his location, and the value insured.
In case of disagreement, the insurer (SUNU) has the obligation to seek the arbitration of the National Insurance Department (regulator) which will be able, if necessary, to compare the data collected by the calculation agent (eLEAF with the National meteo department's data.

AWARENESS CAMPAIGN PLAN

The awareness and information campaign is conducted by Lorica and MAPTO representatives. We make sur that Prefectural representatives attend the meeting as they will play an important role in the follow up regarding premium collection, enquiries in connection with our field agents.
Meeting dates and locations are coordinated with MAPTO representatives, according to local constraints (holidays, market day, funerals etc.) and distance between locations.
The message is delivered in local language, with the following points:

1. **identify** with farmers the difficulties they encounter in their activities
2. **Market** the weather index based product (including loss evaluation and compensation process)
3. Present the opportunity to be covered trough an **agricultural loan** and the appraisal and training process
4. **Answer** questions
5. **Ask** for **payments**
6. **Register** customers

The regions targeted are Maritime and Plateaux where there is a small rainy season during this pilot, and central region in anticipation of the next major season 2021.

ANNEX 2: SURVEY QUESTIONNAIRE

FORMULAIRE ENQUETE LORICA							
Date de l'enquête			Identifiant de l'agent collecteur:				
Pays							
Région							
Préfecture							
Canton							
Village							
Communauté/ coopérative							
IDENTIFICATION DU PRODUCTEUR							
Nom							
Prénoms							
Contact téléphonique		Préciser le nom du titulaire du compte si différent:					
Genre (M; F)							
Age							
Situation matrimoniale	Marié/en couple	Célibataire	Divorcé	Veuf /veuve			
Niveau d'instruction	CP	CM	BEPC	Lycée		Formation prof.	Autres
COMPOSITION DU MENAGE							
Nombre de conjoints							
Nombre d'enfants (moins de 21 ans)							
Nombre des autres personnes à charge (plus de 21 ans)							
EXPLOITATION AGRICOLE							
Depuis combien d'années exploitez-vous votre parcelle							
Comment avez-vous intégré cette activité?	Par héritage	Par envie	Par dépit	Suite à échec scolaire	Autres: préciser		
Vous est-il arrivé d'arrêter cette activité ?	OUI	NON					
Si oui, pendant combien d'années?							
Quelle es la cause de l'arret de l'activité agricole?	Maladie	Décès/funerailles	Sécheresse	Innondation	Autres: préciser		
Liste des personnes exploitant au moins une parcelle ou élevant des animaux dans le ménage (en commençant par le Chef de ménage)	Nom et prénoms	Sexe; âge	Culture principale	Cette personne exploite cette culture principale durant quelle saison? 1.Grande 2.Petite 3. Les deux	Superficie exploitée de la culture principale en Ha: 1. grande saison 2. petite saison	Quantité produite de la culture principale sur cette superficie (en kg) 1. grande saison 2. petite saison	Cette personne élève t elle des animaux (OUI/NON)

CHEF DE MENAGE							
Quelle est la durée de cycle de production de la culture principale?	2 mois	3 mois	4 mois	Autres: préciser			
Quelle est la fenêtre typique des semis pour la culture principale?	1. grande saison 2.petite saison	Mars-Avril	Mai-Juin	Juillet-Août	Septembre-Octobre	Autres	
Quelle est la date la plus précoce où la culture pourrait être semée et reussir?	1. grande saison 2.petite saison	Mois	Début /milieu/fin				
Quelle est la date la plus tardive où la culture pourrait être semée et reussir?	1. grande saison 2.petite saison	Mois	Début /milieu/fin				
Votre production est-elle pluviale ou irriguée?	Pluviale	irriguée	Les deux				
Si les 2 techniques sont utilisées laquelle est la plus importante?	Irriguée	Pluviale					
Utilisez-vous les semences certifiées?	oui	non					
Quelle est la quantité par hectare? En kg?							
utilisez-vous de la fumure organique?	oui						
Quantité par hectare de fumure organique en kg							
Valeur de fumure organique en FCFA							
Période d'application de la fumure organique	1. grande saison	2 mois					
Utilisez-vous des engrais minéraux?	OUI	NON					
Quantités par hectare du NPK							
Valeur NPK							
Période d'application du NPK	1. grande saison 2.petite saison	Mars-Avril	Mai-Juin	Juillet-Août	Septembre-Octobre	Autres	
Quantité par hectare urée							
Valeur urée							
Période d'application urée	1. grande saison 2.petite saison	Mars-Avril	Mai-Juin	Juillet-Août	Septembre-Octobre	Autres	
Utilisez-vous des insecticides ou fongicides?	OUI	NON					
Quantité par hectare herbicide							
Utilisez-vous des pesticides?	OUI	NON					
Valeur des pesticides par hectare							
Utilisez vous de la main d'œuvre externe au ménage ?	OUI	NON					
A combien estimez vous cette main d'œuvre							
Pratiquez vous une culture secondaire 1?	Culture	1. grande saison 2.petite saison	Superficie exploitée en Ha	Quantité en kg produite sur cette superficie			
Pratiquez vous une culture secondaire 2?	Culture	1. grande saison 2.petite saison	Superficie exploitée en Ha	Quantité produite sur cette superficie			

REVENUS							
Revenus générés par la culture principale/an							
Revenus générés par la culture secondaire 1/an							
Revenus générés par la culture secondaire 2/an							
Avez-vous d'autres sources de revenus à part celui issu de la production végétale?	Oui	Non					
Si oui, précisez l'activité génératrice de revenus	Elevage	Pêche/aquaculture	Transformation de produits agricoles	Commerce	Artisanat	Autres: préciser	
A combien estimez-vous les revenus annuels de ces activités en FCFA							
Est-ce que la culture principale est pratiquée à des fins commerciales ou pour l'autoconsommation?	Commerciales	Auto consommation	Les deux				
Quelles sont les marchés ou débouchés pour la partie commercialisée de votre production?	Marché du village	Contrat informel	Agrégateur formel	Autres: préciser			
Qui gère les productions et revenus agricoles dans le ménage?	Chef de ménage	Autres, préciser					
Quelles sont les périodes de vente de vos produits (mois)?	Janvier	Février-Mars	Avril-Mai	Juin-Juillet	Août -Septembre	Octobre-Nov.	Décembre
PARAMETRES DE CONTRAT LIES A LA PLUVIOMETRIE							
Pratiquez-vous des semis à sec?	OUI	NON					
Si oui, pour quelle culture?							
Quel indicateur utilisez-vous pour évaluer le niveau d'eau nécessaire pour semer?	Une grande pluie	une date	les deux	Autres: préciser			
Quelle est la phase selon vous où la culture est la plus sensible à la sécheresse?	Germination -levée	végétative	Floraison	Maturation			
Est-ce que vous vous êtes une fois référé à une station de référence pour les données pluviométriques dans la planification de vos activités agricoles?	OUI	NON					

ACCES AU FINANCEMENT							
Précisez les differents modes de financement pour l'acquisition des intrants	Autofinancement (fonds propres)	crédit auprès des IMF/banques	Crédit auprès des commerçants	Association/tontine	Autres: préciser		
Le financement est-il reçu en temps opportun?	OUI	NON					
Quelles sont les garanties que vous proposez pour avoir accès au crédit?	Terrain	Matériels	Caution solidaire	Aval	Autres: préciser		
A quel moment sentez-vous prêt à rembourser le crédit?	Avant la récolte	Après la récolte	Autre: préciser				
Avez-vous des impayés de crédit agricole?	OUI	NON					
Si oui, pourquoi?	Conditions climatiques	Manque d'accès aux intrans	Maladie	Pas de marché	Autres, préciser		
Si oui, depuis quelle année?							
ASSURANCE AGRICOLE							
Connaissez-vous l'assurance agricole?	OUI	NON					
Si oui, comment?	Mass média	sensibilisation directe	bouche à oreille	Autres: préciser			
Avez-vous déjà adhéré à une assurance agricole?	OUI	NON					
Quelle perception avez-vous de l'assurance agricole?	Bonne	Indifferente	Mauvaise				
Pensez-vous que l'assurance agricole peut améliorer vos conditions de vie?	OUI	NON					
Pensez-vous être prêt à payer une prime d'assurance pour votre production?	OUI	NON					
Si oui, combien pensez-vous payer pour assurer un ha (en FCFA)							
Par quel moyen envisagez-vous de payer votre cotisation ?	Cash	Portemonnaie mobile	Mon compte d'épargne chez une IMF/ banque	Autres: préciser			
Disposez-vous d'un système de paiement avec votre cellulaire (Tmoney, Flooz)	OUI	NON					
Savez-vous comment transférer de l'argent mobile?	OUI	NON					
Si OUI, combien de fois transférez vous de l'argent mobile dans l'année?							
Observations particulières de l'enquêté							
Observations particulières de l'enquêteur							

ANNEX 3: PRODUCT DESCRIPTION AND SAMPLE POLICY DOCUMENT

Lorica Togo

in collaboration with

eLEAF B.V.

Actuarial Memorandum
for
Soy Drought Index Insurance Product

Presented By:
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I. DESCRIPTION OF POLICY CHARACTERISTICS

A. Background

The Weather Index Insurance product is the result of a collaboration between eLEAF B.V. and Lorica Togo.

eLEAF is a Dutch firm that operates in the transition area between consultancy, remote sensing science and operational applications for agricultural and water resources management and agricultural index insurance. eLEAF is the developer and owner of a set of algorithms that transform meteorological and remote sensing based data into quantitative crop-, water- and climate parameters per pixel.

Since 2009 eLEAF has strong operational experience with index design and monitoring. Products have been piloted in over 20 countries, either as a generic or crop-specific service. We have experience with a broad range of crops, both seasonal and perennial, including cotton, wheat, dry rice, maize, coffee, sorghum, sesame, beans, potatoes, millet and tobacco. In 2019 more than 100.000 farmers in Africa have been covered by eLEAF's 13 operational products, which are either crop-specific (cotton, coffee, maize, beans, potatoes) or generic.

Under the collaboration arrangement, eLEAF will act as the calculation agent responsible for structuring and monitoring of the product while SUNU Assurances carries the underwriting risk.

B. Definitions

In this document, unless the context clearly indicates otherwise, the following terms shall have the following meanings.

1. "Effective Date" means the date the insurance contract between Lorica and the Policyholder takes effect. This date will be indicated in the policy document
2. "Expiration Date" means the date the insurance contract between Lorica and the Policyholder will expire. This date will be indicated in the policy document
3. "Covered Crop" means the crop which is insured against drought under the insurance arrangement
4. "Coverage Period" means the period from the Effective Date up to and including the Expiration Date
   - Coverage period is established to coincide with the growing season of the crop in the covered locations of Togo. The coverage period starts within the sowing window and ends with the maturation of the crop.
   - The effective date is set at 21st of August 2020.
   - The coverage period is divided into 3 phases which correspond to the 3 main development stages of the crop. The first phase covers the sowing and emergence of the crop (soy), the second covers the stage from emergence to flowering and finally the third phase corresponds to the period from flowering until maturation.
5. "Policyholder" means the person whose farm is insured under the crop insurance policy
6. "RE Index" shall mean the drought Index on the basis of which this Policy is issued.

RE Index will be monitored by the Calculation Agent during the relevant growing season for the crop insured and the Calculation Agent will monitor and specify the RE Index values during the agreed coverage period.

7. "Drought" means – abnormally low Relative Evapotranspiration levels observed during a specific phase. The "normal" is defined by the historical time series.
8. "Premium" means the amount paid by the Policyholder in respect of the crop insurance policy and represents the cost of insurance
9. "Sum Insured" means the maximum payout that the Policy would generate for the Policyholder in the event of a claim. Value is chosen by the policy holder based on expected maximum **amount of claim desired** during an insured event.
10. "Payout" means a payment from the Insurer to the Policyholder when a Trigger Event occurs
11. "Location" shall mean the location monitored by the Calculation Agent for the RE Index, the data processed by the Calculation Agent for the Reference Location determining the Strike Index and Exit Index for payment of compensation and claim settlement under this Policy.
12. Trigger Event" means the amount of Relative Evapotranspiration observed within a phase, that causes a Payout to be made to the Policyholder
13. Pixel: unit of square km that is distinguished by satellite and consists the spatial basis of the calculation of Evapotranspiration.

C. Basic Benefit Design

The Weather Index Insurance policy provides Drought Benefits payable in the event of a drought emanating from low average RE levels during one or more of the three phases of the coverage period.

The amount of benefit payable is predetermined and varies with the severity of the drought measured by the average Relative Evapotranspiration level observed at each phase. Each policyholder is assigned a Latitude and Longitude location, which is matched to a corresponding pixel. An area of 3x3 pixels around that pixel is used as the spatial basis for the index. The reason for that, is that the location coordinates provided usually correspond to the village location of the farmer and not the location of the farm itself. So including a broader are (9x9 km) minimizes the probability that the actual farm location fells outside those boundaries.

For a given location (3x3 pixels) and the coverage period as defined above, eLEAF designs a policy with a claims schedule that satisfies the following criteria:

- Smallest claim amount is 10% of the sum insured
- Largest claim amount is 100% of the sum insured
- Expected claim at portfolio level (year over year) 6.2% of the sum insured.

A typical crop insurance policy can be expected, based on our models, to trigger a payout approximately 36% of the time (return period of 2.8 years).

D. Empirical Data

The basis for the drought index product is the Relative Evapotranspiration (RE) (Figure 1). RE data is derived from quarter-hourly visual and thermal infrared images from the Meteosat geostationary satellite at a 3km spatial resolution, with coverage of the whole Africa at daily frequency. Data products are available in near-real time and from as early as 1982, allowing for a thorough historical risk analysis.

The RE data product is calculated on a 10-day basis. The RE index has a strong relation to crop yield because biomass and yield - produced with CO2 uptake by the plant - are proportional to evapotranspiration - water used by the plant. The opening and closing of the plant stomata as a result of drought affects both processes equally, therefore making the RE index highly suitable for estimating drought related crop yield losses. For more details on the RE Index, the complete technical report can be provided.

During product design, the RE index is used to understand historical drought risk, such as the frequency and severity of drought in the insured areas. Index monitoring by satellite then detects when a drought occurs, what the impact on the crop yield is, and how much the farmer should be paid at the end of the season.

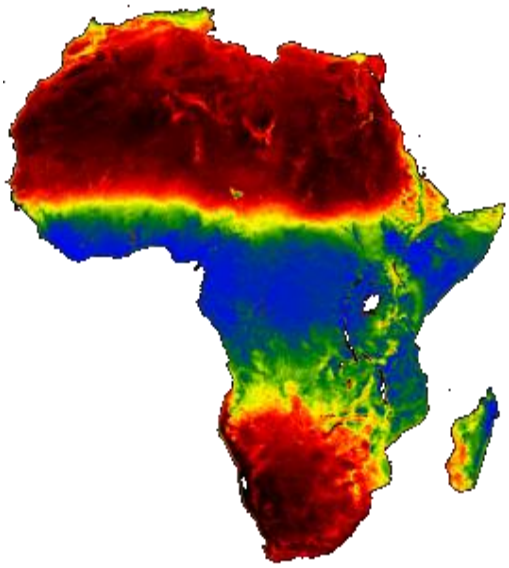

Figure 1 - RE dataset over Africa

E. Risks Covered

Drought is the only risk covered under the policy. Thus, the Crop Insurance Policy benefits (i.e. payout) become payable only when drought occurs during the coverage period whilst the policy is in force which is likely to cause a failure of the covered crop.

The policy does not cover any risks besides that of Drought, and only provides a payout in the event of a Drought as precisely defined herein.

Risks that are not covered include floods, fires, theft, pest infestation, weed infestation, intentional or accidental damage by humans, and all other causes outside of the definition of Drought. Note that the policy does not require failure of crop to pay benefits.

F. Risk Simulation

eLEAF conducts a historical simulation of all its insurance contracts generated by its algorithms for all communities currently in its network. This simulation indicates the historical payout of each insurance contract for each community since 1990 based on the historical RE data. Complete results are available upon request.

Appendix A shows the average simulated claims for a sample of locations in Togo, for every year since 1990.

G. Benefit Proceeds under Crop Insurance Policy

The crop insurance policy pays a predetermined amount as stated in the sample Benefit

Schedule below in the event of the occurrence of any of the trigger events during the coverage period whilst the policy is in force. The proceeds payable in the event of a drought varies with the severity of the drought. The thresholds that define the severity of the drought vary in absolute values from location to location and can be found in APPENDIX B.

Table 1: Benefit Schedule for Soy

	Critical Range	**Loss Factor (% of sum insured)**	**Maximum Covered Loss (% of sum insured)**
RE (Phase 1) sowing - emergence	> Strike Phase 1	0%	20%
	Exit Phase 1 < < Strike Phase 1	0% – 100% (linear)	
	< Exit Phase 1	100%	
RE (Phase 2) emergence - flowering	> Strike Phase 2	0%	60%
	Exit Phase 2< < Strike Phase 2	0% – 100% (linear)	
	< Exit Phase 2	100%	
RE (Phase 3) flowering - maturation	> Strike Phase 2	0%	100%
	Exit Phase 3 < < Strike Phase 3	0% – 100% (linear)	
	< Exit Phase 2	100%	

The final payout is considered the sum of the 3 individual phase payouts with a maximum of 100% of the sum insured.

There are no benefits payable under the following circumstances:

a. The observed average RE per phase is higher than the corresponding strike value.
b. The final payable amount is less than 10% of the sum insured.

H Premiums

Premiums are calculated as the single premium required to provide drought protection against the failure of a specified crop planted in a specified pixel location for the entire reproductive period for that insured crop. As we can see the premiums are dependent on the risk profile of the farm (pixel location) and it is independent of the profile of the policyholder (age, sex, and lifestyle). Premiums are level and fixed at policy inception and are payable in advance at the inception of the policy.

1. **Premiums payable:** Premiums are determined separately for each policyholder-farm as the premium required to provide protection for the covered crop against drought to the end of the coverage period.

2. **Payment Frequency**:
   Premiums are payable once (single premium) and at the inception of the policy. Premiums must be paid prior to the policy becoming effective.

3. **Premium Components**: The premium payable for the cost of insurance for the policy is made up of the four (4) components as follows:

   Expected cost of claims: This represents the expected loss on the policy as a whole. It also represents the portion of the premium which is earmarked to meet expected claims from the protection against drought.

   The expected claim cost for each location (amount of loss on line) is determined by applying a moving average of 5-years to the historical simulated payouts and weighting those 5-year average claims based on their temporal proximity. That means that the payouts of the most recent years affect the expected cost of claims (or risk rate) more than those that happened further in the past.

   By design, the policy is structured such that this value is 6.2% at portfolio level, and between 4.04% and 10.89% of the value insured per location. This expected cost of claims equals 65% of the premium amount.

- **Management and administrative expenses**: We have earmarked on the average of 20% of the premium towards management and administrative expenses. This is informed by our experiences and empirical data collected from the Togo insurance market.

- **Risk Margin**:
  We have earmarked an average of 5% of the premium amount towards the establishment of a risk margin to cover possible adverse deviations.

- **Profit Margin**: We have 10% of the premium amount to meet out profit objective. It is expected that with time some of the risk margin may be released into profit, depending upon the actual experience of the plan.

The sum of the four components above constitutes the total premium payable on an insured farm-crop by the policyholder for the coverage period.

Table 2 below shows the contribution of the various components towards the total premium**.**

No.	Premium Component	Contribution Towards premium
1	Expected Claims Cost	65% of premium
2	Management & Admin. Expenses	20% of premium

3	Risk Margin	5% of premium
4	Profit Margin	10% of premium
	Total	100% of premium

I. Underwriting Requirements

The premiums charged are independent of age and sex of the policyholder. There will be no issue age limitations. A farmer will be eligible for the policy provided he or she plants a crop which is covered and can pay the premiums.

J. Reinsurance

Under the collaboration arrangement, and if needed, Eleaf will introduce SUNU Assurances Io two Reinsurers active in crop reinsurance in Africa

APPENDIX A: EXAMPLE OF HISTORICAL PAYOUTS

Historical Payouts

Table: Historical Payouts – Doulassa, Maritime Togo, Second Season, 1990-2019

LOCID	YEAR	LOSS PHASE 1	LOSS PHASE 2	LOSS PHASE 3	TOTAL LOSS	FINAL PAYOUT
2	1990	0.0	0.0	0.0	0.0	0.0
2	1991	0.0	0.0	0.0	0.0	0.0
2	1992	0.0	0.0	11.8	11.8	11.8
2	1993	0.0	0.0	0.0	0.0	0.0
2	1994	0.0	0.0	99.8	99.8	99.8
2	1995	0.0	28.6	0.0	17.2	17.2
2	1996	0.0	0.0	0.0	0.0	0.0
2	1997	0.0	0.0	0.0	0.0	0.0
2	1998	11.6	0.0	0.0	2.3	0.0
2	1999	0.0	0.0	0.0	0.0	0.0
2	2000	0.0	0.0	81.8	81.8	81.8
2	2001	0.0	0.0	0.0	0.0	0.0
2	2002	0.0	13.6	0.0	8.2	0.0
2	2003	8.3	0.0	0.0	1.7	0.0
2	2004	0.0	0.0	0.0	0.0	0.0
2	2005	1.6	61.1	0.0	37.0	37.0
2	2006	0.0	0.0	3.8	3.8	0.0
2	2007	0.0	0.0	0.0	0.0	0.0

2	2008	0.0	0.0	0.0	0.0	0.0
2	2009	0.0	3.6	0.0	2.2	0.0
2	2010	0.0	0.0	0.0	0.0	0.0
2	2011	0.0	0.0	0.0	0.0	0.0
2	2012	51.6	0.0	0.0	10.3	10.3
2	2013	0.0	0.0	0.0	0.0	0.0
2	2014	0.0	0.0	0.0	0.0	0.0
2	2015	0.0	0.0	0.0	0.0	0.0
2	2016	0.0	0.0	0.0	0.0	0.0
2	2017	0.0	0.0	0.0	0.0	0.0
2	2018	0.0	0.0	0.0	0.0	0.0
2	2019	0.0	0.0	0.0	0.0	0.0

APPENDIX B: STRIKE AND EXIT VALUES

LOCID	PHASE	RE_STRIKE	RE_EXIT
1	1	65.0	55.0
1	2	69.0	59.0
1	3	64.4	54.4
2	1	75.5	65.5
2	2	76.9	66.9
2	3	69.6	59.6
3	1	82.7	72.7
3	2	84.5	74.5
3	3	75.9	65.9
4	1	69.0	59.0
4	2	77.7	67.7
4	3	67.1	52.8
5	1	74.8	64.8
5	2	81.3	71.3
5	3	67.9	54.0
6	1	69.5	59.5
6	2	65.6	55.6
6	3	63.3	53.3
7	1	79.7	63.0
7	2	85.9	75.9
7	3	74.8	64.8
8	1	76.2	58.7
8	2	81.9	71.9
8	3	71.0	61.0
9	1	78.6	60.7

9	2	87.4	77.4
9	3	71.3	61.3
10	1	76.8	62.7
10	2	84.9	74.9
10	3	74.0	64.0
11	1	81.3	66.7
11	2	87.7	77.7
11	3	73.1	63.1
12	1	77.3	64.7
12	2	86.5	76.5
12	3	71.8	61.8
13	1	78.6	58.0
13	2	88.3	78.3
13	3	74.0	64.0
14	1	77.2	59.0
14	2	87.5	77.5
14	3	76.4	66.4
15	1	82.7	72.7
15	2	80.9	70.9
15	3	44.2	34.2
16	1	82.2	72.2
16	2	77.2	67.2
16	3	43.7	33.7
17	1	80.4	70.4
17	2	72.1	62.1
17	3	42.1	32.1
18	1	82.4	72.4
18	2	77.0	67.0
18	3	44.1	34.1
19	1	90.3	80.3
19	2	81.3	71.3
19	3	49.1	39.1
20	1	90.5	75.3
20	2	79.0	69.0
20	3	47.0	37.0
21	1	89.0	79.0
21	2	80.0	70.0
21	3	47.3	37.3
22	1	86.0	76.0
22	2	77.3	67.3
22	3	44.2	34.2
23	1	83.0	73.0
23	2	72.7	62.7
23	3	40.7	30.7
24	1	84.5	74.5
24	2	73.1	63.1
24	3	40.6	30.6
25	1	79.0	69.0

25	2	72.2	62.2
25	3	39.1	29.1
26	1	82.5	72.5
26	2	79.4	69.4
26	3	48.4	38.4
27	1	78.8	68.8
27	2	78.1	68.1
27	3	47.6	37.6
28	1	79.0	68.7
28	2	81.9	71.9
28	3	54.9	44.9
29	1	78.8	68.8
29	2	82.0	72.0
29	3	53.8	43.8
30	1	75.7	65.7
30	2	79.9	69.9
30	3	54.2	44.2
31	1	83.5	73.5
31	2	78.0	68.0
31	3	48.6	38.6

APPENDIX C: PREMIUM RATES PER LOCATION

ID	*NAME*	*Premium (%)*
1	KOUTIME	7.25
2	DOULASSA	8.00
3	ANIMABIO	12.00
4	ASSIKO	7.00
5	MOME HOUNKPATI	10.25
6	ZEGLE KPOTA/ZEGLE	6.75
7	BOLOU KADJI	6.50
8	TSIVE CENTRE ou AKPOGLO KOPE	13.50
9	TOVEGAN	9.00
10	DZOGBEPIME	7.25
11	HEKPE	7.50
12	BAKA KOPE	6.50
13	NYAMESSIVA	11.25
14	HONOUGBA	8.00
15	OKE LOUKOUTOU	8.00
16	WANOU KOPE	15.00
17	LAMA KARA KOPE	11.50
18	KOSSI KOPE	8.00
19	LOM-NAVA	11.50
20	KAMINA	12.00

21	AGANWO	10.00
22	KONADABO	8.25
23	MORETAN	10.50
24	TCHEKITA	9.50
25	ALABADE 1	10.25
26	NIMA	16.75
27	ANANI KOPE	12.00
28	KPEDJI	8.25
29	AVOVO / AVEVOE	7.75
30	AKANA KOPE	9.75
31	HIHEATRO	6.25

CONTRAT D'ASSURANCE DE LA CULTURE DU SOJA

CONTRE LA SECHERESSE

Contrat régi par le code des assurances CIMA

Le présent contrat comporte:

- Les Conditions générales
- Les Conditions particulières
- Les Conventions spéciales

CONDITIONS GENERALES

Définitions générales

Pour l'application du présent contrat, on entend par :

Assureur : SUNU Assurance IARD

Le souscripteur : La coopérative à laquelle appartient l'agriculteur et qui signe les différents documents du contrat d'assurance et qui s'engage à payer les primes

L'assuré : l'agriculteur dont la ferme est assurée au titre de la police d'assurance-récolte. Il est le bénéficiaire des prestations prévues au contrat d'assurance

Date d'effet : la date à laquelle le contrat d'assurance entre SUNU Assurance et le et le souscripteur prend effet. Cette date sera indiquée dans les conditions particulières du contrat

Date d'expiration : la date à laquelle le contrat d'assurance entre SUNU Assurance et le titulaire de la police expirera. Cette date sera indiquée dans le document de la police

Culture couverte : la culture qui est assurée contre la sécheresse dans le cadre du contrat d'assurance

Période de couverture : période allant de la date d'effet à la date d'expiration incluse

La police : le contrat d'assurance

L'indice ER (Evapotranspiration Relative) : L'indice de sécheresse sur la base duquel la présente police émise. L'indice ER sera surveillé par l'agent de calcul pendant la saison de croissance pertinente pour la culture assurée et l'agent de calcul surveillera et spécifiera les valeurs de l'indice ER pendant la période de couverture convenue. L'évapotranspiration est mesurée en mm mais l'Evapotranspiration Relative (ER), est le rapport entre l'évapotranspiration réelle et l'évapotranspiration potentielle.

Agent de calcul pour l'indice ER : eLEAF BV - Pays-Bas, l'entité qui est chargée de surveiller les conditions climatiques couvertes et qui est responsable du calcul de l'indemnisation prévue par la présente police, à transmettre à l'Assureur.

Indice déclencheur : Le niveau de l'indice ER observé à partir duquel l'assuré devient éligible pour le paiement des sinistres.

Indice de sortie : le niveau de l'indice ER observé à partir duquel l'assuré devient admissible à la totalité du capital assuré au titre du contrat.

Sinistre : la Perte de récolte suite à la sécheresse, telle que définie dans le présent contrat
Sécheresse : les niveaux d'évapotranspiration relative anormalement bas observés pendant une phase spécifique de la croissance de la plante.

Prime : Le montant payé par le souscripteur d'assurance-sécheresse et qui représente le coût de l'assurance

Somme assurée : Le montant maximum que l'Assureur peut payer à l'assuré en cas de sinistre. Le montant est fixé par l'assuré en fonction du niveau du coût de production de sa culture.

Paiement : Un paiement de l'assureur à l'assuré lorsqu'un événement déclencheur se produit

Événement déclencheur : Le niveau de l'Évapotranspiration Relative observée au cours d'une phase, qui entraîne le versement d'une indemnité à l'assuré.

Lieu de référence : Le lieu où se situe le champ de l'assuré, surveillé par l'agent de calcul pour l'indice RE. Les informations traitées par l'agent de calcul au le lieu de référence déterminent l'indice déclencheur et l'indice de sortie pour le paiement des indemnités en vertu du présent contrat.

Pixel : Une zone délimitée de 9x9 kilomètres qui est observée par le satellite et qui constitue la base géographique du calcul de l'évapotranspiration. Le champ du producteur se trouve dans cette zone délimitée.

1. L'objet du contrat

Cette police d'assurance est conçue pour les petits agriculteurs pour assurer les cultures du soja contre la sécheresse.
En effet, cette garantie perte de récolte est une assurance indicielle qui prévoit des indemnités liées à la sécheresse et permet ainsi de fournir des revenus correspondant aux couts de production (intrants, main d'œuvre…etc).
L'assuré pourra donc reprendre son activité la prochaine saison malgré la perte subie.

2. L'étendue territoriale: Togo uniquement

3. Les exclusions

Les risques non couverts

Cette police ne couvre aucun risque en dehors de la sécheresse, tel que défini par dans le présent document.

Sont également exclus :
- les inondations,
- les excès de pluie,
- les vents violents
- les incendies,
- le vol,
- l'infestation par nuisibles,
- la destruction des cultures par la transhumance
- l'infestation par les mauvaises herbes,
- les dommages intentionnels ou accidentels par l'intervention humaine ou
- tout évènement survenu avant la date d'effet ou en dehors de la période de couverture.
- toutes les autres causes en dehors de la définition spécifique de la sécheresse, notamment :

- **Les radiations ionisantes ou les contaminations par la radioactivité de tout déchet nucléaire provenant de la combustion de combustible nucléaire ; les propriétés radioactives, toxiques, explosives ou autres propriétés**

dangereuses de tout assemblage nucléaire explosif ou de tout composant nucléaire de celui-ci.

- **Tout événement entraînant une diminution de la production/du rendement agricole ou non agricole, ou une augmentation des coûts d'exploitation, quelle qu'en soit la cause, autre qu'un écart de l'indice d'Evapotranspiration Relative tel qu'indiqué dans la fiche technique, dans un lieu géographique et une période de temps spécifiques.**
- **Les actes de terrorisme, les pertes ou dommages, coûts ou dépenses de quelque nature que ce soit, directement ou indirectement liés au terrorisme**
- **La guerre, les opérations de guerre, les actes d'un ennemi étranger, les hostilités (que la guerre soit déclarée ou non), la guerre civile, la rébellion, la révolution, l'insurrection, les troubles civils, le pouvoir militaire ou usurpé, ou les pillages en relation avec ce qui précède, les saisies, capture, confiscation, arrestations, entraves et détention sur ordre de tout gouvernement ou de toute autre autorité.**

4. Les évènements déclencheurs du processus d'indemnisation

L'assureur évaluera la perte de récolte de la manière suivante :

5.1. Dans le cas où, dans le lieu de référence et pendant la période spécifiée dans les conditions particulières du présent contrat, l'indice d'ER observé par l'agent de calcul est inférieur à l'indice déclencheur, l'assuré peut prétendre au paiement d'une indemnité ; l'indemnité payable à l'assuré est calculée selon le barème d'indemnisation ci-après et dans la limite de la somme assurée.

5.2. L'assureur n'est pas tenu d'indemniser l'assuré ou de payer un montant quelconque si l'indice de l'ER observé par l'agent de calcul est supérieur à l'indice déclencheur indiqué dans le barème d'indemnisation.

5.3. Les indemnisations seront réglées sur la base des données certifiées par l'agent de calcul de l'indice RE fournies pour le lieu, la période d'assurance et la culture spécifiés, comme indiqué dans le barème d'indemnisation.

5.4. En cas d'écart de l'indice d'ER observé par l'agent de calcul pour le lieu, la période et la culture spécifiés dans le barème d'indemnisation, l'assureur calcule la perte selon la formule de paiement indiquée dans le barème d'indemnisation.

5.5. En cas d'absence d'écart de l'indice RE observé et traité par l'agent de calcul conformément aux conditions générales de la police, l'assureur n'est pas tenu de fournir une communication écrite à l'assuré.

5. Les facteurs du produit indiciel

La détermination de la prime est fonction du capital assuré et le calcul de l'indemnité est fonction de la culture et du lieu de référence.
Chaque lieu est identifié par une latitude et une longitude.
Pendant la période de couverture, des satellites sont utilisés pour mesurer le niveau d'évapotranspiration (ER) aux coordonnées du lieu de référence. Ce contrôle et le suivi des conditions climatiques sont effectués par l'agent de calcul eLEAF BV - Pays-Bas.

Les données historiques et actuelles d'évapotranspiration dans les lieux de référence sont disponibles sur simple demande.

6. Le paiement de la prime

La prime doit être payée par le souscripteur avant les semis, au moment du lancement de la campagne agricole.

7. La date d'effet et date d'échéance

La durée de croissance (semis-maturité) du soja peut varier entre 97 et 102 jours selon la variété.

La durée de couverture prévue pour cette police d'assurance est de 92 jours, avec 2 phases à savoir :

- **La phase 1** : de la levée (émergence) de la plante à la floraison d'une durée de 41 jours
- **La phase 2** : de la floraison de la plante à la maturité d'une durée de 51 jours

La date d'effet unique des polices pour cette petite saison est fixée au 1er Octobre 2020 ; la date d'expiration est donc fixée au 31 Décembre 2020.

8. La déclaration de sinistre

Il n'est pas nécessaire pour l'assuré d'informer l'assureur qu'un paiement est requis, puisqu' en fin de période, le sinistre et son montant sont connus de tous. L'existence du sinistre est traçable à partir des données fournies par l'agent de calcul de l'indice RE.

Les données d'évapotranspiration relative observées par l'agent de calcul sur chaque lieu de référence seront communiquées à toutes les coopératives, à la Direction des Assurance à la fin de chaque phase.

A la fin de la phase 2 (expiration), les données seront rapprochées avec le tableau de barème d'indemnisation pour déterminer le montant du sinistre à payer. Ce montant est aussitôt communiqué aux assurés de même que leur groupement, pour appréciation.

Le montant de l'indemnité est remis à l'assuré au plus tard 10 jours après la date d'expiration du contrat sauf contestation. L'assuré dispose de 14 jours après l'indemnisation pour contester le montant payé par l'assureur.

Les indemnités sont versées directement à l'assuré, ou sauf engagement contraire, à ses ayant droits si l'assuré est décédé au moment du paiement.

9. Le barème d'indemnisation (Exemple : localité de Doulassa; région maritime)

Phases	Phase critique (Evapotranspiration Relative mesurée)	Facteur de perte (% de la somme assurée)	Taux maximum de couverture (% de la somme assurée)
Evapotranspiration observée (Phase 1) Levée-floraison	**75,5** et plus	0%	70%
	Entre le **75,5** et **65,5**	0% – 100%	

41 jours	**65,5** et moins	100%	
Evapotranspiration observée (Phase 2)	**64,7** et plus	0%	70%
Floraison-maturité	Entre **64,7** et **54,7**	0% – 100%	
51 jours	**54,7** et moins	100%	

Le paiement final est considéré comme la somme des 2 paiements individuels par phase, avec un maximum de 100 % de la somme assurée.

Aucune prestation n'est versée dans les cas suivants :

a. **L'indice ER moyen observé par phase est supérieur à la valeur de l'indice déclencheur correspondant**
b. **Le montant final payable est inférieur à 5% de la somme assurée.**

10. Autres conditions générales liées à la présente police

1.1. Amendements (modifications)

Aucune modification de cette politique, quelle qu'elle soit, ne sera effective si elle n'est pas approuvée par écrit et signée par les deux parties.

1.2. Déchéance de la police

Si une demande de règlement faite au titre de la présente police est frauduleuse, ou si une fausse déclaration est faite, ou si des moyens ou dispositifs frauduleux sont utilisés par l'Assuré ou toute personne agissant en son nom pour obtenir une prestation au titre de la présente police, ou si la perte est causée par un acte volontaire, ou avec la complicité de l'Assuré, toutes les prestations au titre de la présente police seront perdues.

1.3. Clause de paiement des primes

La prime TTC doit être payée intégralement à l'assureur à la date d'effet de la police. Pour éviter tout doute, l'assuré et l'assureur conviennent que si la prime n'a pas été reçue par l'assureur dans son intégralité dans les 7 jours civils suivant la date d'effet de la police, la présente police est automatiquement nulle et sans effet entre les parties et aucune autre prime n'est due par l'assuré.
L'assuré est responsable de toutes les taxes sur ou découlant de la prime payée pour cette police, y compris, mais sans s'y limiter, les taxes sur les primes d'assurance, les accises, les droits de timbre, les retenues, les charges, les impositions, les évaluations ou les éléments similaires imposés par la loi de toute juridiction. Tous ces montants s'ajoutent à la prime TTC indiquée ci-dessous.

1.4. Litiges-Arbitrage

En cas de litige concernant l'interprétation des termes, conditions, limitations et/ou exclusions contenus dans le présent document, les tribunaux du Togo sont compétents. Toutefois, les parties rechercheront préalablement une solution amiable sous l'arbitrage de la Direction Nationale des Assurances, sise à l'immeuble CASEF, 2ème étage côté Plan, B.P. 2332, Lomé, Togo. Téléphone : 22 21 03 50.

1.5. Sanctions

Aucun assureur ne sera réputé fournir une couverture, et aucun assureur ne sera tenu de payer une réclamation ou de fournir une prestation en vertu des présentes dans la mesure où la fourniture de cette couverture, le paiement de cette réclamation ou la fourniture de cette prestation exposerait cet assureur à une sanction, une interdiction ou une restriction en vertu des résolutions des Nations Unies ; ou des sanctions commerciales ou économiques, des lois ou des règlements de toute juridiction applicable à cet assureur.

CONDITIONS PARTICULIERES *(exemple)*

Aux conditions générales de la police Sécheresse, xxxxxxxxx du 21 Aout 2020, aux conditions particulières qui suivent et qui les complètent, SUNU ASSURANCES IARD TOGO garantit l'assuré aux conditions ci-dessous :

Souscripteur	Coopérative Espoir
Adresse/ Localité	Tovégan
Bénéficiaires	Les producteurs membres de la coopérative Espoir dont la liste est jointe
Intermédiaire	LORICA
lieu de couverture/ coordonnées GPS	6.5686/ 0.897583333
Type de couverture :	Perte de récolte due à la sécheresse
Culture assurée :	Soja
Durée de la couverture :	92 jours
Date d'effet de la couverture :	01/10/2020
Date d'expiration de la couverture :	31/12/2020
Surface totale cultivée en Ha :	10
Valeur assurée (FCFA) :	3 400 000
Taux de prime nette	11,75%

Décompte de prime

Prime nette **:**		**348 500**
Accessoires		0
Taxes	6%	20 910
Prime TTC		**369 410**

Fait à Lomé le ….

Le souscripteur

Signature

Pour l'Assureur

Signature

ANNEX 4: SALES REPORT

N°	FARM SIZE (Ha)	LOCATION	LOCATION_ID	LAT	LONG	VALUE INSURED (XOF)	VALUE INSURED (EURO)	PREMIUM RATE %	NET PREMIUM (XOF)	NET PREMIUM (EURO)	Gross PREMIUM (XOF)	Gross PREMIUM (EURO)
1	0,25	Afagnagan	32	6.4929	1.638633333	45000	69	18	8100	12	8586	13
2	0,25	Afagnagan				45000	69	18	8100	12	8586	13
3	1,5	Afagnagan				270000	412	18	48600	74	51516	79
4	0,25	Afagnagan				45000	69	18	8100	12	8586	13
5	0,25	Afagnagan				45000	69	18	8100	12	8586	13
6	0,25	Afagnagan				45000	69	18	8100	12	8586	13
7	0,15	Afagnagan				27000	41	18	4860	7	5152	8
8	0,25	Afagnagan				45000	69	18	8100	12	8586	13
9	0,25	Afagnagan				45000	69	18	8100	12	8586	13
10	1	Agbelouve	50	6.679316667	1.165716667	180000	274	13,25	23850	36	25281	39
11	5	Agbelouve				900000	1372	13,25	119250	182	126405	193
12	1	Agbelouve				180000	274	13,25	23850	36	25281	39
13	0,5	Agbelouve				90000	137	13,25	11925	18	12641	19
14	1	Agbelouve				180000	274	13,25	23850	36	25281	39
15	0,5	Agbelouve				90000	137	13,25	11925	18	12641	19
16	1	Agbelouve				180000	274	13,25	23850	36	25281	39
17	4	Agbelouve				720000	1098	13,25	95400	145	101124	154
18	1	Agbelouvé				180000	274	13,25	23850	36	25281	39
19	1	Agbelouvé				180000	274	13,25	23850	36	25281	39
20	0,25	Agbleta	33	6.492916667	1.61775	45000	69	14,75	6637,5	10	7036	11
21	0,25	Agbleta				45000	69	14,75	6637,5	10	7036	11
22	1	Agbossou kope	34	6.457033333	1.6475	180000	274	10,00	18000	27	19080	29
23	0,25	Amblesso kope	36	6.4981	1.611733333	45000	69	14,00	6300	10	6678	10
24	1	Ataregbe	51	6.679316668	1.165716668	180000	274	11,25	20250	31	21465	33
25	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
26	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
27	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
28	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16

29	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
30	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
31	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
32	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
33	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
34	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
35	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
36	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
37	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
38	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
39	0,5	Ataregbe				90000	137	11,25	10125	15	10733	16
40	4	Avedze	37	6.673583333	1.238233333	720000	1098	10,00	72000	110	76320	116
41	2	Avedze				360000	549	10,00	36000	55	38160	58
42	0,5	Avedze				90000	137	10,00	9000	14	9540	15
43	0,5	Avedze				90000	137	10,00	9000	14	9540	15
44	0,5	Avedze				90000	137	10,00	9000	14	9540	15
45	0,5	Avedze				90000	137	10,00	9000	14	9540	15
46	0,25	Avedze				45000	69	10,00	4500	7	4770	7
47	0,5	Avedze				90000	137	10,00	9000	14	9540	15
48	0,25	Avedze				45000	69	10,00	4500	7	4770	7
49	0,5	Avedze				90000	137	10,00	9000	14	9540	15
50	0,5	Avedze				90000	137	10,00	9000	14	9540	15
51	1	Avedze				180000	274	10,00	18000	27	19080	29
52	0,5	Avedze				90000	137	10,00	9000	14	9540	15
53	0,5	Avedze				90000	137	10,00	9000	14	9540	15
54	0,5	Avedze				90000	137	10,00	9000	14	9540	15
55	0,5	Avedze				90000	137	10,00	9000	14	9540	15
56	0,25	Avedze				45000	69	10,00	4500	7	4770	7
57	0,5	Avedze				90000	137	10,00	9000	14	9540	15
58	0,25	Avedze				45000	69	10,00	4500	7	4770	7
59	0,25	Avedze				45000	69	10,00	4500	7	4770	7

60	1	Ayakope	47	6.791633333	0.962016667	180000	274	11,25	20250	31	21465	33
61	3	Doglobo	38	6.757233333	1.143766667	540000	823	7,00	37800	58	40068	61
62	0,25	Doglobo				45000	69	7,00	3150	5	3339	5
63	0,75	Doglobo				135000	206	7,00	9450	14	10017	15
64	1,5	Doglobo				270000	412	7,00	18900	29	20034	31
65	1	Fulanycondji	44	6.679316667	1.165716667	180000	274	12,75	22950	35	24327	37
66	1	Fulanycondji				180000	274	12,75	22950	35	24327	37
67	1	Fulanycondji				180000	274	12,75	22950	35	24327	37
68	1	Fulanycondji				180000	274	12,75	22950	35	24327	37
69	1	Fulanycondji				180000	274	12,75	22950	35	24327	37
70	0,5	Fulanycondji				90000	137	12,75	11475	17	12164	19
71	0,5	Fulanycondji				90000	137	12,75	11475	17	12164	19
72	1	Fulanycondji				180000	274	12,75	22950	35	24327	37
73	0,5	Fulanycondji				90000	137	12,75	11475	17	12164	19
74	0,5	Fulanycondji				90000	137	12,75	11475	17	12164	19
75	4	Game 2	52	7.740666667	1.06425	720000	1098	5,25	37800	58	40068	61
76	0,5	Game 2				90000	137	5,25	4725	7	5009	8
77	0,5	Game 2				90000	137	5,25	4725	7	5009	8
78	0,5	Game 2				90000	137	5,25	4725	7	5009	8
79	0,5	Game 2				90000	137	5,25	4725	7	5009	8
80	0,5	Game 2				90000	137	5,25	4725	7	5009	8
81	0,5	Game 2				90000	137	5,25	4725	7	5009	8
82	0,5	Game 2				90000	137	5,25	4725	7	5009	8
83	0,5	Game 2				90000	137	5,25	4725	7	5009	8
84	0,5	Game 2				90000	137	5,25	4725	7	5009	8
85	0,5	Game 2				90000	137	5,25	4725	7	5009	8
86	1	Game 2				180000	274	5,25	9450	14	10017	15
87	1	Game 2				180000	274	5,25	9450	14	10017	15
88	2	Gamégblé	49	6.791633335	0.962016669	360000	549	10,00	36000	55	38160	58
89	1	Gamégblé				180000	274	10,00	18000	27	19080	29
90	1	Gamégblé				180000	274	10,00	18000	27	19080	29

91	1,5	Gape tsingoé	46	6.602116667	1.103466667	270000	412	8,75	23625	36	25043	38
92	1,5	Gape tsingoé				270000	412	8,75	23625	36	25043	38
93	1	Kondacopé	45	6.679316668	1.165716668	180000	274	11,00	19800	30	20988	32
94	1	Kondacopé				180000	274	11,00	19800	30	20988	32
95	1	Kouni-kpota	53	6.598716	1.183053	180000	274	10,50	18900	29	20034	31
96	0,25	Kouni-kpota				45000	69	10,50	4725	7	5009	8
97	0,3	Kouni-kpota				54000	82	10,50	5670	9	6010	9
98	0,6	Kouni-kpota				108000	165	10,50	11340	17	12020	18
99	1	Kouni-kpota				180000	274	10,50	18900	29	20034	31
100	0,3	Kouni-kpota				54000	82	10,50	5670	9	6010	9
101	1	Kouni-kpota				180000	274	10,50	18900	29	20034	31
102	1	Kouni-kpota				180000	274	10,50	18900	29	20034	31
103	0,125	Kouni-kpota				22500	34	10,50	2362,5	4	2504	4
104	0,125	Kouni-kpota				22500	34	10,50	2362,5	4	2504	4
105	0,5	Kouni-kpota				90000	137	10,50	9450	14	10017	15
106	0,3	Kouni-kpota				54000	82	10,50	5670	9	6010	9
107	0,3	Kouni-kpota				54000	82	10,50	5670	9	6010	9
108	0,4	Kouni-kpota				72000	110	10,50	7560	12	8014	12
109	0,25	Kouni-kpota				45000	69	10,50	4725	7	5009	8
110	0,8	Kouni-kpota				144000	220	10,50	15120	23	16027	24
111	2	Kpetsu	40	6.514633333	1.57605	360000	549	12,75	45900	70	48654	74
112	0,25	Kpetsu				45000	69	12,75	5737,5	9	6082	9
113	1,5	Kpetsu				270000	412	12,75	34425	52	36491	56
114	1	Kpetsu				180000	274	12,75	22950	35	24327	37
115	0,1	Kpetsu				18000	27	12,75	2295	3	2433	4
116	0,25	Kpetsu				45000	69	12,75	5737,5	9	6082	9
117	0,5	Lonvo	55	6.644166667	1.118833333	90000	137	11,50	10350	16	10971	17
118	1	Nyative	54	6.70035	0.996516667	180000	274	11,50	20700	32	21942	33
119	1	Nyative				180000	274	11,50	20700	32	21942	33
120	0,75	Nyative				135000	206	11,50	15525	24	16457	25
121	0,5	Togba	57	6.7675	1.176066667	90000	137	9,75	8775	13	9302	14

122	1	Togba				180000	274	9,75	17550	27	18603	28
123	0,5	Togba				90000	137	9,75	8775	13	9302	14
124	0,5	Togba				90000	137	9,75	8775	13	9302	14
125	0,5	Togba				90000	137	9,75	8775	13	9302	14
126	1	Togba				180000	274	9,75	17550	27	18603	28
127	0,5	Togba				90000	137	9,75	8775	13	9302	14
128	0,5	Togba				90000	137	9,75	8775	13	9302	14
129	1	Togba				180000	274	9,75	17550	27	18603	28
130	1	Togba				180000	274	9,75	17550	27	18603	28
131	0,5	Togba				90000	137	9,75	8775	13	9302	14
132	1	Togba				180000	274	9,75	17550	27	18603	28
133	0,5	Togba				90000	137	9,75	8775	13	9302	14
134	0,5	Togba				90000	137	9,75	8775	13	9302	14
135	0,5	Togba				90000	137	9,75	8775	13	9302	14
136	1	Togba				180000	274	9,75	17550	27	18603	28
137	1	Togba				180000	274	9,75	17550	27	18603	28
138	0,5	Togba				90000	137	9,75	8775	13	9302	14
139	1	Togba				180000	274	9,75	17550	27	18603	28
140	0,5	Togba				90000	137	9,75	8775	13	9302	14
141	0,5	Togba				90000	137	9,75	8775	13	9302	14
142	0,5	Togba				90000	137	9,75	8775	13	9302	14
143	1	Togba				180000	274	9,75	17550	27	18603	28
144	1	Togba				180000	274	9,75	17550	27	18603	28
145	1	Togba				180000	274	9,75	17550	27	18603	28
146	1	Togba				180000	274	9,75	17550	27	18603	28
147	1	Togba				180000	274	9,75	17550	27	18603	28
148	1	Togba				180000	274	9,75	17550	27	18603	28
149	0,5	Togba				90000	137	9,75	8775	13	9302	14
150	1	Tomefa	48	6.791633334	0.962016668	180000	274	11,00	19800	30	20988	32
151	1	Tomefa				180000	274	11,00	19800	30	20988	32
152	1	Tomefa				180000	274	11,00	19800	30	20988	32

153	0,5	Tove				90000	137	4,25	3825	6	4055	6
154	1	Tove				180000	274	4,25	7650	12	8109	12
155	0,75	Tove				135000	206	4,25	5737,5	9	6082	9
156	0,5	Tove				90000	137	4,25	3825	6	4055	6
157	1	Tove				180000	274	4,25	7650	12	8109	12
158	1	Tove				180000	274	4,25	7650	12	8109	12
159	0,75	Tove				135000	206	4,25	5737,5	9	6082	9
160	0,5	Tove				90000	137	4,25	3825	6	4055	6
161	0,5	Tove				90000	137	4,25	3825	6	4055	6
162	0,5	Tove				90000	137	4,25	3825	6	4055	6
163	1	Tove				180000	274	4,25	7650	12	8109	12
164	0,5	Tove				90000	137	4,25	3825	6	4055	6
165	0,5	Tove				90000	137	4,25	3825	6	4055	6
166	0,5	Tove				90000	137	4,25	3825	6	4055	6
167	1	Tove				180000	274	4,25	7650	12	8109	12
168	1	Tove	41	6.704316667	1.2825	180000	274	4,25	7650	12	8109	12
169	5	Tove				900000	1372	4,25	38250	58	40545	62
170	0,5	Tove				90000	137	4,25	3825	6	4055	6
171	0,5	Tove				90000	137	4,25	3825	6	4055	6
172	1	Tove				180000	274	4,25	7650	12	8109	12
173	0,25	Tove				45000	69	4,25	1912,5	3	2027	3
174	0,5	Tove				90000	137	4,25	3825	6	4055	6
175	0,5	Tove				90000	137	4,25	3825	6	4055	6
176	1	Tove				180000	274	4,25	7650	12	8109	12
177	0,75	Tove				135000	206	4,25	5737,5	9	6082	9
178	0,5	Tove				90000	137	4,25	3825	6	4055	6
179	0,5	Tove				90000	137	4,25	3825	6	4055	6
180	1	Tove				180000	274	4,25	7650	12	8109	12
181	0,25	Tove				45000	69	4,25	1912,5	3	2027	3
182	0,5	Tove				90000	137	4,25	3825	6	4055	6
183	0,5	Tove				90000	137	4,25	3825	6	4055	6

184	0,25	Tove				45000	69	4,25	1912,5	3	2027	3
185	1	Tove				180000	274	4,25	7650	12	8109	12
186	1	Tove				180000	274	4,25	7650	12	8109	12
187	0,5	Tove				90000	137	4,25	3825	6	4055	6
188	0,5	Tove				90000	137	4,25	3825	6	4055	6
189	0,5	Tove				90000	137	4,25	3825	6	4055	6
190	0,5	Tove				90000	137	4,25	3825	6	4055	6
191	0,5	Yotokope centre	42	6.737383333	1.314883333	90000	137	5,25	4725	7	5009	8
192	0,25	Yotokope centre				45000	69	5,25	2362,5	4	2504	4
193	0,75	Yotokope centre				135000	206	5,25	7087,5	11	7513	11
194	0,5	Yotokope centre				90000	137	5,25	4725	7	5009	8
195	0,25	Yotokope centre				45000	69	5,25	2362,5	4	2504	4
196	1	Yotovilage	43	6.695366667	1.314166667	180000	274	3,75	6750	10	7155	11
197	0,12	Yotovillage				21600	33	3,75	810	1	859	1
198	0,75	Yotovillage				135000	206	3,75	5062,5	8	5366	8
199	0,25	Yotovillage				45000	69	3,75	1687,5	3	1789	3
200	1	Yotovillage				180000	274	3,75	6750	10	7155	11
201	0,75	Yotovillage				135000	206	3,75	5062,5	8	5366	8
202	0,5	Yotovillage				90000	137	3,75	3375	5	3578	5
	155,12					27921600	**42566**		**2543490**	**3878**	**2696099**	**4110**

ANNEX 5 : Payouts listing

N°	Farm size (ha)	Location	LOCARION _ID	LAT	LONG	REGION	VALUE INSURED (EUROS)	NET PREMIUM RATE (%)	NET PREMIUM (EURO)	GROSS PREMIUM (EUROS)	Final RE Loss [%]	Final RE Loss (Euros)
1	0,25	Afagnagan	32	6.4929	1.638633333	MARITIME	69	18	12	13	0,0000%	0,00
2	0,25	Afagnagan	32			MARITIME	69	18	12	13	0,0000%	0,00
3	1,5	Afagnagan	32			MARITIME	412	18	74	79	0,0000%	0,00
4	0,25	Afagnagan	32			MARITIME	69	18	12	13	0,0000%	0,00
5	0,25	Afagnagan	32			MARITIME	69	18	12	13	0,0000%	0,00
6	0,25	Afagnagan	32			MARITIME	69	18	12	13	0,0000%	0,00
7	0,15	Afagnagan	32			MARITIME	41	18	7	8	0,0000%	0,00
8	0,25	Afagnagan	32			MARITIME	69	18	12	13	0,0000%	0,00
9	0,25	Afagnagan	32			MARITIME	69	18	12	13	0,0000%	0,00
10	1	Agbelouve	50	6.679316667	1.165716667	MARITIME	274	13,25	36	39	6,0550%	16,62
11	5	Agbelouve	50			MARITIME	1372	13,25	182	193	6,0550%	83,08
12	1	Agbelouve	50			MARITIME	274	13,25	36	39	6,0550%	16,62
13	0,5	Agbelouve	50			MARITIME	137	13,25	18	19	6,0550%	8,31
14	1	Agbelouve	50			MARITIME	274	13,25	36	39	6,0550%	16,62
15	0,5	Agbelouve	50			MARITIME	137	13,25	18	19	6,0550%	8,31
16	1	Agbelouve	50			MARITIME	274	13,25	36	39	6,0550%	16,62
17	4	Agbelouve	50			MARITIME	1098	13,25	145	154	6,0550%	66,46
18	1	Agbelouvé	50			MARITIME	274	13,25	36	39	6,0550%	16,62
19	1	Agbelouvé	50			MARITIME	274	13,25	36	39	6,0550%	16,62
20	0,25	Agbleta	33	6.492916667	1.61775	MARITIME	69	14,75	10	11	0,0000%	0,00
21	0,25	Agbleta	33			MARITIME	69	14,75	10	11	0,0000%	0,00
22	1	Agbossou kope	34	6.457033333	1.6475	MARITIME	274	10,00	27	29	0,0000%	0,00
23	0,25	Amblesso kope	36	6.4981	1.611733333	MARITIME	69	14,00	10	10	0,0000%	0,00
24	1	Ataregbe	51	6.679316668	1.165716668	MARITIME	274	11,25	31	33	0,0000%	0,00
25	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
26	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
27	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00

28	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
29	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
30	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
31	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
32	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
33	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
34	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
35	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
36	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
37	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
38	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
39	0,5	Ataregbe	51			MARITIME	137	11,25	15	16	0,0000%	0,00
40	4	Avedze	37	6.673583333	1.238233333	MARITIME	1098	10,00	110	116	0,0000%	0,00
41	2	Avedze	37			MARITIME	549	10,00	55	58	0,0000%	0,00
42	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
43	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
44	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
45	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
46	0,25	Avedze	37			MARITIME	69	10,00	7	7	0,0000%	0,00
47	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
48	0,25	Avedze	37			MARITIME	69	10,00	7	7	0,0000%	0,00
49	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
50	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
51	1	Avedze	37			MARITIME	274	10,00	27	29	0,0000%	0,00
52	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
53	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
54	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
55	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00
56	0,25	Avedze	37			MARITIME	69	10,00	7	7	0,0000%	0,00
57	0,5	Avedze	37			MARITIME	137	10,00	14	15	0,0000%	0,00

58	0,25	Avedze	37			MARITIME	69	10,00	7	7	0,0000%	0,00
59	0,25	Avedze	37			MARITIME	69	10,00	7	7	0,0000%	0,00
60	1	Ayakope	47	6.791633333	0.962016667	MARITIME	274	11,25	31	33	0,0000%	0,00
61	3	Doglobo	38	6.757233333	1.143766667	MARITIME	823	7,00	58	61	0,0000%	0,00
62	0,25	Doglobo	38			MARITIME	69	7,00	5	5	0,0000%	0,00
63	0,75	Doglobo	38			MARITIME	206	7,00	14	15	0,0000%	0,00
64	1,5	Doglobo	38			MARITIME	412	7,00	29	31	0,0000%	0,00
65	1	Fulanycondji	44	6.679316667	1.165716667	MARITIME	274	12,75	35	37	0,0000%	0,00
66	1	Fulanycondji	44			MARITIME	274	12,75	35	37	0,0000%	0,00
67	1	Fulanycondji	44			MARITIME	274	12,75	35	37	0,0000%	0,00
68	1	Fulanycondji	44			MARITIME	274	12,75	35	37	0,0000%	0,00
69	1	Fulanycondji	44			MARITIME	274	12,75	35	37	0,0000%	0,00
70	0,5	Fulanycondji	44			MARITIME	137	12,75	17	19	0,0000%	0,00
71	0,5	Fulanycondji	44			MARITIME	137	12,75	17	19	0,0000%	0,00
72	1	Fulanycondji	44			MARITIME	274	12,75	35	37	0,0000%	0,00
73	0,5	Fulanycondji	44			MARITIME	137	12,75	17	19	0,0000%	0,00
74	0,5	Fulanycondji	44			MARITIME	137	12,75	17	19	0,0000%	0,00
75	4	Game 2	52	7.740666667	1.06425	MARITIME	1098	5,25	58	61	0,0000%	0,00
76	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
77	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
78	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
79	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
80	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
81	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
82	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
83	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
84	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
85	0,5	Game 2	52			MARITIME	137	5,25	7	8	0,0000%	0,00
86	1	Game 2	52			MARITIME	274	5,25	14	15	0,0000%	0,00
87	1	Game 2	52			MARITIME	274	5,25	14	15	0,0000%	0,00

88	2	Gamégblé	49	6.791633335	0.962016669	MARITIME	549	10,00	55	58	10,2900%	56,47
89	1	Gamégblé	49			MARITIME	274	10,00	27	29	10,2900%	28,24
90	1	Gamégblé	49			MARITIME	274	10,00	27	29	10,2900%	28,24
91	1,5	Gape tsingoé	46	6.602116667	1.103466667	MARITIME	412	8,75	36	38	0,0000%	0,00
92	1,5	Gape tsingoé	46			MARITIME	412	8,75	36	38	0,0000%	0,00
93	1	Kondacopé	45	6.679316668	1.165716668	MARITIME	274	11,00	30	32	0,0000%	0,00
94	1	Kondacopé	45			MARITIME	274	11,00	30	32	0,0000%	0,00
95	1	Kouni-kpota	53	6.598716	1.183053	MARITIME	274	10,50	29	31	0,0000%	0,00
96	0,25	Kouni-kpota	53			MARITIME	69	10,50	7	8	0,0000%	0,00
97	0,3	Kouni-kpota	53			MARITIME	82	10,50	9	9	0,0000%	0,00
98	0,6	Kouni-kpota	53			MARITIME	165	10,50	17	18	0,0000%	0,00
99	1	Kouni-kpota	53			MARITIME	274	10,50	29	31	0,0000%	0,00
100	0,3	Kouni-kpota	53			MARITIME	82	10,50	9	9	0,0000%	0,00
101	1	Kouni-kpota	53			MARITIME	274	10,50	29	31	0,0000%	0,00
102	1	Kouni-kpota	53			MARITIME	274	10,50	29	31	0,0000%	0,00
103	0,125	Kouni-kpota	53			MARITIME	34	10,50	4	4	0,0000%	0,00
104	0,125	Kouni-kpota	53			MARITIME	34	10,50	4	4	0,0000%	0,00
105	0,5	Kouni-kpota	53			MARITIME	137	10,50	14	15	0,0000%	0,00
106	0,3	Kouni-kpota	53			MARITIME	82	10,50	9	9	0,0000%	0,00
107	0,3	Kouni-kpota	53			MARITIME	82	10,50	9	9	0,0000%	0,00
108	0,4	Kouni-kpota	53			MARITIME	110	10,50	12	12	0,0000%	0,00
109	0,25	Kouni-kpota	53			MARITIME	69	10,50	7	8	0,0000%	0,00
110	0,8	Kouni-kpota	53			MARITIME	220	10,50	23	24	0,0000%	0,00
111	2	Kpetsu	40	6.514633333	1.57605	MARITIME	549	12,75	70	74	0,0000%	0,00
112	0,25	Kpetsu	40			MARITIME	69	12,75	9	9	0,0000%	0,00
113	1,5	Kpetsu	40			MARITIME	412	12,75	52	56	0,0000%	0,00
114	1	Kpetsu	40			MARITIME	274	12,75	35	37	0,0000%	0,00
115	0,1	Kpetsu	40			MARITIME	27	12,75	3	4	0,0000%	0,00
116	0,25	Kpetsu	40			MARITIME	69	12,75	9	9	0,0000%	0,00
117	0,5	Lonvo	55	6.644166667	1.118833333	MARITIME	137	11,50	16	17	14,9100%	20,46

118	1	Nyative	54	6.70035	0.996516667	MARITIME	274	11,50	32	33	0,0000%	0,00
119	1	Nyative	54			MARITIME	274	11,50	32	33	0,0000%	0,00
120	0,75	Nyative	54			MARITIME	206	11,50	24	25	0,0000%	0,00
121	0,5	Togba	57	6.7675	1.176066667	MARITIME	137	9,75	13	14	0,0000%	0,00
122	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
123	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
124	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
125	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
126	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
127	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
128	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
129	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
130	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
131	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
132	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
133	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
134	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
135	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
136	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
137	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
138	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
139	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
140	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
141	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
142	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
143	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
144	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
145	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
146	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
147	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00

148	1	Togba	57			MARITIME	274	9,75	27	28	0,0000%	0,00
149	0,5	Togba	57			MARITIME	137	9,75	13	14	0,0000%	0,00
150	1	Tomefa	48			MARITIME	274	11,00	30	32	22,9950%	63,10
151	1	Tomefa	48	6.791633334	0.962016668	MARITIME	274	11,00	30	32	22,9950%	63,10
152	1	Tomefa	48			MARITIME	274	11,00	30	32	22,9950%	63,10
153	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
154	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
155	0,75	Tove	41			MARITIME	206	4,25	9	9	13,3700%	27,52
156	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
157	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
158	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
159	0,75	Tove	41			MARITIME	206	4,25	9	9	13,3700%	27,52
160	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
161	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
162	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
163	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
164	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
165	0,5	Tove	41	6.704316667	1.2825	MARITIME	137	4,25	6	6	13,3700%	18,34
166	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
167	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
168	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
169	5	Tove	41			MARITIME	1372	4,25	58	62	13,3700%	183,44
170	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
171	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
172	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
173	0,25	Tove	41			MARITIME	69	4,25	3	3	13,3700%	9,17
174	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
175	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
176	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
177	0,75	Tove	41			MARITIME	206	4,25	9	9	13,3700%	27,52

178	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
179	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
180	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
181	0,25	Tove	41			MARITIME	69	4,25	3	3	13,3700%	9,17
182	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
183	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
184	0,25	Tove	41			MARITIME	69	4,25	3	3	13,3700%	9,17
185	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
186	1	Tove	41			MARITIME	274	4,25	12	12	13,3700%	36,69
187	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
188	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
189	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
190	0,5	Tove	41			MARITIME	137	4,25	6	6	13,3700%	18,34
191	0,5	Yotokope centre	42			MARITIME	137	5,25	7	8	27,8250%	38,18
192	0,25	Yotokope centre	42			MARITIME	69	5,25	4	4	27,8250%	19,09
193	0,75	Yotokope centre	42	6.737383333	1.314883333	MARITIME	206	5,25	11	11	27,8250%	57,27
194	0,5	Yotokope centre	42			MARITIME	137	5,25	7	8	27,8250%	38,18
195	0,25	Yotokope centre	42			MARITIME	69	5,25	4	4	27,8250%	19,09
196	1	Yotovillage	43			MARITIME	274	3,75	10	11	23,9750%	65,79
197	0,12	Yotovillage	43			MARITIME	33	3,75	1	1	23,9750%	7,89
198	0,75	Yotovillage	43			MARITIME	206	3,75	8	8	23,9750%	49,34
199	0,25	Yotovillage	43	6.695366667	1.314166667	MARITIME	69	3,75	3	3	23,9750%	16,45
200	1	Yotovillage	43			MARITIME	274	3,75	10	11	23,9750%	65,79
201	0,75	Yotovillage	43			MARITIME	206	3,75	8	8	23,9750%	49,34
202	0,5	Yotovillage	43			MARITIME	137	3,75	5	5	23,9750%	32,89
	155,12						**42 566**		**3 878**	**4 110**		**2 111,81**