fundación CODESPA

Rural market development of quality seeds for small producers

METHODOLOGY BASED ON CODESPA'S EXPERIENCE IN ANGOLA

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LIST OF ACRONYMS

ADRA	Acção para o Desenvolvimento Rural e Ambiente
AECID	Spanish International Cooperation for Development Agency
AOA	Kwanza (official currency in Angola)
AFDB	African Development Bank
DAS	Diagnosis of Agricultural Systems
FAO	United Nations Food and Agriculture Organization
IAD	Institute for Agricultural Development
IAR	Institute for Agronomic Research
NSI	National Statistics Institute
MPI	Multidimensional Poverty Index
NGDO	Non-governmental Development Organization
CBO	Community-based Organizations
MDG	Millennium Development Goals
GDP	Gross Domestic Product
UNDP	United Nations Development Program
QDS	Quality Declared Seeds
UAA	Usable Agricultural Area
SDP	*Sementes do Planalto*
USD	United States Dollars

Partner and collaborating agencies

About CODESPA [www.codespa.org]

The CODESPA Foundation [www.codespa.org] is a not-for-profit organization which has 30 years of experience in cooperative international development efforts.

Based on trust in human ability to build a better and more just world, its mission is to provide opportunities to people so that they can – through their work – hone their capabilities and be the protagonists of their own development.

Since its beginnings, CODESPA has managed over 800 projects in 33 countries in Latin America, the Middle East, Africa, and Asia – helping millions of people to improve their living conditions. The organization currently has 17 international and national offices.

CODESPA believes in economic and social development as an engine to achieve human development and employs various thematic lines of work to achieve this end: micro-finance for development, business creation, rural agricultural and livestock development, community-led management of tourism, professional training and job placement, remittances and development, and alliances with the private development sector. Likewise, CODESPA carries out intensive work in knowledge management, as well as in research, innovation, and training for development professionals and companies. Additionally, CODESPA has a Development Consulting Department which provides consulting services to international development companies and entities which wish to get involved in the fight against poverty with solutions which make an impact and are sustainable, inclusive, and just.

About the United Nations Development Program in Angola (UNDP) [www.ao.undp.org]

The United Nations Development Program (UNDP) is a United Nations worldwide development network which works in 177 countries. It has been in Angola since 1977. Its general aim is centered on eradicating poverty and it works around four interrelated, thematic areas: reducing poverty and reaching the millennium development goals, democratic governance, crisis prevention and recovery, and a sustainable environment (energy and the environment).

About the Spanish International Cooperation for Development Agency (AECID) [www.aecid.org]

Created in 1988, the Spanish International Cooperation for Development Agency (AECID) has a team of more than 1,300 professionals dedicated to reducing poverty in the most disadvantaged countries.

Through cooperative programs and projects, the AECID provides technical assistance to institutions in partner countries, as well as supplying help with budgets, micro-credits, scholarships, and assistantships. Likewise, it gives training to development professionals by financing training events and publications – one of which is this publication.

About ROVIRALTA Foundation [www.roviralta.org]

ROVIRALTA was founded in 1959. The Foundation aims at providing the income from its assets for altruistic and/or beneficial purposes. This assistance is primarily addressed to legal persons with charitable, educational, or mixed uses; divided into four sections: welfare, education and scientific research, emergency and culture, art, and other activities.

In 2014, ROVIRALTA invested 2.2 million of euros in projects of social development (63%), education and science (22%), health (14%), others (1%).

Nova Esperança Tchihanha Cooperative, Municipality of Caála (Huambo)

Presentation of CODESPA

Over the last few years, economic development aims have been increasingly directed at creating more opportunities for the Base of the Pyramid (BoP) population, an important category that includes up to 4 billion people. The reasons for this are numerous, but amongst them are: the development and promotion of a potential market which may include this population in a consumer's role as well as enabling these individuals to become involved in value chains as income-generating providers or distributors of products and/or services developed for and through this market. Nevertheless – and despite this being a new trend – the technologies made available or intended for this new market are often not adapted to the needs of the population or of the market. Likewise, an analysis and/or diagnosis which is tailored to the context is rarely undertaken and included in the scope of work.

Thus CODESPA has worked towards generating strategies which try to correct the problems which exist in this type of market through a sustainable approach which takes advantage of opportunities to generate wealth both justly and inclusively.

Over the last few years, CODESPA's presence in Angola has been mainly in the Provinces of Huambo and Bié – rural markets which have been strongly affected by the ravishes of a war that lasted more than 25 years. One of the consequences of the war is food insecurity as well as a lack of solid infrastructure for access to, and development of, markets and, concomitantly, incomes.

In Huambo and Bié, when the determining factors which affected the market were analyzed, it was found that – amongst other things – the agriculture market is characterized by a lack of access to quality inputs, principally seeds and fertilizers. Likewise, deficiencies were found in the storage systems used to allow the harvest to be consumed in the hungry season and to allow for sale when market demand spiked.

Under these conditions, CODESPA developed a farming model which involved several components such as:

- Market development of a system for the production and maintenance of quality seeds with small producers.
- Development of field schools to adapt and improve agricultural practices.

- Market development of low-cost technology grain storage systems for small producers.
- Programs to strengthen cooperatives in order to improve market access.
- Programs to strengthen institutions in order to guarantee access to land.
- Access to financing.

The aforementioned work is the result of actions carried out by the CODESPA Foundation in Angola between 2010 and 2014 and financed by the Spanish International Cooperation for Development Agency (AECID).

During those four years, resources were destined to a highly vulnerable area to develop initiatives which would generate income for the poor population while simultaneously strengthening an attachment to the land and a positive environmental impact.

It is important to highlight that, the intervention described in this publication was selected, from hundreds of initiatives, as an example of good practice, and won an international recognition in Expo Milano 2015, by participating in the Spanish pavilion under the theme "Feeding the planet, energy for life".

With this publication, CODESPA hopes to promote different alternatives for projects in the agriculture and livestock sectors in order to increase the performance of small-holder producers who do not have access to quality supplies by creating a seed multiplication model (corn, bean, and soybean) with local farmers which is sustainable and has a market development approach.

We would like to take this opportunity to thank the members of CODESPA Angola who have helped to make this project a success. Likewise, we send our thanks to AECID for the financing we received to help with this development work and to help with this publication in order to share our experience with other actors.

We hope that you find this publication to be both interesting and useful.

Signed,

José Ignacio González Aller-Gross
General Manager
CODESPA Foundation

Juan Ramón García
Representative in Angola
CODESPA Foundation

Executive summary

This document is meant to be a methodological guide for projects relating to agriculture and livestock sectors and in situations in which quality seeds and other inputs are not accessible to small producers – both in contexts of food insecurity and in those in which the aim is to promote a transition from subsistence to market access.

The methodology is the result of the actions carried out by the CODESPA Foundation in Angola between 2010 and 2014 and financed by the Spanish International Cooperation for Development Agency (AECID). The project, carried out in the Huambo and Bié Provinces, had as its objective that of consolidating an agricultural model which would cover the needs of subsistence farmers with severe food vulnerability and/or the needs of farmers who were beginning a farm production diversification process in order to start producing income generating crops.

Thus, this publication establishes a model for intervention in projects aimed at improving the farm production of small producers by creating a seed multiplication model (corn, bean, and soybean) with local farmers that is sustainable and has a market development approach.

The document's structure is designed to guide the reader through the establishment of said model, considering the most important matters to bear in mind when facing an intervention with these dimensions while also including the insights that CODESPA has garnered during its experience in Angola.

Firstly, the context surrounding CODESPA's intervention actions in Angola is presented so that, in this way, the circumstances and parameters conditioning the vision and development of the methodology are known.

Next, the problem diagnosis is summarized, with special emphasis on the population's food situation. Likewise, analysis of the project beneficiaries is undertaken, along with their description – all of these being important aspects in order to determine if the methodology can be replicated in other contexts. Additionally, the problems which can be solved through these types of interventions are analyzed as well as the methodological approaches which support the model and their results when applied.

Later, in the fourth chapter, a detailed explanation of the methodology is provided, summarizing the main steps necessary to execute a project with these characteristics based upon a market development approach with four different phases: (1) diagnosis, (2) identification of low-cost technology, (3) development of supply, and (4) development of demand.

After highlighting the main results, we go on to share a summary of the lessons learned, critical aspects, recommendations, and challenges which can be useful if this methodology is to be carried out by other International Cooperation actors and in other contexts.

CHAPTER 1
Context

1. Context

Thirteen years after the end of the civil war, Angola today is still in the peace and national reconstruction process. The country currently has a population of over 24 million inhabitants[1]. It is one of the countries with the greatest potential for economic growth and foreign investment in Africa (between 2002 and 2011. It grew an average of 11.6%)[2], despite having a per capita Gross Domestic Product (GDP) of 5.199 USD/year[3]. The oil sector contributes the most to the GDP (39%), in contrast with 8.5% from agriculture, silviculture, and fishing. Thus, there is a high degree of dependence on food imports, with 80% of food needs being satisfied by importation[4].

CHART 1. LOCATION OF THE HUAMBO AND BIÉ PROVINCES, AREAS OF ACTION OF THE CODESPA PROJECT IN ANGOLA

Source: Angola Press Agency

1 *Population census, 2014*

2 *According to the AFDB, 2012: http://www.afdb.org/fileadmin/uploads/afdb/Documents/Evaluation-Reports/Angola%20%20-%20Private%20Sector%20 Country%20Profile.pdf*

3 *Report of the Millennium Development Goals 2015, Angola*

4 *IDEM*

Despite this high level of economic growth – which undoubtedly is currently slowing with the sudden drop of oil prices – and although progress is being made on the social level and there are reliable signs of the fight against hunger in Angola, the poverty indicators in the country are still worrying even today. Angola went from the "extremely alarming" hunger category in 1990 to "alarming" in 2011[5]. 27.4% of the population is currently undernourished[6],more than half of the population (54.3%) lives with less than 1.25 USD/day, and 60% of the poor live in rural areas.

Because of the low level of local production and the high level of dependency on food imports, the country's food security is a clear cause for concern. Angola has one of the highest levels of poverty and vulnerability of the world, occupying slot 149 of 187 in the 2014 Report on Human Development[7].

The agriculture sector in Angola is considered to be the "sleeping giant" of the national economy[8].There are favorable weather conditions and abundant water resources. Likewise, 46.3% of Angola's land is suitable for agriculture (575,900 km^2). Nevertheless, only 5.7% is currently being exploited due to a series of historical factors (the long period of civil conflict and the presence of landmines in rural areas, amongst others) and economic factors (lack of investment capacity and/or economic competitiveness).

Producers from the Ben Vindo Cooperative in Caála placing potatoes in sacks for their sale

The low levels of farm production contribute to the fact that nearly 77% of the population is in a situation of multidimensional poverty in accordance with the Multidimensional Poverty Index (MPI)[9] and combines with a child mortality rate which continues to be one of the highest in the world (approximately 220 children die per 1,000 births). Likewise, the average life expectancy in Angola is extremely low, barely reaching 50 years. Lastly, the rate of illiteracy is around 30% and more than 50% of the population does not have access to improved water sources or sewage[10].

5 *According to the Global Hunger Index, 2011: http://www.ifpri.org/sites/default/files/publications/ghi11.pdf*

6 *Data extracted from the 2012 SOFI published by the FAO: http://www.fao.org/docrep/016/i3027e/i3027e.pdf*

7 *2014 Report on Human Development: http://hdr.undp.org/sites/default/files/hdr14-report-en-1.pdf*

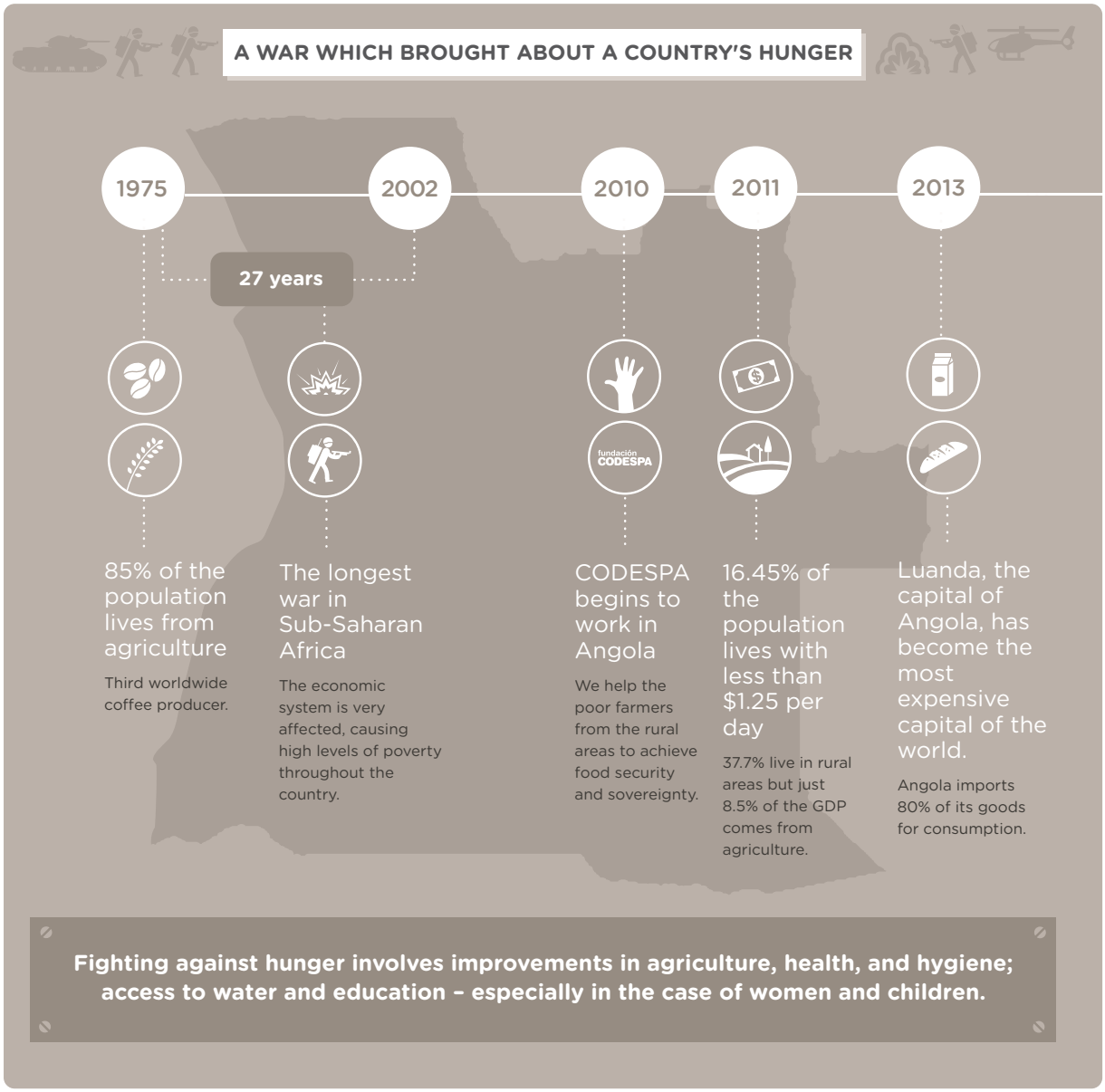
8 *Estrategia de desenvolvimento medio prazo 2013-2017. Governo de Angola.*

9 *Data extracted from the MDG report. http://hdr.undp.org/en/content/table-6-multidimensional-poverty-index-mpi*

10 *Data extracted from the 2010 Progress Report on the MDG: http://mirror.undp.org/angola/LinkRtf/ANGOLA_2010_MDG_REPORT.pdf*

The groups which are most vulnerable to food and nutritional insecurity are those which are traditionally the most affected by hunger and war: the child population, women (widows and pregnant women), the elderly, small farmers, and those injured in the war. The majority of these individuals live in rural areas.

Despite the substantial progress made in improving social conditions since 2002, the country is still facing enormous challenges in terms of reducing poverty and unemployment and increasing the level of human development. A significant piece of information is that the agriculture budget went down between 2008 and 2013 from 4.45% to an all-time low (0.67%)[11].



11 http://www.minfin.gv.ao/fsys/RESUMO_DA_DESPESA_POR_FUNCAO_2015.pdf

FOOD SECURITY SITUATION

CODESPA's project's area of invervention in the Huambo and Bié Provinces is in a permanent situation of food insecurity. The last food vulnerability analysis carried out in the region in the year 2012 by the NGO ADRA shows a serious situation of food insecurity among 47.5% of the population in terms of access to, and consumption of, food. There are other factors which worsen the vulnerability of rural families, like changes in rain patterns and the short period of time that the families harvest. As can be seen in the table, for 49% of families, the harvest lasts for a period of less than three months.

TABLE 1. CLASSIFICATION OF FOOD INSECURITY IN THE HUAMBO PROVINCE

FAMILY SAMPLE	%	FOOD SITUATION
18	7.50%	Food security
51	21.25%	Mild food insecurity
57	23.75%	Moderate food insecurity (equal to level 2 IPC)[12]
114	47.50%	Severe food insecurity (equal to level 3 IPC)
240	100.00%	

Source: Segurança Alimentar e Nutricional na Óptica do Acesso e Consumo. ADRA 2012.

To this end, as shall be seen later, two of the main factors which condition food security in the region are: (1) the low yield of the crops and (2) the lack of adequate storage systems to maintain harvests for food over the year.

This creates a paradoxical, dramatic situation which makes it impossible to improve the living conditions of the most vulnerable populations: the lack of storage systems forces them to sell part of the scarce production at the time when market prices are lower (after the harvest) and, likewise, these same populations are obliged to acquire grain (mainly corn, beans, and soybean) at very high prices for their sustenance during times of food shortage.

TABLE 2. TIME THAT THE FOOD HARVEST LASTS

TIME THAT THE FOOD HARVEST LASTS		
Period	**Number of families**	**%**
<3 months	118	49.17%
From 3 to 4 months	48	20.00%
From 5 to 6 months	29	12.08%
From 6 to 7 months	23	9.58%
>7 months	19	7.92%

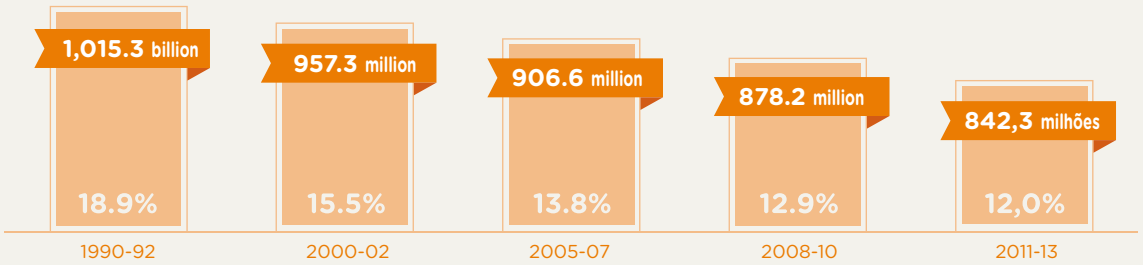
Source. Segurança Alimentar e Nutricional na Óptica do Acesso e Consumo, ADRA 2012.

12 http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC_UserGuide_SP.pdf

IS REDUCTION OF HUNGER WITHIN ARM'S REACH?

In 2015, our objective is to cut the percentage of people who were starving in 1990 in half.

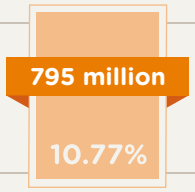
MALNUTRITION AROUND THE WORLD



EVOLUTION HAS NOT BROUGHT ABOUT JUST RESULTS

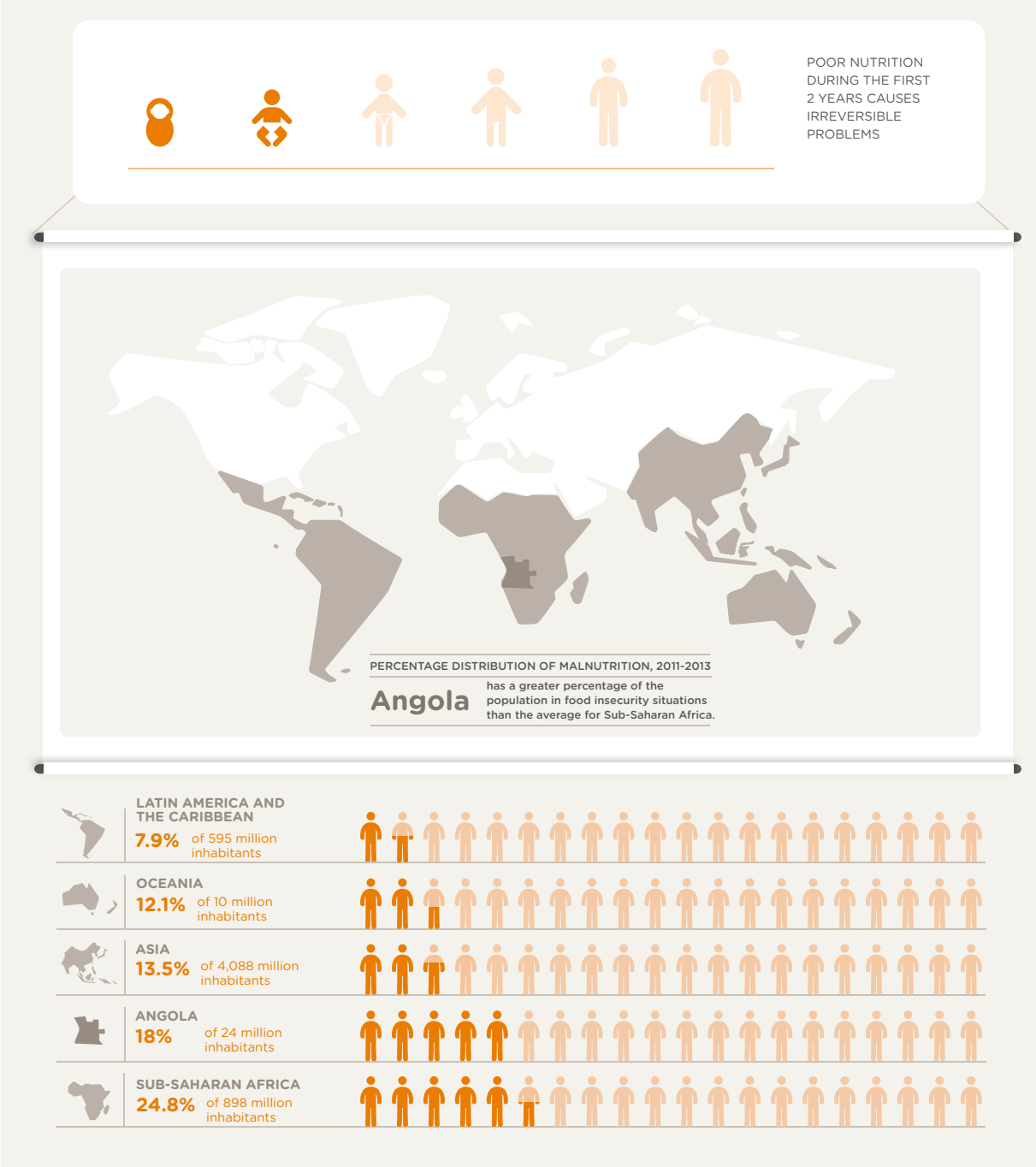
795 million people, 11% of the world's population, suffer from chronic hunger.

795 million
OF THEM LIVE IN DEVELOPING COUNTRIES



24.72 %
OF SUB-SAHARAN AFRICA'S POPULATION SUFFERS FROM MALNUTRITION

Katapi Cooperative in Katabola



SHORT AGRO-ECOLOGICAL DESCRIPTION

In the Huambo and Bié Provinces, located at an average height of 1,600 meters above sea level, average rainfall is 1,500 millimeters distributed over eight months (from September/October to April/May). This implies an abundance of water and good seasonal distribution. Nevertheless, in the last 10 years, many key players in the region have noticed a substantial change in rainfall patterns which are making farmers' adaptation to the new circumstances tremendously difficult.

There are no current studies of the soil and the most "recent" studies date back to the 70s, just before Angola's independence. These analyses, therefore, are not very exact. However, CODESPA has carried out macronutrient studies (nitrogen, phosphorus, potassium, and pH analysis) in the region and these studies

have confirmed that, contrary to the soil of other regions of the country, the soil of the high plains (where the provinces of Huambo and Bié are located) is poor and acidic, and especially ferralitic, due to the high degree of leaching of the soil brought on by large slopes and an abundance of rain. This process is getting worse as a result of intensified agriculture and practices which are not environmentally friendly.

Establishing soil fertility is a slow process in which farming practices are fundamental. Therefore, years of corrective practices will be necessary to reach the optimal soil level for this region. Meanwhile, the existence of these soils does not hinder the Central High Plains of Angola from being the main agriculture and livestock production center, along with the coastal region of Kwanza Sul. This is explained because they are regions whose climates are very favorable for agriculture, having significant water resources and large stretches of land available which provide (with effective handling of soil fertility construction processes) conditions which are very good for agriculture.

The most common crops are cereals – mainly corn – with a harvested area of 699,370 hectares (ha), 29% of the total national surface area. In addition, the potato crop is noteworthy, with a harvested area of 333,184 ha, 31% of the nation's production and, lastly, the cultivation of leguminosae (especially beans), with a harvested area of 392,120 ha, 30% of the country's total production.

The majority of the family producers grow their crops based on a system of farming which combines cultivation on three types of soil: rain-fed crops, located in high zones where growing takes place in rainy seasons. These are generally the largest stretches of land and, on them, corn is the main crop. Sloping land comprises plots which are near low-lying areas along rivers and retain more moisture for longer periods. Here, the second-season (February), short-cycle crops are grown (normally leguminosae like beans). Lastly, there are the growing fields located alongside rivers which allow for irrigation (generally through flow re-direction or the use of motorized pumps) in the dry season. Here, horticultural crops and a little bit of corn is grown to try to get through the hungry season in January and February. The combination of these three crops requires a complex agricultural system in which the use of labor and active capital are combined.

In terms of the size of the farms, and according to data provided by the Institute for Agricultural Development (IDA), in Huambo there are approximately 277,467 family producers and in Bié there is a total of 199,846, cultivating an average surface area of 1.5 ha. Likewise, it must be noted that in both provinces 99% of the producers are families, with 1% corresponding to low-tech industrial production.

THE ANGOLAN SEED MARKET

Generally speaking, there are two systems (formal and informal) which exist internationally and imply two different seed production markets. The first, the formal seed production system, falls within the framework of a system in which companies, research institutions, and certifying agencies are in charge of monitoring the production and control of the seeds which are sold through formal distribution channels. This market is regulated based upon patent management and, depending on the internal regulations of the country, there are a series of criteria and procedures for the production of seeds which go to market and legislation on the industrial property of said seeds.

Meanwhile, in coexistence with the first system, there is the traditional system in which small producers manage their seed reserves depending on prior harvests. This market is not regulated and allows producers to have self-management systems as well as generating informal markets to sell and exchange seeds.

The problem arises when formal seeds are too expensive for small producers, or when they are inaccessible to them, and when the seeds on the informal market have degenerated in such a way that they have lost their quality and production capacity. This situation can generate a "poverty trap" that very vulnerable producers cannot get out of easily. A lack of access to quality supplies and seed causes production scarcity which doesn't allow small producers to take any surplus to market and, as a result, in the next season, they cannot invest in or improve their agricultural inputs. It is a vicious circle.

This methodology proposes working under a type of intermediary framework between the two aforementioned systems. The "legal" backing of this alternative is found under the concept of "Quality Declared Seeds" (QDS), developed by FAO in 1993 and updated in 2006[13],offering an alternative regulatory framework for the production of seeds locally, with a production and certification process which is much more lax than the formal seed production system but stricter than the informal system.

The following table summarizes the main differences between the three seed production systems and their different markets:

TABLE 3. COMPARISON BETWEEN GRAIN, CERTIFIED SEEDS, AND QUALITY DECLARED SEEDS

CHARACTERISTICS	INFORMAL MARKET	FORMAL MARKET	POTENTIAL QUALITY DECLARED SEEDS (QDS) MARKET
Product	Grain	Certified seed	Quality declared seed
Physical, physiological, genetic, and phytosanitary characteristics	Homogeneity does not exist, the ability to germinate, the purity, and the resistance to pests are not checked	Homogeneous seed, with a high degree of germination and purity	Homogeneous seed, with a high degree of germination and purity (less than the certified seed)
Origin	Local production, without differentiation	Imported, or produced by large companies	Local production, with differentiation
Production system	There is not a differentiated production system	Regulated production process to improve the quality of the seeds	Multiplication protocols which are adapted to small producers
Storage system	Traditional systems with the risk of loss and deterioration	Advanced	Hermetic barrels (case of CODESPA)
Price	Equivalent to the price of grain, depending on the time of year. Example - Angola: Katerina Bean, 200 AOA/Kg	Relatively fixed price. Example Angola: Katerina Bean, 510 AOA/kg	Intermediate established price. Adjusted to the buying power of poor farmers
Place of sale	Informal markets.	Specialized shops	Informal and formal markets
Target audience	Vulnerable farmers: t1-t2	Rural farmers, t4, and industrial producers	Farmers t2-t3-t4
Productivity level	Low and variable Example - Angola: Katerina Bean, 300 Kg/ha	High Example - Angola: Katerina Bean more than 900 Kg/ha	Medium-High Example - Angola: Katerina Bean, 700 Kg/ha
Level of supply intensity in production	Low	High	Low
Quality control system	No	National and international regulation	Test on appearance and germination established by a regulating body

Source: Compiled by authors

13 *Quality declared seeds system 2006. FAO*

CHAPTER 2
Diagnosis of the problems and design of development intervention actions

2. Diagnosis of the problems and design of development intervention actions

Before initiating any development intervention actions, it is crucial to identify what the determining factors are (those to which the causes of the problem can be directly attributed) and what the predisposing factors are (those factors which are not determining but help to create a problem or cause it to grow) which bring about a situation. That is to say, the origin of the problem must be identified before starting work on the solution.

Depending on the context and its particularities, the determining factors of a situation of food vulnerability may vary. For example, in the region of Tana River County, in Kenya, where CODESPA carried out an Agricultural and Food Analysis for a local NGO, one of the determining factors for the situation of food insecurity was pressure on the land (and, as a result, scarcity of growing land per family) and a lack of water, factors which –nonetheless– have practically no importance in the case of the rural areas of Huambo and Bié in Angola.

A failure in the diagnosis of the problem, and in identifying the determining factors which bring it about, will – logically– result in the wrong solutions. In order to identify the determining factors and the predisposing factors, a very useful method (as we will see below) is that of quantitative correlation analysis to verify a direct relationship between a factor and its consequences. These studies help to establish the percentage of incidence of the identifying factor in the problem's solution.

As has already been mentioned, there was a severe situation of food vulnerability in a very high percentage of the population that benefited from CODESPA's activities in the Huambo and Bié Provinces. We were faced with small farmers in a "serious" or "moderate" situation of food vulnerability[14] who lived in rural areas and had limited access to markets to sell the surplus of their harvest. Their main source of sustenance, both in terms of food and income (if these existed) was agriculture, using family labor to manage the crops. Likewise, the majority of these families depended on jobs as day-workers at other farms as a second source of income, a situation which also brought about substantial limits in terms of tending to their own crops.

14 *http://es.wfp.org/sites/default/files/es/file/mapa_de_vulnerabilidad_a_la_inseguridad_alimentaria_2012_web.pdf*

Main characteristics of the population to which CODESPA's development actions are aimed

– 100% of the population lives in rural areas
– 99% of the farms are family farms
– 47% of the populations lives with severe food insecurity
– Families with land sizes of less than 1.5 hectares
– 500 Kg average production per hectare of corn
– Reduced investment capacity

The majority of the small producers that CODESPA worked with were families of farmers whose agriculture was based on subsistence or on the emerging trend of selling product surplus on the market.

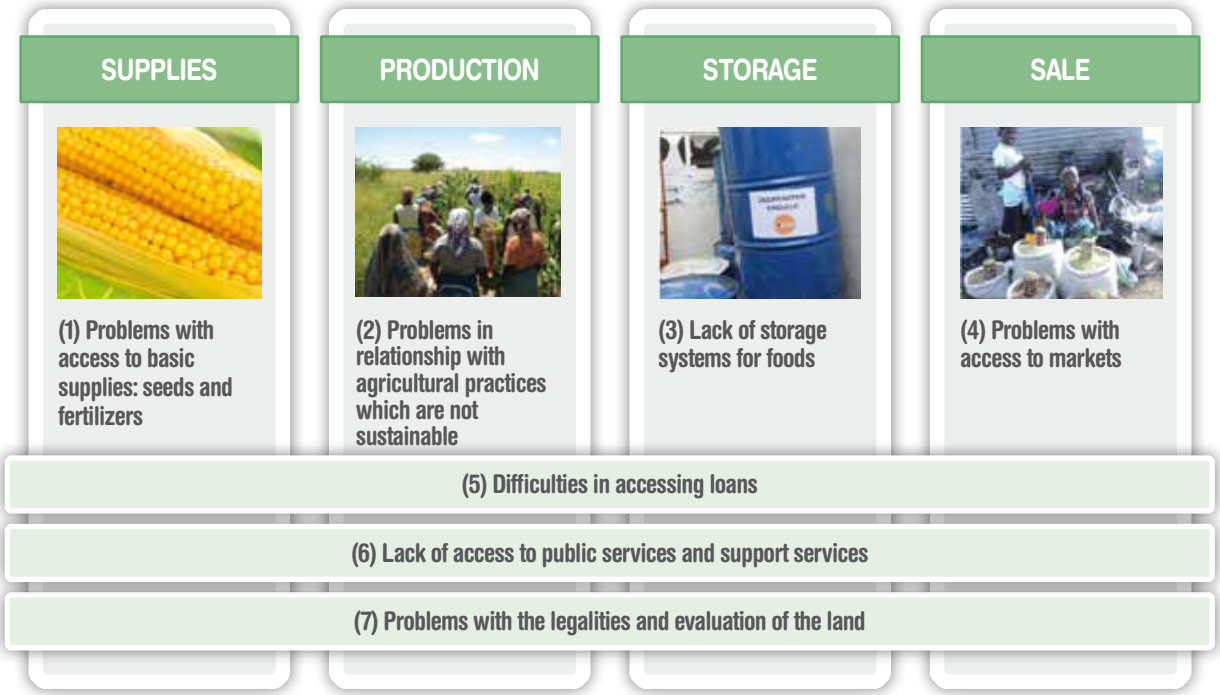
As is detailed in the methodology, and taking the studies carried out by FAO in the intervention area as a basis, the population to which CODESPA's actions were directed was classified in four different levels depending on the availability of labor within the family, their investment capacity, access to land and natural resources (with t1's type being those with less sophistication and greater vulnerability and t4 being those with greater sophistication and less dependency, as shall be detailed below).

In the diagnosis undertaken by CODESPA at the beginning of the project, a severe problem with food security was confirmed among t1 and t2 producers, as well as a structural market access problem in those of the t3 and t4 groups. To this end, and as can be seen in the list below, this situation of food insecurity and market access was based on the following limitations identified throughout the chain:

1. **Lack of access to quality supplies,** mainly seeds and fertilizers.
2. **Agricultural practices inadequate to a precarious environment,** not adapted to the current situation of the crops, conditioned by so many years of war.
3. **Lack of storage systems** which would allow the harvest to be maintained for consumption in the hungry season (from December to February) and for sale when market demand spiked.
4. **Limitations in access to the market** due to scarce social-organizational structures which would allow costs to be minimized.
5. **Basic problems accessing loans.**
6. **Structural problem with public services that support producers,** led by the agriculture and livestock extension services.
7. **Problems with the legal status of land** due to its common law use by rural communities.

Women from the Ben Vindo Cooperative preparing funge (cornflower and water) for consumption

CHART 2. FACTORS IDENTIFIED WHICH AFFECT FOOD SECURITY IN ANGOLA



Source: Compiled by authors

To this end, and based on the results of the diagnosis, of all the problems identified, the two factors whose incidence was more determining and direct in terms of the situation of food scarcity were the low level of production brought on mainly by the use of extremely poor seeds, with low germination and production capacities, and the non-existence of proper storage systems (points 1 and 3 on the previous chart).

These two factors had consequences for the majority of the problems described above: the use of low-quality seeds which have a low germination capacity brought about an inadequate adaptation of the growing practices which, likewise, contributed to the low productivity of the field. For example, if a seed's germination capacity was 30%, the farmer tended to plant more seeds at each planting point (in the case analyzed, up to seven seeds per point). This promoted a type of competition for nutrients amongst the plants and conditioned their development and degree of productivity. In short, the agricultural practices of the rural farmers adapted to the agricultural supplies and technological conditions available in their environment.

Likewise, the problem of market access was clearly conditioned by the lack of storage means which would allow the producers to make decisions based on the demand needs. The lack of storage systems forced producers to sell after their harvest to whatever customers and intermediaries happen to pop up at that specific moment. However, the existence of said storage methods allowed the producers to choose the time of sale and final destination of the products over a much longer timeframe and this allowed them to adapt differential sales strategies for their products.

Lastly, it is important to note that access to loans to improve the technologies used for production (and, therefore, to increase productivity), only made sense if proper supplies existed to improve the technological package (in this case, seeds and storage systems) and/or if there was adequate market access as, otherwise, an increase in production could cause more losses after the harvest or bring about higher levels of production based on low production per hectare, with a great spread in production.

A factor to note within the scope of this project in Huambo and Bié, which is characterized by a broader concept of food sovereignty, is that, in the region, there was not a substantial limit on the use of the land nor were there substantial land conflicts between industries, large producers, and small family producers. Nevertheless, there was evidence of a significant increase in these types of cases in neighboring provinces, something which made the worsening of this situation foreseeable.

Likewise, we must note that none of the producers that CODESPA worked with in both provinces had land titles and, keeping in mind that the law gives preference to title over use, if conflicts were to begin, this factor could –in the future– be a setback for the investment and, as a result, for the creation of micro-businesses based on the land.

Lastly, in the intervention area there was a clear limitation of labor and financing capabilities, making the surplus of land unable to be considered or capitalized. That is to say, the rural farmers had amounts of land which were greater than their production capacity as they did not have enough labor (family members) or the financial means to contract personnel or acquire supplies to improve production. In this context, the legalization of the land was a fundamental question, as it would allow the land to be used as a guarantee in order to access financing.

Natalia in the meeting place for the Calussinga Cooperative in Andulo, Bié

Based upon the aforementioned diagnosis, and with the support of AECID and UNDP, CODESPA developed an intervention strategy to work on all the phases of the production chain of three crops, corn, soybean, and beans[15], with the aim of improving the small producers' position on the value chains. The six components that the intervention actions were based upon are described below:

1. QUALITY SEEDS

Market development of a system for the production and maintenance of quality seeds with small producers.

Having verified the market's inefficiency to supply quality seeds to small producers at affordable prices, CODESPA developed a local seed multiplication model with small producers which would be able to supply the market with quality seeds at a reasonable price. To accomplish this, seed banks were installed in the cooperatives which provided access to quality seeds based on a credit-in-kind scheme. In addition, technical protocols were created for seed multiplication, which were adapted to the capabilities and needs of the rural farmers. Likewise, a Technical Support service was established for said protocols. Lastly, a seed grading and certification system was created to guarantee certain quality minimums and to ensure that the seeds could go to the market at reasonable prices.

Later, in the "Results" section, the main results of this component are detailed.

2. IMPROVEMENT OF AGRICULTURAL PRACTICES

Development of field schools to adapt and improve agricultural practices for agro-ecological conditions and the use of new seeds.

The new agricultural supplies required new agricultural practices and many of the practices used by the rural farmers were still in line with their "emergency" thinking and a short-term vision the medium-term results of which could worsen their already precarious situation. For this reason, CODESPA developed field schools in all the agricultural and livestock cooperatives in order to try to adapt the agricultural practices to the new seeds which were introduced in the communities. In addition, the field schools were home to training sessions whose objective was to take full advantage of the natural resources of the environment, trying to minimize costs and maximize production (for example, training on crop rotation, green fertilization, or natural defenses, amongst others).

As a result, 24 field schools were developed.

15 The reasons for selecting the three main crops were mainly as follows: (1) corn is a basic crop for all rural farmers in the regions and it is a staple food for the populations; (2) soybean, because of its high protein content and its nutritional properties, as well as its good market potential as a result of a growth in soybean demand for animal feed production; (3) lastly, beans, they are the main rotation crop for corn, and because of being the second main crop for the rural farmers and having a favorable profit margin for the producer.

3. STORAGE SYSTEMS

Market development of low-cost grain storage systems for small producers.

Improving production does not necessarily mean an improvement in the producer's quality of life. A lack of storage means for grain produced can cause a setback which is much greater than low production. To this end, the storage means play three roles when improving the lives of the rural farmers: firstly, they allow the food to be kept until the periods of scarcity (called "the hungry season" in Angola). Secondly, they allow for the storage of the seeds until the next season – something which is especially relevant as the seeds must be kept over relatively prolonged periods of time and in optimal conditions so that their quality is not affected, which in turn would affect the harvest's productivity. Lastly, storage systems allow for the storage of products until periods in which demand is greater on the market and prices rise.

Traditional storage means (raffia sacks or silos made from leaves) were substantially limited in conserving grain due to attacks by rodents, insects, and the high incidence of fungi due to moisture. This is why one of the project's aims was to find a low-cost storage system which could cover the needs of the small producers at a reduced price.

Therefore, CODESPA implemented a market development component for low-cost storage systems based on recycled barrels used by certain companies to import products for the food industry. These barrels could get to the market for a price of less than 40 USD. Once this technology had been identified, it was introduced on the main local markets accessed by the small farmers, and logistics were strengthened to make those products arrive to the producer.

As a result, more than 900 families had access to improved storage systems.

The CODESPA team training the Talamangolo Cooperative, located in Andulo, on weighing and storing seeds

4. STRENGTHENING OF COOPERATIVES

Program to strengthen cooperatives in order to improve market access.

Despite all the aforementioned improvements, the aggregation of the producers for improved position in and access to the market in Angola continued to be a challenge which substantially limited the rural farmers' ability to access supplies and sell their products on the market. Therefore, CODESPA developed a program to strengthen cooperatives. Said program's basic aim was to create or consolidate economical feasible and socially sustainable cooperatives, based on the provision of services to their members.

As a result, 14 cooperatives received training for the management of their business models, achieving a formal organic structure and developing service provisions for their members.

5. INSTITUTIONAL STRENGTHENING FOR ACCESS TO LAND

Program to strengthen institutions to execute the land law.

CODESPA, along with FAO (under the framework of their TERRA project) and the Red Cross, supported the institutional strengthening of public authorities in charge of guaranteeing and carrying out the common law land recognition process.

These actions were undertaken in four phases: (1) dissemination and training on land laws for the bodies which act in the land recognition process, (2) dissemination of land laws in rural communities, (3) training for competent authorities in participatory methodology to divide up community land, and (4) application of the methodology and beginning of land division.

Based on the foregoing, more than 50 State employees were trained and 200 rural communities were worked with. Additionally, for the first time in Bié's history, it was possible to divide up the first four communities and hand over titles to the land to two of them. The legalization process continues to date, and an administrative procedure has been created based on a formula for division procedures. These actions are proving exemplary on the national level and several Provincial Governments are interested in replicating similar projects.

In Angola, in accordance with law 9/04, the ownership of land always belongs to the State. The State, as the owner of the land in rural areas, has two administrative procedures for the use of land for agricultural purposes: (1) concession, granting permission to a physical person or legal entity to produce on the land for a set period of time and (2) recognition of common law use, granted to rural communities

In order to recognize their historical rights to make use of, and manage, the lands inherited from their ancestors. The latter is the instrument used to recognize rights over certain pieces of land and to provide protection from external agents.

With regard to this point, and having established a legal framework, the law's execution (putting it into practice to protect the rural farmers) is proving to be slow and complicated in Angola.

6. RURAL MICROCREDITS

Establishment of community credit institutions to promote agriculture and livestock activities within the cooperatives.

Lastly, the lack of access to loans was another one of the structural factors which conditioned the development of the farming activities for the small farmers. Therefore, taking into account the emerging development of the microcredit sector in Angola, CODESPA, through the local NGO ADRA, supported the creation of community credit institutions within the cooperatives. These credit institutions were created as cooperative business units whose objective was to grant microloans to their members. These institutions were self-managed by the members of the cooperatives and the benefits obtained were re-invested in their own loan funds.

As a result, seven community credit institutions were established, with a credit volume greater than 35,000 USD.

This document focuses on the development of the methodology of the first component: rural market development of quality seeds for small producers.16

The execution of the above comprehensive intervention actions was undertaken with 17 agriculture and livestock cooperatives (Table 4), which included a total of 2,706 small farming families whose social and economic situations differed. The different types of producers (producers from T1 to T4) made up the same cooperatives, and each one had specific needs which required that the aforementioned components adapt to each one of them.

TABLE 4. COOPERATIVES WHICH PARTICIPATED IN THE CODESPA PROJECT

COOPERATIVE	PROVINCE	MUNICIPALITY	NO. MEMBERS	MEN	%	WOMEN	%
Kalussinga	Bié	Andulo	68	26	38%	42	62%
Sima			52	46	88%	6	12%
Eyovo			50	34	68%	16	32%
Talamangolo			130	87	67%	43	33%
Katapi		Katabola	158	118	75%	40	25%
Tuendela Kumossi			61	22	36%	39	64%
Omunga			75	39	52%	36	48%
Chicumbi			50	17	33%	33	67%
Chipipa	Huambo	Huambo sede	1100	N.D.	N.D.	N.D.	N.D.
Ekolelo		Bailundo	205	140	68%	65	32%
Ekolelo do Sagrado			50	22	43%	28	57%
Coop. 15			375	180	48%	195	52%
Cupemba			50	37	74%	13	26%
Coaguca		Chicala Cholohanga	204	149	73%	55	27%
Bem-vindo		Caála	54	43	80%	11	20%
Nova Esperança			50	38	76%	12	24%
KM 25			50	26	71%	14	29%
Total			**2782**	**1023**	**61%**	**648**	**39%**

Source: Compiled by authors

16 For more information on the other components, you can consult the technical notes on the project. `Food security and rural farming development. The strategy of CODESPA in Angola.' Download the document here.

THE PROBLEM OF "CUMULATIVE ADVANTAGE" AND THE CONCENTRATION OF AID IN PROJECTS:

According to Malcom Gladwell, the success of any intervention action is determined by the abilities or opportunities that those who aspire to said success receive: "it's those who are successful, then, who usually get the best opportunities for success. The rich man is the one who gets the best tax deductions. The best student is the one who gets the best teacher and the best attention. It's the bigger and older child who gets the best trainer and, therefore, the best sports training. Success is the result of what sociologists call *cumulative advantage*."[17]

In these interventions, it is fundamental to measure the risk that the lack of a selection strategy for beneficiaries can pose, as well as the diversification of the beneficiaries and the non-overlapping nature of benefits (from the NGO, Public Administrations, etc.) for the same people or institutions. Therefore, it is necessary to create a strategy which supports, during the management of the project, the measure of impact and benefits both from inside (inside the project itself) and from outside (outside the project).

It is obvious to say that projects work better with beneficiaries who are more skilled and, once these beneficiaries improve their situation even more, they are easily chosen for other types of benefits. Concentration of aid can create a detour of resources which were supposedly designed for those most in need towards those who are best at getting said resources. Even the intervention actions of an NGO can make this happen with government programs, which get distracted into favoring those groups or communities which, due to the support received, have greater management abilities and more chances to access said resources. This problem can occur both on an individual level (individual beneficiaries) and on a group level (communities or cooperatives); therefore, it is a good idea to establish tools and criteria from the very start of the project to fight against this phenomenon.

In order to fulfill the three challenges of channeling actions to those beneficiaries who most need them, designing different strategies for the different types of beneficiaries, and defining an exit strategy, this methodology takes three factors into consideration:

17 *Outliers.2012. Malcom Gladwell*

(1) The description of the beneficiaries: this is fundamental to keep this phenomenon from occurring. This methodology, as has been mentioned previously, is designed to be implemented with the producers who have greater capacity (t3 - secondary beneficiaries) so that they create a greater volume of quality seeds in the seed banks and said seeds may benefit the rural farmers with less capacity (t1 and t2 – direct beneficiaries). For this to happen, it is not enough to merely differentiate the rural farmers. Instead, it is necessary to establish access criteria for each form of aid. If the correct criteria are not established inside the seed banks, it is possible to make the mistake of constantly giving seeds to the most advantaged farmers. As has been mentioned previously, different producer types require different intervention strategies. If differentiation is not carried out deliberately, the results will always favor the same individuals.

(2) Timing of intervention actions: in addition to the possibility of aid accumulating for the same people, the same effect can materialize with cooperatives, associations or groups of people. A natural tendency of collaboration can be to continue helping those groups who, for one reason or another, have responded well to the aid. This situation can make the aid continue over time and cause said groups, as they improve, to progressively gain access to more aid from the same NGDO and from other bodies, generating a dependency of the community on the NGDO and vice versa (the "poverty trap"). That is why it is strictly necessary to time intervention actions and to have an exit strategy to manage a future severance of the groups from the project. Likewise, this will obligate the NGDO to have a timeframe to make the project sustainable.

(3) Coordination with other actors: lastly, it is crucial for intervention actions to be coordinated with other players – whether public or private – to try to make use of synergies and, above all, to try to create logical aid blocks which avoid the concentration of the cumulative advantage on the same individuals. In addition, in this intervention effort, even if it is not specifically stated in the methodology, it is important for there to be coordination with agriculture and livestock extension services – and even for them to be involved in the execution of the project – as a desired effect of the project would be for the methodology to be adopted by public institutions who are able to put it into practice.

Ngove, municipality of Caála (Huambo)

CHAPTER 3

Methodology for the rural market development of quality seeds for small producers

3. Methodology for the rural market development of quality seeds for small producers

METHODOLOGY OBJECTIVES

This methodology, based on the experience of the CODESPA program in Angola described previously, includes a production and maintenance system for quality seeds with small producers and applies to specific contexts in response to different problems such as:

- Contexts in which there are low production levels due to the low germination and production capacities of the seeds used by small producers.
- Problems with access to quality seeds due to different market failures or the nonexistence of a market.
- Food insecurity contexts which are not related to humanitarian emergencies, in rural areas, in which low production levels are common in harvests due to a lack of quality seeds, not allowing for the self-consumption or self-sufficiency of the family system.

With the methodology, three aims are pursued:

1. Increase the production of food by the most vulnerable small producers, both in terms of food crops and market crops.
2. Improve access to the market for producers who are a bit more diversified by strengthening the informal seed production system.
3. Establish a production and conservation system for quality seeds on a local level which strengthens the production of the area of intervention.

METHODOLOGY PHASES AND TIMEFRAME

As can be seen in the chart below, the methodology is structured into three basic steps for rural market development:

1) identification of the technology,
2) development of supply, and
3) development of demand.

As is detailed below, all these phases are preceded by the prior need to carry out a diagnosis which allows the reality to be understood in terms of the seeds that the project is facing. Later, it is necessary to identify the technology needed to solve the problems found in the diagnosis (in this case, seeds which improve the rural farmers' production capacity and which can be produced locally are desired).

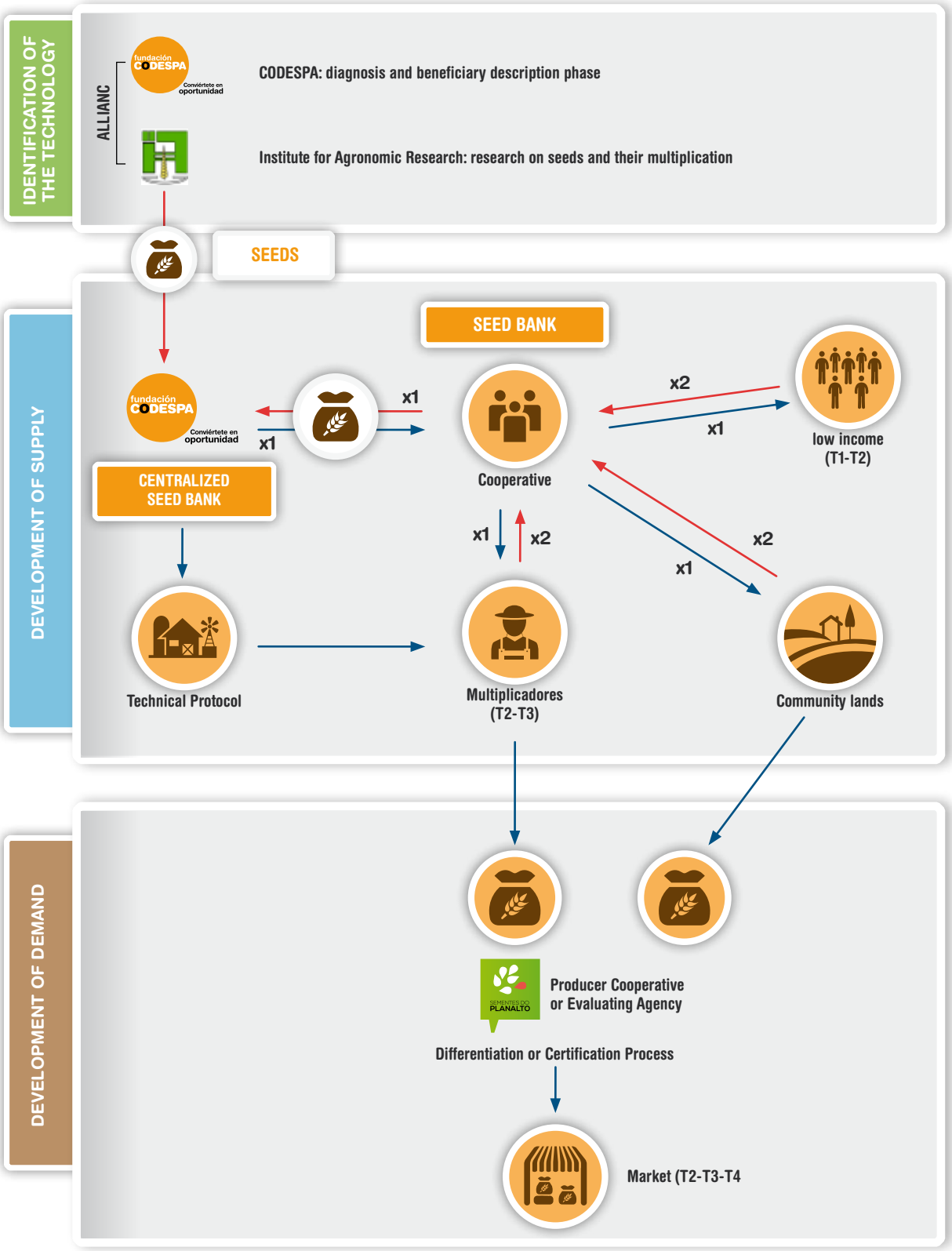
This first phase aims to pour the foundation which will act as a base for the development of the project. It is in this first phase that the problems of the beneficiaries and the causes of said problems should be identified, as well as writing a detailed description of the beneficiaries to which action is directed. In addition, it is crucial to draft, from the project's start, a plan and system to evaluate and follow-up on activities, as well as for measuring the impact generated. It is additionally necessary to identify the farming associations or cooperatives which are to benefit from the intervention.

Later, the process of identifying the technology which will be used for project development is undertaken – the base seeds which will be used for all the multiplication procedures and which will supply the Cooperatives' seed banks (as shown in the chart below). In this process, in addition to the local NGO, an external agent specialized in seed validation and multiplication processes should be involved (public or private institute, or private company) to offer guarantees on the seed which will be used for the program. Additionally, the technical protocol for seed multiplication with small producers shall be defined.

Secondly, and once the beneficiaries and the technology have been determined and described, the supply development phase begins. In this phase, continuous work is undertaken with cooperatives and small seed producers to establish a local seed production system which increases the volume of quality seeds in rural communities. To this end, CODESPA will install field schools in the communities to provide training on the seed multiplication protocols established in the previous phase. In addition, seed banks shall be established in the communities and skills for their management shall be developed within the farming associations or cooperatives.

Simultaneously, once the supply of quality seed has been stimulated, it is important to ensure access to the market and promote demand in order to guarantee the absorption of the seeds by the market. To accomplish this, a seed demand strengthening and promotion phase (which shall be detailed below) is undertaken in rural markets by defining a seed differentiation strategy (through packaging, a proprietary brand, etc.), as well as the development of a promotion and dissemination strategy for these new products on the market.

CHART 3. METHODOLOGY SCHEMATIC ON THE RURAL MARKET DEVELOPMENT OF SEEDS



Source: Compiled by authors

The ideal timeframe to execute the methodology is three years, promoting the creation of supply and demand simultaneously.

TABLE 5. TIMEFRAME FOR THE ESTABLISHMENT OF THE METHODOLOGY

MINIMUM INTERVENTION TIMEFRAME												
Dates	Year 1				Year 2				Year 3			
Actividades	1	2	3	4	1	2	3	4	1	2	3	4
Phase 1. Diagnosis. Why?												
Step 1.1. Diagnosis of agricultural systems												
Step 1.2. Description of the beneficiaries												
Step 1.3. Identification of the problems of the seeds												
Phase 2. Identification of the low-cost technology What?												
Step 2.1. Technical validation process												
Step 2.2. Financial validation process												
Step 2.3. Anthropological validation process												
Phase 3. Development of the supply												
Step 3.1. Identification of cooperatives and multipliers												
Step 3.2. Acquisition of base seeds												
Step 3.3. Growing process												
Step 3.4. Creation of the seed banks												
Phase 4. Development of demand												
4.1. Differentiation and certification process												
4.1.1. Description of the client												
4.1.2. Price setting policy definition												
4.1.3. Definition of positioning strategies The Sementes do Planalto case.												

Source: Compiled by authors

METHODOLOGY APPROACHES: MARKET DEVELOPMENT AND PARTICIPATORY RURAL LEARNING

In order to understand the intervention methodology, it is necessary to become familiar with the approach behind it. All the steps which guide this methodology are based on two interdependent approaches which give sense to the project and contribute to its sustainability:

1) Rural market development for the introduction of low-cost technologies.

2) Participatory teaching and learning methodology based on the concept of rural facilitation, using the field school as the main instrument.

Both are included in the search for market-based sustainability and in the generation of incentives for local players who intervene. At the same time, they are developed through a training methodology and process which allows, gradually over a period of three years, all players to function autonomously within market dynamics.

1. Rural market development for the introduction of low-cost technologies

The rural market development methodology was used as a mechanism to satisfy a fundamental need, just like the improvement of food security for rural families and, in addition, it was used as a mechanism which was integrated into the intervention to guarantee the project's sustainability, developing the local production capacity and assuring enough incentives for the participating players, with the aim of keeping the process going strong after the development intervention activities finalize.

THE ROLE OF NGDOS IN MARKET DEVELOPMENT

One of the biggest aspects considered in rural market development for a low-cost technology is the role that NGOs have in said development.

The creation and development process of a rural market requires, as shall be seen throughout the section on methodology, exhaustive work identifying the players that can carry out the necessary roles for the market to work (supply, technical support, transport, amongst others). Depending on the context, these actors will exist or not – and their skills will be different. Therefore, when a rural market development project is designed, it is necessary to consider what the role of the NGDO will be, how it will proceed when it is time to energize that market, how much time intervention will last, and what the exit strategy will be.

There is the general tendency for NGDOs to intervene as little as possible within the market dynamics so that it remains unaffected when the project finalizes. This role is known as that of "facilitator" or "stimulant."

Nevertheless, there are poverty contexts in which public or private players are not yet present in the territory and thus do not participate in any part of the productive chain. In these contexts, the development NGO can assume a role; however, in these cases, an exit strategy must likewise be defined so that the market will later function with local private actors.

For this project in Angola, and because of its complexity and the nonexistence of an agent who could take on the role of Technical Support and that of developing the seed certification process, it was decided that CODESPA should actively participate in the market development. For the exit strategy, CODESPA created economic incentives in order to motivate another agent to take on the role that CODESPA had been carrying out within the market dynamics. In this case, and as shall be seen at the end of the document, the substitute for CODESPA was an agency whose creation was semi-endogenous: Sementes do Planalto, a cooperative of seed producers which was promoted in the project.

The search for and generation of incentives of an economic and non-economic nature is sought so that private players on rural markets satisfy needs while obtaining, as a result, economic benefits.

This logic is executed in an environment in which there is significant latent demand for a product (low-price, quality seeds) that the supply is not able to keep up with as a result of a market failure (price, location, advertising, etc.) or, similarly, as a result of not being able to do so profitably. That is to say, at the moment, for the suppliers who are on any given market, it is not profitable to sell quality seeds at the price that the

majority of the small, rural farmers can afford. Therefore, CODESPA developed a strategy which allowed for the creation of a new business unit for new suppliers (small producers or multipliers): quality corn, bean, and soybean seeds produced locally to satisfy the great demand inherent to quality seeds.

In truth, the aim was for the market to satisfy the seed needs of small producers, thus avoiding welfare dynamics and trying to generate in the beneficiaries a sense of "ownership" of their development. Thus, in this approach there is also an objective of preserving the dignity of the small, rural producer and making him/her part of these market dynamics – dynamics which, for any number of reasons, he/she can be excluded from.

This approach is permanently applied to the entire model: (1) in the improvement of the seeds: through the creation of small businesses with rural farmers and via a technical protocol which is adapted to the socio-economic situation of the small producers, (2) in the seed banks (see Practical Case 1): generating a credit-in-kind market which turns reimbursement into income, and (3) in the purchasing of recycled metal barrels for grain storage: developing the entire micro-storage supply chain which begins in Luanda and culminates in sales in small, rural shops (see Practical Case 2).

Marta, a field technician working for CODESPA, teaching soybean production management in the village of Katapi (Katabola, Bié)

As shall be seen, this income shall be used to buy new seed storage mediums, as well as new seeds, in order to avoid their loss of quality.

As can be seen in the following box, the sustainability of CODESPA's model is based on the fact that the different players have incentives which motivate them to carry out their role. To this end, and as shall be seen in the demand development phase, *Sementes do Planalto* has arisen as a for-profit organization to replace CODESPA in the project and provide sustainability for the intervention actions.

CHART 4. INCENTIVES FOR THE PLAYERS OF THE RURAL SEED MARKET

PLAYERS	INCENTIVES
Institute for Agronomic Research	Execution of its functions and increase in its research ability, as well as improvement of its seed programs.
fundación CODESPA Conviértete en oportunidad	Agricultural development mission, improvement in food security, and creation of socio-economic status for the Base of the Pyramid.
SEED BANK Rural cooperatives	Provision of services to members of cooperatives. Income generation through seed bank.
Multipliers	Creation of a micro-business for seed multiplication and increase in income.
Community land	Investment for vulnerable rural farmers. Increase in seed base. Dissemination of agricultural practices.
Low-income rural farmers	Access to quality seeds. Increase in food reserves. Increase in products for the market.
Sementes do Planalto	Provision of services to its associates. Generation of income through certification.

Source. Complied by authors

Making cobs of corn into flour

2. Participatory teaching and learning methodology based on the concept of rural facilitation, using the field school as the main instrument

> **"There are not better or worse forms of intelligence. There are different forms of intelligence."**
>
> **Paulo Freire.**

In the entire process which requires the execution of this methodology, training is necessary for the different intervening players. All of them are, generally, rural farmers with a low level of studies (some of them are literate), with great resistance to change and skills for retention based upon images and practice. It is because of this that it is fundamental to use learning mechanisms based on practical teaching for adults. Therefore, mechanisms for approximation based on the concept of participatory rural facilitation should be used to seek the forming of a collective knowledge base amongst the rural farmers and, likewise, an approach based on comparative experience.

In this case, this methodology is based, additionally, on the use of the field school[18] as a fundamental teaching instrument for all phases of training: both in training multipliers and in training the different technicians who participate in the seed banks. As shall be seen throughout the entire methodology explanation, there are four important points which must be taken into account in the teaching and learning model and which are included in all training contents:

(1) Knowledge construction: CODESPA does not create knowledge and teach it; instead, it constructs knowledge based upon the experiences of its technicians and those of the rural farmers themselves. Nobody knows more about the circumstances which drive the rural farmers to adopt certain practices than they themselves do. There is always some type of logic (no matter how complex it may be) which determines the adoption of a practice. If that logic is not understood and the factors conditioning it are not modified, change will not be achieved.

(2) Use of local dynamics: in order to transmit knowledge, it is fundamental to use dynamics from the rural farmer's daily life to illustrate the different concepts you wish to teach. This should be done simply and visually.

(3) Adoption of new practices: it is fundamental to come to an agreement in which the rural farmers feel comfortable; you cannot force the use of practices if the rural farmer does not agree with them and is not convinced of their practicality. It is preferable to be flexible in the practices rather than facing head-on opposition.

(4) The use of experience in all learning processes: it is fundamental to base all adult learning in rural areas on practical situations.

> **"What is heard is forgotten; what is seen is remembered; what is done is learned."**
>
> **Said in Umbundu.**

For all of this, it is crucial to systematically support the rural farmers. Training is not worth anything without permanent support to help the new knowledge to be put into practice. Concepts in the field must be repeated. To this end, the methodology of the field school allows for the creation of spaces of dialog which facilitate discussion and subsequent reflection on the results of the learning processes.

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17 Methodological guide for the development of field schools. FAO, El Salvador. 2011.

Field school organized by CODESPA for the Katapi Cooperative in Katabola, on the management and use of soy milk

The field school is a place without walls; it is located on the land of the rural farmers themselves. Inside, comparative test fields are created and participatory dialog is generated to debate and construct cooperative learning based on the facilitator's role as guide.[19] The majority of training will take place in these schools.

All these concepts shall be elaborated upon in the methodology development section, which is to come. Below, each one of the methodology phases is detailed.

19 *Caderno de formaçao, Desenvolvimento Rural Sustentável. FAO AECID - Angola. 2011.*

PHASE 1. DIAGNOSIS

Before carrying out an intervention, it is necessary to carry out diagnosis to allow one to understand the problems, the situation that the project is up against, and the information necessary for its execution.

"Identifying a problem correctly is 50% of the solution. Doing this incorrectly is 100% of the failure."
Borja Monreal

1.1. PRE-IDENTIFICATION OF THE PROBLEMS IN RELATIONSHIP WITH THE AGRICULTURAL PRACTICES

The first questions which arise are: why have we found that, in order to improve food production in a certain intervention area, we have to improve the seed production system? What criteria must we take into account to carry out a project based on this methodology? Diagnosis is the tool which answers these questions.

The methodology recommended to carry out this diagnosis is the Diagnosis of Agricultural Systems methodology (DAS),20 based on comparative agriculture from the French school of thought. This methodology understands family agriculture as a part of a complex system in which it is fundamental to understand the social, economic, and agro-ecological contexts to be able to offer solutions to the problems that this type of agriculture faces.

The following steps summarize, in general, said methodology:

1. Agro-ecological definition of the intervention area.
2. Definition of the different agricultural, livestock, and forest systems.
3. Description of the types of the producers based upon the different systems identified previously, the investment capacity, the availability and use of natural resources, and the availability of family labor.
4. Strategies for intervention and improvement in each one of the aforementioned types.
5. Relationships amongst the different types to be able to establish an open flow of knowledge exchange.

To carry out this diagnosis, the following tools are recommended the details of which can be found in the DAS manual:

- **Study of secondary sources** – studies carried out by other organizations in the same intervention area.

- **Focal groups divided by sex** for (a) identification and discussion on the main production problems that the community faces and (b) drafting of a community map showing natural resources that the community has at its disposal, divided between men and women: this tool allows us to have an idea of the resources that the community uses and evaluate them based upon the importance that the individuals themselves give them. In addition, it will be necessary to draft a list of crop priorities to be able to define the crops with which work shall be carried out.

20 *Diagnostic Analysis of Agricultural Systems. Methodological Guide. Carlos Enrique Guanziruli, 2006*

- **Venn Diagram:** with this tool, the key players within the communities are identified, as well as their relationships (positive or negative). It is a good idea to use this tool in relationship with the specific problem at hand in order to understand the interaction of all these players in relationship with said problem.

CODESPA executed participatory diagnosis through adaptive dynamics.

- **Problem and solution tree:** once a problem in relationship with food security is identified, it is a good idea to go ahead with a problem and solution tree. It is very important to center this tool in such a way that the problems to be focused on the intervention guides the actions which are expected to be carried out.

- **Transect:** this was a crucial tool for this project. Based upon the focal groups and community maps, some individuals who have proven higher skills and knowledge on the realities under study should be chosen, and a walk should be taken – together with the chosen person or persons – over one of the paths identified in the map. With this process, information on agriculture, the soil, the water, and the agricultural practices – amongst other things – should be obtained.

- **Specific focal group on agricultural processes and practices:** an open dialog about agriculture and the problems that farmers face should be established. The crops should be prioritized in order of their importance (for food and for the market). To accomplish this, a very simple dynamic can be set up, this being adapted to the target individuals, by arranging the different products (corn, soybean, etc.) and giving each person a stone to be placed in front of the most important crop for food and the most important crop for sale – said crops being within the individuals' production capacities and possibilities. Once the crops have been selected, an information gathering process on the agricultural practices the individuals use should be undertaken.

- **Survey for producers to confirm the producer types defined in the description of the beneficiaries:** this survey should look for data on the availability and use of income (from agriculture and from external sources), the availability and use of the land, and that of family labor force.

All these dynamics can be found in the diagnosis of agricultural systems manual and in the participatory rural diagnosis manual.

1.2. DESCRIPTION OF THE BENEFICIARIES

Within this diagnosis, it is fundamental to describe the beneficiaries and the types of farmers in the intervention area and group. One of the most common mistakes when identifying the beneficiaries and, therefore, when strategically defining each beneficiary type, is a failure to appropriately classify beneficiaries – placing them all together under the label "small producer" or "rural farmer."

To this end, it is fundamental to classify the different types of producers depending on the sociological family characteristics, the use of natural resources, the different crop systems, the investment capacity and purchasing power, and even the agricultural sophistication and use of technology. In truth, and simply speaking, we must classify the rural farmers based on the three fundamental economic factors:

1) Land factor, or management of natural resources.
2) Capital factor, or economic ability/investment capacity.
3) Work factor, or the true availability of labor.

The aim behind distinguishing all these factors is to create beneficiary types to be able to design – for each type – a specific intervention strategy. In addition, two variables must be evaluated:

(1) the response to innovation of each individual: if there is innovation of any type, it cannot be experienced by subsistence farmers for two reasons: minimization of vulnerability risks and resistance to change.

(2) the workflow and, therefore, knowledge flow amongst the different types (or categories) of rural farmers. In this case, the subsistence farmers work as day workers during a certain time of the year on the land which belongs to rural farmers with diversified crops. Possibly, in order to modify the work patterns of the former group, it may be more effective to work with the latter group.

In the intervention area, with the support of the studies carried out by FAO's TERRA Project, four types of producers were identified which – as can be seen in table 6 (from the least to the greatest state of agricultural sophistication) – had a series of characteristics and a series of strategies associated with them. The first type consists of farmers who are strictly subsistence farmers, without crop diversification and without investment capacity. The fourth type is where the farmers with diversified crops are listed, having income crops and a higher investment capacity.

Likewise, these types can be found – to a greater or lesser degree – in all the cooperatives with which the project has been executed. To this end, it is necessary to identify the type of producer individually to be able to direct the different strategies to each producer type.

This identification process was carried out based upon the "Diagnosis of Agricultural Systems" methodological scheme, through a recent poll of rural farmworkers, after having modeled (identified types) to authenticate the results of the entire diagnosis.

Chikelo Market

TABLE 6. DESCRIPTION OF BENEFICIARIES

	TYPES OF PRODUCERS	FAMILY CHARACTERISTICS (WORK FACTOR)	USE OF RESOURCES (LAND FACTOR)	FINANCIAL CAPITAL (CAPITAL FACTOR)
T1	**Small family subsistence farm, in a high vulnerability situation**	Families with low availability of labor: recently married youth, widows, elderly people, people with war injuries. Day-workers	UAA[21]/family assets ≤ 0.45 ha. Sandy land with rain-fed agriculture. Without access to irrigated land, or access is extremely limited	Very limited. Without agriculture investment capacity
T2	**Small family subsistence farm, diversified and with a certain degree of stability**	Middle-level availability of labor: the majority of the families have children	UAA/family assets ≤ 0.8 ha. Sandy land with rain-fed agriculture. Land near the rivers and some land on riverbanks with access to irrigation	Very limited, but stable. Small agriculture investments (labor, fertilizer, etc.)
T3	**Intermediate-level farm, stable and diversified, sometimes with a certain degree of specialization**	Capable of hiring sporadic labor: large families which are recognized within the community	UAA/family assets > 0.8 ha All types of land, including land with access to irrigation	Limited. Capable of temporary hiring and other small investments
T4	**Diversified and specialized family farm**	Capable of hiring permanent labor: large families with purchasing power	UAA/family assets > 2 ha with all types of land	Stable and with investment capacity in both production and sales

Source: Compiled by authors.

To this end, it is fundamental to clearly understand what type of rural farmers are the direct beneficiaries of the project, as well as which are the secondary beneficiaries. This project's aim was to improve the food vulnerability situation of the t1 and t2 rural farmers, and to give them quality seeds which will help them to increase their production. To accomplish this, the project makes use of the greater technical and economic skill of the t3 and t4 groups and promotes, amongst them, the creation of micro-businesses to multiply quality seeds.

Husking the corn. Nova Esperança Tchihanha Cooperative in Ngove, municipality of Caála (Huambo)

21 Usable Agricultural Area - the surface area of land used for production by a farmer.

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THE NEED TO IDENTIFY THE INTERVENTION STRATEGY FOR EACH TYPE OF BENEFICIARY

The project was aimed at promoting the creation of businesses with the more advanced rural farmers so that they would produce seeds at reasonable prices for the more vulnerable rural farmers, with the final target of increasing agricultural production.

The problem was identified with the first seed harvest: the quality of the seeds was so high that their price was at an intermediate point between the certified seed price and the grain price. In the case of soybean, the seed reached a price of 250 AOA/kg (2.5 USD) – a price that the vulnerable rural farmers were not able to afford as they did not have such high income. Therefore, the first year, it was possible to conclude – with nothing more than a simple sampling of seed sales – that only the rural farmers who were already at an advantage were being benefited. The response, as shall be seen in detail in the supply develolearpment section, came with the installation of seed banks in order to allow the more vulnerable farmers (t1-t2) to have access to seeds through credit-in-kind.22

That is to say, through a beneficiary description and classification process, we were able to define strategies which fit with each group, supply the seed market in an affordable way considering the purchasing power of the t2, t3, and t4 groups, and establish a credit-in-kind system to fulfill the seed needs of the t1 – t2 groups without the need to pay in cash – instead, we used a reimbursement scheme which equated to the return of 2 seeds for every 1 seed provided.

1.3. DIAGNOSIS OF THE SPECIFIC PROBLEMS IN RELATIONSHIP WITH THE SEED

Now, it is necessary to discover if the food security problems found in the community are related to the lack of seed quality or to other problems. To accomplish this, it is considered to be necessary to carry out a series of activities in which the beneficiary communities are involved – and which will be used to identify the direct incidence of seeds in production, as well as the practices used to select and store seeds:

1. A comparative, participatory study of germination and production capacities between the local seeds used by the vulnerable rural farmers and the imported or improved ones on the market.

   In the event that there is enough time and ability, this study should be accompanied by an analysis of the correlation between the incidence of the seeds in production in a set number of fields with similar edaphoclimatic conditions (with the same types of land, seed density, fertilizing conditions, and crop management systems). This analysis shall be used to prove the difference in terms of germination and production of the two seeds and, therefore, the possibility of production improvement via a change in seeds. As can be seen in the following table, the difference in productivity in the case of the study was so disproportionate in terms of the use of some local seeds and the other improved ones that this was considered to be enough to determine that the reason for the low production was the nonexistence of quality seeds in the rural, isolated communities of Huambo and Bié (see Table 7: Comparison of production with local seeds produced without protocols and local quality seeds produced under the project with protocols).

22 *Loan based on the concept of the provision of one agricultural supply and its return based upon the amount of product initially provided.*

In addition, as has been seen previously, intervention in the storage means for grain and, therefore, the seeds, was considered to be critical. Comparative studies were carried out between the traditional storage methods (raffia sacks or silos made by braiding leaves) and those methods proposed by CODESPA (recycled metal barrels with a hermetic lid – box 2: comparison of storage systems).

In order to consider the relevance of carrying out a seed project with these characteristics, a correlation of at least 20% must be found between the seeds and production improvement (also taking into account the incidence of the price of seeds in the total production cost).

TABLE 7. COMPARISON OF PRODUCTION WITH LOCAL SEEDS PRODUCED WITHOUT PROTOCOLS AND LOCAL QUALITY SEEDS PRODUCED UNDER THE PROJECT WITH PROTOCOLS

AGRICULTURAL YEAR 2012/2013: COMPARISONS IN THE PRODUCTION OF 1 HA OF SOYBEAN WITH DIFFERENT SEEDS					
	Surface area planted	**Seeds used**	**Plants germinated**	**Production**	**Food result**
Local seeds	1 ha	30 kg	38,000	240 kg	High food vulnerability. Enormous expense in acquiring food in high price seasons (average and planting period) Duration of the harvest < 3 months
Seeds produced by *Sementes do Planalto*	1 ha	30 kg	78,000	1,400 kg	The family has a food reserve which guarantees food for the entire year, and market access

Source: Compiled by authors

TABLE 8. COMPARISON OF STORAGE SYSTEMS

AGRICULTURAL YEAR 2012/2013 FINANCIAL COMPARISON OF A HECTARE OF SOYBEAN WITH DIFFERENT STORAGE SYSTEMS						
	Soybean production	**Own consumption**	**Loss in storage**	**Amount sold * price**	**Financial result**	**Food result**
Without storage (the most common practice)	600 kg	0 kg Because storage systems do not exist, the entire production amount goes to the market	0 KG	600 x 70 AOA The sale price in the harvest season is lower than the entire year because of the abundance of the product on the market	42,000 AOA (€300)	High food vulnerability. Enormous expense in acquiring food in high price seasons (average period and planting period)
Storage for three months with traditional systems	600 kg	100 kg As these systems do not guarantee very prolonged periods of conservation, large amounts are not stored	125 kg In three months of storage, a loss of an average of 25% is registered due to all of the risk factors	375 x 100 AOA The sales price of the average period reaches 100 AOA	37,500 AOA (€267)	The family has a small food reserve which doesn't guarantee getting through the months referred to as the "hungry season"
Storage for nine months with barrels	600 kg	200 kg Barrels can store throughout the year	0 kg In periods of nine months there has been no losses	400 x 250 AOA The sales price reaches 250 AOA in the sowing period	100.000 AOA (€566)	The family has a food reserve during the year, including months of higher incidence of food insecurity (January and February)

Source: Compiled by authors

2. A basic market study which allows for analysis of the availability and access to improved seeds on the local markets by vulnerable rural farmers in the intervention area. In order to carry out intervention actions based upon this methodology, the results obtained should point towards the lack of seed availability and access to seeds by local producers (or, to put it another way, there should not be seeds on the market and, if there are, the prices should be too high).

3. A short comparative study on agricultural practices for the maintenance and conservation of seeds. It is necessary to understand the practices used to produce, select, and conserve seeds by the small producers and the possibilities for improvement which can be proposed to this end in all the phases during the production process. In this study, the existence of deficiencies in the practices used by the rural farmers should be verified in terms of the production, conservation, and maintenance of grain seeds and, as a result, there should be a technological package for improvement in said practices.

DIAGNOSTIC STEPS AND TOOLS

STEP	TOOL	AIM	RESULT
1.1. Diagnosis of Agricultural Systems (DAS)		• Identify the agro-ecological profile of the region • Identify the agriculture systems • Identify the rural farmer types • Define strategies for improvement • Identify knowledge exchange relationships between types	• Agro-ecological profile designed • Table of agriculture types and systems • Table of knowledge exchange flows • Table of problems and intervention strategies
	Study of secondary sources	• Obtain agro-ecological data • Begin to define agriculture systems	
	Focal groups for the identification of problems	• Identify the community's problems and the possible solutions • Support the agro-ecological profile • Identify the priority crops	• Problem and solution tree • Map of community resources • Identify the priority crops
	Venn Diagram	• Identify the players, their relationships, and their intensity	• Sociogram of the players who intervene in the community
	Transect	• Define the agro-ecological profile • Compare the community facilitator's vision with the map drafted by the beneficiaries	• Agro-ecological profile of the community
1.2. Description of the beneficiaries	Poll producers	• Identify producer types	• Table describing beneficiaries
1.3. Identification of the problems of the seeds		• Identify the problems of the seeds used and their incidence factor in production • Identify the possibilities for improvement to this end	• Comparative table on maintenance and conservation practices for seeds • List of factors which condition the market
	Comparative and participatory study on seeds	• Identify the germination and production capacities of the seeds	• Germination rate of seeds in field conditions
	Seed market study	• Identify market deficiencies in terms of seeds • Identify market dynamics (formal or informal) in relationship with seeds	• Seed price table • List of seed points of sale
	Study on agricultural practices for the maintenance and conservation of seeds	• Identify the traditional agricultural practices for seed management • Identify the proposals for improvement in relationship with the agricultural practices in order to improve seed quality	• Comparative table on practices by agricultural phase, and proposals for improvement in each phase

PHASE 2. IDENTIFICATION OF LOW-COST TECHNOLOGY

In order to identify a low-cost technology which can solve the seed access problems faced by small producers (t1 and t2), three fundamental questions must be analyzed:

(1) technical verification of the technology
(2) social or anthropological validation
(3) financial validation

To accomplish this, it is necessary to keep the supply and demand point of view in mind in each one of these three aspects. If a point of balance is not found in the three steps in terms of financial feasibility – for both the seller and the buyer – the seed market development project will not prosper.

Likewise, it is also important to take into account the specific seed market factors in Angola detailed previously in the context section. This methodology is designed to identify and develop seeds that can meet the demand of the rural farmers with low levels of resources; therefore, the aim is not to multiply certified seeds – instead, we wish to improve the seeds on the informal market and offer an intermediate alternative between the formal and the informal market: the Quality Declared Seed.

CODESPA teaching the members of the Talamangolo Cooperative at Andulo how to weigh seeds

2.1. TECHNICAL VALIDATION PROCESS

The first of the phases is, in this case, one of the most complicated ones: technical validation. In this methodology, the identification of seeds which have a germination capacity, purity, and cleanliness greater than 80% and which allow for a 20% increase in production capacity when compared with the seeds traditionally used by the rural farmers is to be sought. In order to accomplish this, a research phase should be undertaken alongside a research institution in the country and/or through experimentation in the field.

Once the crops with which work shall be carried out are identified (corn, beans, soybean, etc.) an analysis should be undertaken (through the focal groups formed during the aforementioned diagnosis phase) of the varieties existing on the market in order to be able to choose the varieties which will be studied. A germination test for all the varieties is recommended, as well as experience alongside a specialized research institute which can validate the seeds which best adapt to the needs and capacities of the local producers (tool: seed variety study). To accomplish this, the four basic criteria for seed quality should be taken into account:

- Physical quality: homogeneity, physical appearance of the size, color, and shape, cleanliness and integrity of seeds.
- Physiological quality: germination capacity and robustness.
- Genetic quality: purity and adaptation to the land, climate, and resistance to pests and diseases.
- Phytosanitary quality: nonexistence of transferable diseases and absence of pests.

2.2. SOCIAL VALIDATION PROCESS ADAPTED TO THE BASE OF THE PYRAMID

The technical verification criteria must be amended with the usage adaptations of these seeds in terms of the handling conditions and capabilities of the rural farmers. That is to say, it is necessary to adapt the seed use to the production system of the small producers, which normally consists of a low availability of labor, scarce use of technology, unreliable water resources, and scarce fertilization – amongst other aspects. Therefore, it is necessary for the seeds to fulfill certain requirements described in the following table both in terms of supply (in relationship with the small producers who grow these seeds), and in terms of demand (in relationship with the small producers who acquire these seeds).

TABLE 9. TECHNICAL CRITERIA THAT THE SEEDS MUST UPHOLD BOTH IN TERMS OF SUPPLY AND DEMAND

SUPPLY	DEMAND
High capacity to adapt to stress brought on by a lack of water or an abundance of water	High germination capacity: > 80%
Low fertilization requirements	High degree of purity: >80%
Adaptation to the area and tested in the edaphoclimatic conditions of the small producers' environment	High degree of cleanliness: > 80%
Low incidence of pests	Low fertilization needs

Source: Compiled by authors

This second step is fundamental in the development of new products for the Base of the Pyramid. In this case, as the seeds are intended for mass production for future customers, it is not necessary to study the future perception of the product. Nevertheless, it is important in the diagnosis process to identify the seed varieties which are most valued both on the market and by the consumers, as there may be varieties that are not accepted on the market due to their color, shape, or flavor.

Need to contrast validation with the growing conditions of the small producers

While there are varieties which are well accepted on the market, as is the case of the "feijao manteiga" crop, it is always necessary to carry out prior tests on the crop's adaptation to multipliers' or small producers' conditions.

Experience in the growing process for this variety of crop was not positive in the majority of the cases when the variety was multiplied due to an excess of (or scarcity of) rain, pests, early or late seeding, or other various reasons.

The learning was that, although it was an accepted variety, it was an extremely sensitive crop and brought about serious difficulties for multiplication on the small producers' level. As a result, it was decided to experiment in other fields with producers of a higher level to try to extract knowledge for future years.

2.3. FINANCIAL VALIDATION PROCESS

In this step, it is necessary to validate the financial aspects of rural market development model, ensuring both the profitability obtained by the seed producers or multipliers and the ability of the farmers to access the seeds at market price.

On the supply side, it is necessary to develop a financial feasibility plan and a business plan for seed multipliers based on a seed price setting strategy. The most common way is to establish an intermediate price between the price of certified seeds and that of informal market seeds as a base for the financial model.

In addition, it is important to take into account the product's scalability. For a low-cost technology to be profitable for the sellers there must be a very high potential demand. These rural markets with low-cost technologies are volume markets in which each product has a very low margin. This makes it necessary to sell a high volume of the product.

Manuel checking the mill's workings to process corn

To this end, it is important that this product scalability is also considered from both points of view: supply and demand. The product has to be produced by a considerable number of multipliers to be able to generate the competitive conditions that obligate low price setting. In the case of quality declared seeds, this is a product which is perfectly scalable, both in terms of demand (when production is increased, seed purchasing is increased) and supply (when demand increases, the producers will increase supply).

To satisfy the financial criteria in terms of demand, it is mainly necessary for the seeds to meet the following requirements:

1. Accessibility: the main problem that the project must solve is that, in rural areas, availability of quality seeds does not exist. That is to say, the rural farmers in the intervention area are not able to buy quality seeds at the markets they go to in order to improve their crop conditions. Therefore, it is strictly necessary for the seeds to be for sale at what is known as the "last mile;" that is to say, a point which is accessible for small producers from rural areas.

2. Affordability: another problem for the development of this market is making an affordable product for the target consumers (t1-t2). The affordability of a product does not solely depend on its price. Instead, it also depends on the purchasing power that the potential client has and on the financing methods the customer can access in order to acquire the goods.

   Therefore, it is necessary to contrast the data compiled in the investment capacity stage for each type of producer and, thus, be able to ease the mechanisms which allow consumers access to the seeds produced within the framework of the project.

Once again, it is necessary to verify that the technology meets the basic financial criteria both in terms of those selling and in terms of those buying.

TABLE 10. FINANCIAL CRITERIA FOR SELLERS AND BUYERS

SUPPLY	DEMAND
Product scalability. Volume of market	Accessibility and proximity to the end customer
Financial profitability based on a feasibility plan	Affordability based on the price and acquisition and/or finance methods
Intermediate price setting strategy between the certified seed and the informal grain	

Source: Compiled by authors

STEPS AND TOOLS FOR THE IDENTIFICATION OF THE TECHNOLOGY

STEP	TOOL	AIM	RESULT
2.1. Technical verification	Crop experiment sheet	This sheet's aim is to structure experimentation and validation processes with different seeds. In the sheet, the different experiences and their field results should be logged (studies on varieties, densities, fertilization, photosensitivity, etc.)	The result after using this tool should be the identification of the seed varieties which are adapted to the rural farmers' production conditions
2.2. Social validation adapted to the base of the pyramid	Field seed tests with producers	Test that the seed and its growing methods are in line with the possibilities of the target group	Validation of the seed's adaptability and its growing process in terms of local ability
2.3. Financial Verification	Seed multiplication business plan	Analyze the costs and income from the multiplication business with small producers	Analysis of the profitability of the multiplication business for the small producers

Women from the Katapi Cooperative, located in Katabola, singing and dancing

PHASE 3. DEVELOPMENT OF SUPPLY

3.1. IDENTIFICATION OF COOPERATIVES AND SEED MULTIPLIERS

a) Identification of the cooperatives

One of the most important steps to get the project off the ground is identifying the agriculture and livestock associations and cooperatives that work will be carried out with. It is fundamental to identify farming cooperatives which meet minimum criteria in terms of unity, cohesion, and size, allowing the resources available for the project to be optimized.

In the case of CODESPA's intervention in Angola, the following criteria were considered, depending on the environment and the resources for the project:

1. Greater than 50 members.
2. The majority of the producers must be classified as t1-t2 (at least 60%).
3. Logistically accessible for those who are going to execute the project.
4. Minimum organizational and management structure which allows for the establishment of continued contact, as well as management of project processes.
5. The legalities of the association or cooperative were not an influential factor for this type of project in Angola.

Area surrounding a village in Chikelo

CODESPA provides training on soy milk through the field schools

These criteria, or similar ones, can at times cause setbacks for the participation of women in the projects. Therefore, it is necessary to identify these limitations and propose solutions which allow for the participation of women in seed production – in this case – and in the creation of micro-businesses. One measure is to promote seed production through the grouping of women, this being done on individual pieces of land or collectively on community lands.

The better the cooperatives are known, the better the work which is later undertaken with them will be. Therefore, it is recommended to use the cooperative analysis tool.

One of the problems that can be found when identifying cooperatives is the significant influence of local authorities which exists in certain locations so that specific cooperatives are chosen due to personal interests (family members, acquaintances, etc.).

In the cooperative identification process, generally, the first source of information is the list of associations and cooperatives from the agriculture and livestock extension services. These services can also be of great help in this identification phase, but it is very important to carry out a verification process on the information with other players in the area (NGOs, Community Based Organizations, etc.) when selecting the cooperatives, as special interests on the part of local actors are often undeniable.

Another common problem in many countries is that the cooperatives exist but aren't really working. Many of them, additionally, are created based upon village social organization and not based upon a business or productive structure.[23] In addition, many of the cooperatives – in practice – do not provide services to members and, therefore, fall victim to a de-legitimation process which can cause their disappearance. In these cases, the use of collective production lands can be promoted as a way to achieve cohesion, just as is described below.

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23 See the publication `Lessons learned and comments on support to rural, associative micro-businesses and cooperatives in a poverty context.' CODESPA, 2012. Download here.

LEARNING CODESPA

COMMUNITY LAND AS A MECHANISM FOR GROUP COHESION WITHIN THE ASSOCIATIONS OR COOPERATIVES CODESPA'S EXPERIENCE IN ANGOLA

One of the problems that CODESPA identified in Angola when working with cooperatives was the lack of cohesion and structural organization. The majority of them had been created under governmental programs or through the support of an NGDO, but they did not have a financial nature and these programs had not strengthened this aspect.

The majority of the cooperatives had no productive motivation; instead, they had been created around the concept of a village or around the concept of an extended family. Additionally, many of their members had begun a separation process due to the lack of services being provided by the cooperatives.

Within this context, and as a starting point for the beginning of the CODESPA project, the use of community land for growing with a collective purpose was proposed (provided that this was a custom which had previously existed within the rural community). This became a tremendously useful tool in terms of four main objectives:

1. *Promotion of the association or cooperative's cohesion*
2. *Improvement in the agricultural practices of certain crops, in seed production, and in the exchange of knowledge between the different producer types through the field school methodology.*
3. *Increase in the volume of seeds after an initial community field multiplication phase and, as a result, a more motivating start for the seed banks on the community level.*
4. *The increase of food reserves and achievement of profits for community projects.*

This practice was used to create the basic pillars for the project's execution in a context which was much better suited to it and with a much greater level of motivation on the part of the beneficiaries.

Nevertheless, it is necessary to point out that on a profitability level, the community fields were found not to be very profitable when compared with private plots of land. This is mainly due to the lack of control exercised on the land, the amount of labor used and individual incentives.

b) Identification of seed multipliers

The next step is to identify the seed multipliers. As we have already said previously, the multipliers should be t3-t4 producers – that is to say, rural farmers with greater investment capacity, greater ability to adopt technology, and greater knowledge. We mustn't forget that what these producers are starting is a small business – and this requires certain skills for it to work. Additionally, multiplication of seeds is a complex process that requires a much more intense degree of dedication in terms of time and work – dedication of capital and labor – than grain production does.

One of the challenges that the project faced was transforming the grain producer into a seed producer. In these rural communities, awareness of the differences between seeds and grain does not exist; therefore, there is not knowledge of production differences between the two. Generally, for a small producer, a seed is considered "the better grain." Nevertheless, this project promotes differentiated growing amongst the producers, a different conservation process, and a seed evaluation and differentiation scheme.

To this end, when selecting multipliers, the innovation factor versus the risk must be taken into account. The more vulnerable the producer's situation is, the less willing said producer will be to adopt new crops, new practices, and new technologies. These must be producers who can manage the risk of failure and this failure must not send them into a situation of greater food vulnerability. Therefore, the t1-t2 producers are not recommendable for innovation as they cannot be exposed to the risk.

Lastly, in this case, there was a transfer of knowledge between the t3 group and the t1-t2 groups, who mainly worked as day laborers for the t3 group, with the t1-t2 groups subsequently adopting the practices of the t3 groups.

AVERSION TO RISK AND ADAPTATION OF THE INNOVATIONS OF THE SMALL PRODUCERS IN TERMS OF SOYBEAN GROWING

The first project carried out in Angola to introduce and improve soybean growing was executed based upon a very simple description of the beneficiaries: differentiation was made solely between seed multipliers and rural farmers. For seed multipliers, a seed multiplying strategy was adapted with a specific technology package, and the rural farmers were simply asked to grow soybean in line with certain minimum practices.

The results for the seed multipliers were more than acceptable, with a very positive response and production improvements of more than 50%. Nevertheless, the rural farmers had very dissimilar results. Some were able to grow the soybean and others simply abandoned it. When reflection was carried out on why this had happened, there was a pattern that repeated in those who had failed: all of them could be classified as t1. When the seasons arrived which required more intensive work (fertilization, weeding, etc.), these producers decided to continue growing corn rather than soybean. The reason was quite simple: the soybean crop left them uncertain when compared with corn, which provided them with more confidence as they had been growing it for years.

The next year, when the t1 group saw the positive results of the other producers (t2 and t3, or seed multipliers), many t1 individuals adopted, through the seed banks, soybean cultivation and they were able to be successful. This proves that there are producers with greater aversion to risk due to their vulnerability, but this does not mean that they will not adopt successful practices when they can verify the success of said processes with other producers.

The incentives which exist to promote seed multipliers are the financial benefits that can be obtained based upon the sale of the seeds produced. Therefore, it is important – during the technology identification phase – to have carried out feasibility studies that guarantee the profitability of the seed multiplication business based upon the producers' production practices.

When identifying seed multipliers, it is important for not only the cooperative to participate but also the NGDO, as this will highly condition the project's results (a mistake when choosing the seed multipliers will cause problems with the amount of seeds available). Additionally, if depending solely on the leadership of the cooperatives, you will find that the seed multipliers will always be people who are related with said cooperatives.

TABLE 11. CRITERIA DEVELOPED BY CODESPA FOR CHOOSING SEED MULTIPLIERS IN ANGOLA

CRITERIA	PROOF AND INDICATORS
Honesty and commitment	– Membership in the cooperative and approval of the traditional leadership and authorities. – Performance over the previous year, in the event of already having been a seed multiplier, or participation in community land. – Participation in prior training events or induction activities carried out during the participatory seed study's diagnosis period (if a producer does not participate in the preliminary activities, said producer cannot be a seed multiplier).
Technical growing capacity	– Prior experience in growing the crop for which seeds shall be multiplied based upon the fields which are currently being exploited by the producer. This is verified through a test on knowledge related with seed production and conservation. This test can be carried out in two ways: with the use of interviewers who collect the rural farmers' responses, or with a participatory methodology, trying to represent the opinion of the majority.
Easy logistic access	– Relatively close layout of plots of land, these being logistically accessible for the project, as a high degree of dispersion complicates project execution. – In the case of Angola, and due to the enormous distances that had to be traveled in order to arrive to the headquarters of the different cooperatives, a maximum of 15 minutes in travel time was taken into account (from the cooperative headquarters). This factor should be adapted to the realities of each individual context.
Investment capacity	– Proven ability to buy fertilizers and two barrels, fronting 50% of their total value before starting to grow seeds. – In the case of Angola, the necessary investment cost is around 150 euros.
Financial independence of the seed multiplication micro-business and food sustainability, regardless of said business	– Agricultural diversification of income crops (potato, beans in great quantity, horticultural crops, etc.).

Source: Compiled by authors

At the start of the project, the maximum growing surface area for seed production was between 0.25 ha and 0.5 ha. In addition, no more than one crop was assigned per seed multiplier.

3.2. ACQUISITION AND DELIVERY OF SEEDS

The success of the intervention was based on using certified, quality seeds. CODESPA acquired these seeds and provided them to the cooperative seed banks. Seed acquisition can be carried out through an importer, a local certified seed producer, or a leading research institution in the intervention area provided they have developed a strict seed multiplication process.

The quality of the seeds acquired must be ensured, with these seeds being tested previously, during the identification phase. Therefore, the certification sheet of the seeds must be obtained. This should indicate the seed's variety and breakdown the percentages of germination, purity, and cleanliness.

It is recommended to do random sampling of the sacks acquired (at least 1 of every 10 sacks) to visually verify the seed quality and ensure that damages, diseases, or pests do not exist in the seeds.

Lastly, it is recommended to carry out, once the seeds are purchased, on a sizable sample, a germination test with each variety acquired (tool: germination test).

When handing over the seeds to the multipliers, a credit-in-kind contract with the seed banks should be signed. The seed banks shall be further analyzed in the section on seed bank establishment. The return rate for the seeds can be established based upon the agreement with the community, since a more aid-based approach could be justifiable as the seeds introduced in the cooperative are an "asset for public use" and, therefore, returns could be considered to be of no interest other than increasing the volume of seeds in the banks.

3.3. THE GROWING PROCESS

3.3.1. Establishment of field schools for seed multiplication on community land

The growing process is the key to the project's success and it is what provides the differential added value to both the seed multiplication micro-businesses and to the small producers who acquire the seeds at the seed banks or through the market.

The project started with raising awareness of the fact that seed production implies a different growing process when compared with grain production, and it requires a seed evaluation and differentiation process.

The first step that must be taken is to create a plot of land to act as an example where the training will take place and where practical experience will be garnered; that is to say, a place for a field school on seed multiplication. This piece of land can belong to one of the seed multipliers, if it is considered to be conveniently located for the others; it can be a test plot in an ideal place; or it can be a community plot of land where the seed multipliers (and even the other members of the cooperative) work to multiply seeds and increase the volume of the seed bank, as detailed below.

The key to choosing one place or another is to look for logistical convenience for the seed multipliers and the NGDO which is implementing the project, and to make sure that the location aligns with the interests of the cooperative itself and with the intervention objectives. If the idea is to substantially increase the seed volume to be able to benefit many rural farmers from the very beginning, the option of a community plot of land could be the best. In this case, it is important to keep the following recommendations in mind:

- The community plot must be granted by the entire community and, therefore, the traditional leader must give authorization. Private land generates private interests. Situations have arisen in which land was granted by private members who, upon seeing the harvest, demanded to keep it.

- The work regulations must be established in a participatory way on the community plot, as well as coming up with punishment for absenteeism.

- Prior to all of this, what to do with the plot's production should be decided upon and, in the event the plot will be used for the market, the destination of the funds obtained should also be agreed upon.

- A person in charge of managing the community plot should be named. This person should note attendance and manage technical support on the plot.

- The work in the phases in which there is greater demand for labor should be planned from the start of production. If this is not done, during these phases the community land may be abandoned.

Additionally, a datasheet on the establishment of a field school (Field School Datasheet Tool) should be filled out to describe the participating multipliers and their weekly work day (this can be weekly, every two weeks, or sporadic depending upon the planning deemed necessary for the project and the rural farmers' time constraints). It is recommended to establish a minimum of one practice session every two weeks to be able to follow up on the seed growing process.

Field school developed by CODESPA

LEARNING CODESPA

LACK OF TIME: AN EXTREMELY IMPORTANT VARIABLE

A fundamental question for work in rural communities is the use of the farmers' time. In Angola there are two limiting factors for agriculture: the capital to be invested and the availability of labor. In absence of capital, labor is the factor which determines productivity. In family agriculture, labor stems from the family which has, in addition to farming, many other priorities it must tend to. Depending on the type of farmers, they may have more or less labor or more or less time available to dedicate to farming.

A development project, on principle, must never rob a vulnerable rural farmer of his time without a clear return on that investment of time. The more vulnerable a producer is, the less availability of time he has. Therefore, the necessary incentives must be sought so that he makes time for the project. A day of work per week is already a very high demand for a rural farmer if the time is not related to his subsistence activities. This is not the case if the activity is directly involved in his food security.

An example of this principle can be found in the Katapi de Katabola Cooperative, which works community land with the requirement that each family provides one person one day per week to work. However, all the production obtained from those shared fields is used to provide members with food during the months with the highest incidence of food insecurity.

Likewise, it is important to note the adaptation of said time – not just to the producers' availability but also to the distribution of the time throughout the day. This factor especially affects the work of the women, and the timetable availability of women should be taken into account to be able to promote their participation in the development activities. Carrying out training of women outside of their workplace creates a problem which is virtually unsolvable for rural woman as they have a load of housework that they can hardly avoid doing.

At the end of this training process, two types of actors arise who can produce seed:

- The multipliers.
- The cooperative itself, deciding to produce seed on community land.

Both actors will store their seeds in the seed banks of the communities, as shall be seen below.

3.3.2. Development of technical protocols: five phases to ensure quality.

Once the teaching plot has been created, the process of seed multiplication should be made very clear. Therefore, CODESPA has created a series of technical protocols – for potatoes, corn, soybeans, and beans – which covers all the necessary elements of the process and the different phases of seed growing processes with small producers (CODESPA tool: technical protocol for the growing of corn, technical protocol for the growing of potatoes, and technical protocols for the growing of soybeans and beans).

These technical protocols are not unwavering. Instead, they are meant to be dynamic tools in which all the learning from the growing processes are included in order to adapt – as much as possible – seed growing to the small producers being worked with. Additionally, all considerations of context, as indicated previously, must be taken into account as they will condition the creation of said protocols.

Likewise, it is important to establish, for each crop and region where growing is undertaken, a calendar of activities which is agreed upon with the multipliers and which arises from a process of dialog with them. This calendar will be conditioned by:

- The seasons and rainy periods
- The planting periods for crops
- The photosensitivity of the plants
- The duration of the crops
- The fruit harvest and drying processes

Another important concept which must be understood in this methodology is the management of the different seeds, as well as their use. Therefore, a classification system has been created which allows the nature of the seeds to be understood in terms of the quality that they have. This system is summarized in the table below.

As can be seen, S0 seeds are those directly acquired from the formal seed provider (shop or research institute) and it is certified seed. It is, one could say, our base seed. This seed disappears as soon as it is grown by the multipliers and a similar quality shall never be obtained despite the implementation of the technical protocol which was developed. This is because these seeds are the result of seed multiplication with extremely advanced means, as compared with those of rural farmers, by research institutes or large commercial companies.

After said technical protocol has been implemented, two seed types are obtained: S1, the result of positive selection of plants by the multipliers, these being used in the next harvest for seed multiplication, and S2 which is the seed that comes from the rest of the multipliers' plants and which can be useful for producing grain. All seeds used for grain production result in the S3 category: this category, in the proposed system, is equivalent to grain which does not fulfill the quality standards that have been self-imposed by the project.

TABLE 12. LABELING OF THE DIFFERENT SEEDS PRODUCED UNDER THE PROJECT

PLAYERS	S0	S1	S2	S3
PHASE I				
Multipliers	**Origin:** certified seed	**Origin:** positive selection from multipliers **Destination:** seed bank and personal reserves	**Origin:** the rest of the seed production from the multipliers **Destination:** market, after quality control	
Rural Farmers			**Origin:** seed bank	**Destination:** grain for sale
Production field on community land	**Origin:** certified seed	**Origin:** positive selection from community production **Destination:** seed bank and new community land	**Origin:** the rest of the production from the community land **Destination:** seed bank and market	

Source. Complied by authors

As each crop requires relatively differentiated treatment, all the growing phases shall not be discussed for each individual variety. Having said that, it is a good idea to discuss the five main phases that make the methods used in this project distinguishable and that cause a notable increase in the seed quality for the small producers, and constitute the basis for the multiplication process:

1. Use of certified seeds

The base for the entire project is, without a doubt, the use of improved seeds which keep their germination and production capacities intact. A project of these dimensions wouldn't make sense if it used poor seeds mixed with a low production capacity as a base. However, if this is the objective sought, it is recommended to consider a local seed recuperation project which has other processes and objectives.

As has been mentioned in the low-cost technology identification phase, the seeds provided by the program are not necessarily those which produce the most; instead, they should be those which best adapt to the growing situation and conditions of the small producers. Good results are not obtained if the most productive seed is supplied and this seed requires a lot of fertilizer, or if it's extremely sensitive to water availability, or to a certain pest or disease which would require treatments that are not available or wasteful. The aim is to achieve a seed that adapts to the precarious environment at hand; that is to say, an environment with irregular rain, a lack of fertilization, etc. so as to adapt, in this way, to the production technology of the multipliers.

Almost 4 hours from Huambo, in the village of Chikelo (municipality of Bailundo, Huambo) corn is processed to become flour

2. Choice of the plot of land, period and planting density

Another fundamental factor to achieve success in the growing process is the choice of the land and the planting period to guarantee that the seed does not get mixed with other varieties and to ensure that it maintains its genetic purity. To this end, there is a series of recommendations included in the technical protocols which seeks: (1) sufficient physical separation between different variates or (2) a separation in time for planting to allow the plants to enter in their flowering or pollination phase over different time periods so as to avoid mixing. As each crop has its own time period, it is necessary to adapt to both the crops and the varieties.

Likewise, it is fundamental to verify the history of the land in order to promote more sustainable and suitable management, and to thus guarantee the best conditions for seed multiplication. Therefore, and in the event it is considered necessary due to a lack of technical knowledge, it is recommended to provide training to the communities on crop rotation (tool: contents of crop rotation training).

Lastly, from the time the agricultural activity starts, the clear difference between the growing of seeds and the growing of grain should be highlighted, as has been mentioned previously. Those who participate in this project are seed multipliers, they are not grain producers. This requires fully differentiated crop management which begins at the planting phase – and even before if a seed cleaning and selection phase is deemed necessary. Therefore, it is fundamental to start growing with training in planting density and by introducing a reduced number of seeds per point in order to avoid competition amongst plants. Normally, this is a critical point due to the fact that the conditions under which the small producers grow their crops (a low germination percentage for plants, high number of pests, etc.) have made them become accustomed to a very high planting density and a large concentration of seeds per point (tool: training contents on planting density).

3. Negative and positive selection of plants

The third factor which sets the growing process developed by CODESPA apart is the negative and positive plant selection phase, establishing the difference between S1 and S2, as has been seen in the previous table.

The principle on which this methodology is based is that the majority of the diseases or plagues can only be identified in the plant and not in the grain produced thereof. Therefore, it is necessary to identify the plants before the harvest, and it is thus necessary to have differential harvesting which allows for differentiation of the seeds with the most potential.

The negative selection process consists of periodically eliminating all those plants which have diseases and excessive pests or anomalies which can cause the seed to grow in a hostile environment, lowering its quality. This process must begin before the plants flower and continue during the entire growing process (tool: training contents on negative selection, and training plan).

Later, a positive plant selection process is undertaken in which between 12% and 14% of the plants should be marked. The idea here is to identify all those plants that have higher quality and levels of development, allowing for seeds which are free of diseases and which have the potential for greater growth and production. As a result of this positive selection, what is known in this program as S1 is obtained, also known as "seeds for multiplication" – a selection of the best seeds obtained throughout the process.

The methods used to mark the plants are varied, from cutting the cornstalk to simply marking the areas with better growth with tape or ropes. However, in the case of leguminosae, it has been considered relevant to remove some of the buds from the plants in order to favor the growth of others (tool: positive selection training contents).

4. Differentiated harvest

The last phase for growing is the differentiated harvest, stemming from positive selection. At the first moment, the seeds of the plants marked in the prior phase are picked and, later, the rest of the harvest. If, for any reason, a specific area has slower growth than the rest, it is a good idea for this area to also be picked separately so as to not mix seed qualities.

5. Cleaning and conditioning

The last phase, but not the least important, is the seed cleaning and conditioning process. Before storage, it is very important to carry out a cleaning process on the grain, eliminating impurities, dust, insects, or any other component found amongst the seeds. Additionally, a grain selection process must be carried out. If sieves with set measurements are available, this process can be carried out using them or, if this is not possible, it should be done manually.

Lastly, it is very important to respect the moisture percent before storage. Therefore, traditional moisture tests should be carried out.

Luciano next to the potato storage facility that he built himself

3.4 CREATION OF SEED BANKS

For the success of this methodology and, especially, for its impact to be transferred to the most vulnerable farmers, it is very important to create seed banks. The aim of the banks is simple: to provide access, under a credit-in-kind scheme, to quality seeds (provided by the multipliers or generated through collective land) to the Base of the Pyramid producers (t1 and part of t2).

Within the cooperative or association, these seed banks must be created with a business unit approach, with an independent management team and financial management (cash register) which guarantees its proper functioning. It is important to highlight that the main objective of the seed bank in this project is not to earn a profit in itself; instead, it is to create a self-sustainable business model that outlasts the project's duration and generates positive impact in the members of the cooperative and, additionally, gives legitimacy to the cooperative's existence.

In past experiences in many countries, seed banks have been a tool for the development of endogenous initiatives in rural communities for the management, production, and maintenance of quality seeds. However, in the majority of the cases, this has been a temporary solution which, due to different factors, has stopped working and has not been able to fully establish itself once the intervention actions have finished as a lasting solution to the structural problem of a lack of seeds.

SEED BANKS IN SUSTAINABLE COOPERATIVES

Seed banks are instruments which have been used for years in many cooperative projects as an endogenous methodology for solving the problems of seed access and availability in rural communities. Their workings, simply stated, are as follows: a seed warehouse is created, along with a management structure, and seeds are acquired and made available to producers. The storage facility acquires or receives quality seeds from a third party (NGDO, private company, etc.). These seeds can be accessed by the members of the cooperative through a credit-in-kind scheme (in general, for every Kg of seed received, the producer must give back 2 Kg). In this way, access to seeds is granted to a higher number of producers and seed volume is increased for the community.

This methodology has traditionally had problems with sustainability as it does not generate enough incentives for it to continue autonomously. To this end, the project developed by CODESPA has considerably improved the seed banks by creating said incentives. One of the errors traditionally made is the lack of income generation by the seed banks and the need for funds to cover expenses incurred in their execution (buying new seeds, buying office materials, buying storage systems, etc.). CODESPA has conceived of the seed banks as an independent business unit with the ability to generate income to cover their own expenses through the sale of grain which comes from the seeds given to a group of rural farmers with a higher purchasing power.

CODESPA has analyzed the methodology and tried to carry out an exhaustive analysis of the failures that can arise, developing an innovative system that responds to the main limitations faced and creating incentives for the methodology to sustain itself over time. The changes introduced were as follows:

TABLE 13. SOLUTIONS OF THE CODESPA MODEL TO THE HABITUAL PROBLEMS WHICH ARISE WITH SEED BANKS

FAULT OR LIMITATION	CODESPA MODEL SOLUTION
Quick degeneration of seed quality: In the traditional model for seed banks, there is no difference between rural farmers and multipliers. Everyone receives seeds and returns seeds. The problem is that the requirements for the reimbursed seeds are minimal due to the lack of monitoring abilities and the socioeconomic level of the producers. This causes swift degeneration in seed quality and, as a result, a loss of interest by the users.	**Differentiated system of producers and seed quality:** The system promoted by CODESPA proposes that only those who are defined as multipliers can access the base seed (S0), which comes from certified seeds or a research institution. Later, the multipliers, through the development of micro-businesses for seed multiplication, are the ones who produce the seeds and see to maintaining their quality over more time. The seeds which come from the multipliers' efforts are the S1 and S2 varieties and they are stored and managed differently. Lastly, reimbursement – in the form of S3 seed from the rural farmers who received the S1 or S2 seed – shall be sold as grain. Through the profit obtained in this sale, the purchasing of new S0 seed shall be carried out to mix it with the S1 seed, thus continuously improving the genetic seed quality.
Lack of storage systems and scalability: Another problem faced by traditional seed banks is that of storage systems, which are generally traditional systems with a low cost that cause deficiencies in the seeds during the conservation process (attacks by rodents, moisture, insects, etc.). This lowers not only the seed quality but also the amount of seed reserves.	**Hermetic, differentiated storage:** CODESPA proposes storing the seeds in recycled metal barrels that allow for storage conditions which are nearly optimal. Additionally, due to the barrels' size, storage can be differentiated according to the different seed qualities. This storage system allows for the maintenance of more seeds for more time, upholding their quality.
Lack of generation of income and incentives: The seed banks generally are a tool that do not generate income but do generate expenses like the acquisition of the seeds, the storage containers, or the time invested in their management. However, in traditional models there has not typically been a logical response to allow for covering said costs. The lack of a way to generate income has caused a lack of motivation for the maintenance of the seed banks and impacted their sustainability.	**Sale of S3:** CODESPA proposes the creation of a business unit within the seed banks which sells S3 seeds that come from the reimbursements of seeds made by the rural farmers. With the profits stemming from the sale of seeds, new seeds can be bought or other seed bank expenses can be covered. Likewise, if the cooperative decides to produce seeds on community land, a substantial amount of seeds can be sold, generating income which allows for not only the maintenance of the seed bank but also for its extension.

Source: Compiled by authors

These three innovations have been successfully experienced in Angola and are considered to be key when installing seed banks in a sustainable way. As a base for their establishment, an external methodology was used [24], but a series of small, proprietary tools were developed to establish and integrate the methodological changes described.

The process to create the seed bank includes the following steps:

a) Definition of the model and internal operations
b) Choice of location
c) Training process for technicians
d) Handover of seeds
e) Monitoring of crops
f) Return of seeds and analysis of grain
g) Storage of seeds

3.4.1. Definition of the model and internal operations

An important matter when a seed bank is established is (in addition to validating the need in the identification process) to validate the seed bank's model alongside the members of the cooperative. Not all seed banks have to have the same objectives, the same management structures, the same punishments and the same reimbursement interest (in this case, the reimbursement model of 2 kg reimbursed for every 1 kg of seed provided was established).

It is recommended to carry out at least three participatory sessions in which the community, cooperative, or association creates its own model which adapts to the circumstances. The NGDO technician can participate in this process as a facilitator. For these purposes, some general lines of action are shared:

- Before the first meeting, the organization's management must have made clear the NGDO's intentions with its development actions, the objectives of the seed bank, and the basic regulations for its workings.
- In the first session, the leaders themselves should transmit this information, supported by the facilitator.
- In the second session, the regulations on the workings of the seed bank must be discussed in a participatory way (tools: orientation model for statutes and datasheet for service statutes creation). The participation of the members is fundamental as they must feel as if the rules are their own and have not been imposed by an external NGDO. This factor is key when rules are to be complied with.
- In the third session, the statues should be approved and the management structure of the seed bank must be chosen.
  The minimum structure should be: seed bank coordinator and treasurer, seed technician, and storage technician. These individuals' functions shall be detailed below. If it is considered necessary, a simplified datasheet can be drafted on the functions so that an election may ensue (tool: datasheet on functions for the positions within a cooperative).

24 Zamora A. (2011), "Guide to organize community seed banks"

Once the statutes are established and the technicians are chosen, the seed bank logbooks should be distributed. At minimum, four notebooks (or tools) should be created:

1) Seed bank logbook
2) Distribution of seeds logbook
3) Reimbursement of seeds logbook
4) Seed inventory logbook

3.4.2. Choice of location

The seed bank for this project requires a basic physical space to house a table and chair, a small filing cabinet with the logbooks, and the different barrels to store the seeds.

The ideal location would be in a place with a cool temperature (adobe structure with a straw or metal roof) and a central location near the community. This is to simplify travel to the location and guarantee safety (tool: materials and costs for a seed bank).

3.4.3. Training process for technicians

The training of the technicians is fundamental for the success of the model. It is necessary to create three profiles:

1. Seed bank coordinator: the person with the highest level of responsibilities in terms of seed bank service provision. This individual's job is to keep the seed handover and reimbursement logbooks up to date, as well as to manage the sale of surplus and the income stemming from the sale.

2. Seed technician: this individual's job is key for seed bank management. The tasks inherent to this position are to accompany the farmers and to advise the multipliers when seeds are multiplied in the event that they need technical support. Likewise, this individual should monitor the multiplication efforts and guarantee quality in the seed reimbursement process (tool: contents of training for the seed technician). Likewise, this individual should notify the NGDO of any incidences which may arise in the fields.

3. Storage technician: this is the person in charge of weighing and differentially storing the seeds. His job is to guarantee good storage and ensure that the seeds are not infected and that they are not dirty or full of insects. In addition, this individual is in charge of carrying out moisture tests on the storage containers and guaranteeing that the barrel is closed hermetically (tool: contents of training for the storage technician).

3.4.4. Reimbursement of seeds

The reimbursement of the seeds to the seed bank must be carried out based upon a contract which guarantees they will be well used and which establishes the handover terms and the agreements between the NGDO and the seed bank (tool: seed handover contract).

This agreement must be public for the group members; all of them must be aware of the rights granted to them by the seeds and the duties they will be held accountable for (tool: seed reimbursement procedure).

Once the seeds are at the bank, the first seed distribution assembly should be held. It is important for this assembly to be carried out with the largest number of members possible and, there, it should be explained that, for the first year of the project, the beneficiaries of the seeds shall be the multipliers and the community land (if this system is decided upon), but that, later, the benefits of the seeds shall be given to more multipliers and more rural farmers.

It is important to transmit, from the start, the rules and penalties which the multipliers and the rural farmers are subject to. These individuals should then assume their commitment in public and everything should be logged in the "Seed Bank Statutes."

In this seed distribution assembly, the multipliers will be provided with:

1. The seeds, having been weighed in front of the members and registered in the seed contract.
2. The seed contract which shall include the amounts to be reimbursed and the commitments acquired by the multiplier, in two copies (one for each signatory).
3. Seed delivery receipt, in two copies (one for each signatory of the contract).
4. Lastly, the seed bank coordinator shall fill out the seed bank log book with the multiplier's information, the amount received, and the date.

3.4.5. Monitoring of crops

During the growing phase, support from the NGDO shall be fundamental for the seed bank's seed technician, said individual being the eyes and ears of the NGDO in situ. This aid should be in the form of permanent support to the work that the seed technician carries out inside the multipliers' fields in order to detect any problems which may arise. The work of the seed technician shall be permanently supporting the NGDO's training, and repeating said training whenever necessary.

Monitoring of the crops is not only necessary to react to possible problems which may arise and to support the producers; cases of force majeure which impede seed reimbursement can also be established based upon this monitoring. That is to say, the seed technician must measure the difficulties in terms of force majeure (drought, floods, pests, etc.) which may impede reimbursement within the established terms and conditions. For circumstances in which reimbursement is not complied with, each seed bank must have a set of rules and penalizations which adapt to the nuances and conditions of each cooperative and community.

3.4.6. Return of seeds and analysis of grain

The seed reimbursement assemblies are another key moment for the seed banks. In the same way as in the distribution assembly, the reimbursement assembly should be carried out with the greatest possible number of members and it should be a public event so that the community's monitoring and control weigh upon the seed debtor.

The reimbursement process should be carried out after each crop harvesting phase. Firstly, the seed technician shall validate the quality and state of the seeds, verifying their external appearance (homogeneity in shape and color, variety characteristics, cleanliness, and state). Once validated by the seed technician, the seed shall be given to the storage technician, who will weigh them and give a reimbursement receipt to the producer (tool: keys for the seed reimbursement assembly).

3.4.7. Storage of seeds

The storage process inside the seed banks must be strict and must guarantee that all the seed are differentially stored (S0, S1, S2, and grain) in ideal moisture conditions (guaranteed with the salt test) and that the cleanliness state is sufficient.

With the low-cost technology introduced by CODESPA, all the barrels should be hermetically sealed – this should either be done by filling them completely or by using a candle to create a vacuum. Each storage facility must have a datasheet which describes the basic storage data (tool: storage datasheet).

Nova Esperança Tchihanha Cooperative in Ngove (municipality of Caála, Huambo)

STEPS AND TOOLS TO DEVELOP SUPPLY

PHASE 3. DEVELOPMENT OF SUPPLY	TOOL	AIM	RESULT
3.1. Identification of cooperatives and multipliers	Evaluation sheet for cooperatives and multipliers	Evaluate and identify the multipliers and the cooperatives	List of people, contact information, and facilitator for field schools
3.2. Acquisition of seeds	Datasheet with recommendations when buying seeds		
3.3. Growing process			
3.3.1. Establishment of field schools for seed multiplication, on community land	Log sheet for field schools	Order the basic data from the field schools	
3.3.2. Development of technical protocols: five phases to ensure quality.	Technical protocols for seed multiplication with small producers: potato, corn, bean, soybean		
	Contents of training on planting density	Train the multipliers to manage the planting of crops	Training which is adapted to the crop and the circumstances of the multipliers. The result should be a planting density
	Contents of training on negative selection	Train the multipliers on negative selection practices to improve the quality of the seeds	Periodic cleaning of abnormal or diseased plants to stop spread to healthy ones
	Contents of training on positive selection	Train the multipliers on positive plant selection processes	Fields with the best plants marked for differentiated harvest
	Contents of training on crop rotation	Train the multipliers on the benefits of crop rotation and rotation alternatives	Crop rotation plan for the seed multipliers favoring the sustainability of the land and conserving crops
	Contents of training on storage	Adapt the use of drums to store seed and improve the traditional	Seeds stored without moisture, without pests, in metal barrels
	Infographic on barrel use	Illustrate the barrel storage process	
	Barrel usage instructions	Explain the aforementioned infographic	

PHASE 3. DEVELOPMENT OF SUPPLY	TOOL	AIM	RESULT
3.4. Creation of the seed banks			
3.4.1. Definition of the model and internal operations	Community seed bank installation guide	Understand the general workings of the seed banks	
	Datasheet to create service statutes	Draft participatory service statutes for the seed bank	Statutes with the working regulations of the seed bank for each cooperative
3.4.2. Choice of location	Datasheet on costs and materials for a seed bank	Describe the basic physical needs to establish a seed bank	Plan for the acquisition of, and budget for, materials
3.4.3. Training process for technicians	Contents of the storage technician training	Train a technician in the seed banks to manage the conditioning and storage of seeds	A person who is trained to manage storage in the seed bank
	Contents of the seed technician training	Train a seed technician in the seed banks	A person who has been selected and trained to manage the technical aspects of the seeds
	Seed bank logbook	Manage distribution and reimbursement of seeds from the bank	Distribution logbook managed by the seed technician.
	Inventory logbook for the seed banks	Manage the inventory of materials and seed reserves for the seed bank	Manage an updated book after each growing process
	Seed reimbursement receipt	Certify reimbursement of seeds by a seed bank beneficiary	Attain a log of all seed reimbursements carried out by rural farmers throughout the history of the seed bank
3.4.4. Distribution of seeds	Seed distribution receipt	Certify the distribution of seeds to a seed bank beneficiary	Attain a log of all seed distributions made to rural farmers throughout the history of the seed bank
	Contrato entrega de sementes	Certify the agreement between the seed bank and the client when seeds are distributed	Agreement, signed by each seed receiver, which includes all the commitments acquired thereof and the reimbursement conditions
	Seed distribution contract	Organize the entire seed distribution process for the seed bank, as well as distribution requirements	Include all the seed bank and beneficiary components in the procedure which is followed for distributing seeds
3.4.5. Monitoring of the crop	Continuous support for producers	Repeat training and support producers' difficulties	Conditions and regulations of each cooperative
3.4.6. Return of seeds and analysis of grain	Keys for the seed reimbursement assembly	Management, by the NGO technicians, of a seed reimbursement assembly	Management of seed reimbursement assemblies and use of cases of success and failure to provide examples of the workings of the seed bank
3.4.7. Storage of seeds	Datasheet for storage of seeds in barrels	Classify the information on each barrel with regard to the seeds	Supply inventory information on seeds for the seed bank

PHASE 4. DEVELOPMENT OF DEMAND

Rural market development requires work parallel to strengthening the supply of a product or service – that is, promotion of demand in order to find a balance which allows for incentives to be maintained in order to sustain the market and the enterprises or institutions created within it.

4.1. DIFFERENTIATION AND CERTIFICATION PROCESS

The objective which must be set to develop demand should be based on a strategy of product differentiation and positioning, as well as a promotional strategy which presents the product to potential producers.

In the case of the rural seed market project, the main objective to promote demand is differentiation of seed production when compared with grain. The appearance of grain and seeds is similar if seeds are sold in bulk, as the main properties of the seed are inside.

It is fundamental, in the first place, to carry out a market study[25] in order to understand the local, accessible market. The aim of this study should be to get to know the distribution channels for seeds, the products that are already on the market, and the prices, amongst other things.

Based upon this market study, a description of the client should be defined in order to guide marketing strategies which are adapted to said clients.

Combining these two studies, a price setting policy should be established which keeps in mind the products that are already found on the market and the characteristics of the potential clients.

4.1.1. Characteristics of the client

It is necessary to identify the different types of clients which can exist and classify them based upon their purchasing power. This description of the client can be supported by the description of the rural farmers which was carried out in the identification phase, as said description also determines the supply purchasing power, and the use of technology packages by each rural farmer, and many of the rural farmers are also clients.

Within these guidelines, we must establish the capacity and willingness to spend on seeds for each one of the client types, and establish the potential seed clients. In additional, other possible clients should be identified, such as institutions, NGOs, or other local organizations.

Every market and every environment will have different characteristics and, therefore, the clients could have different needs. In the following table, some of the demands of the different clients can be seen, depending on their level of formality.

25 To accomplish this, the manual titled "A Guide to Rapid Market Appraisal (RMA) for Agricultural Products" may be used.

TABLE 14. MAIN DEMANDS OF SEED CUSTOMERS

	TYPE OF MARKET	PACKAGING	SENSITIVITY TO PRICE	SENSITIVITY TO QUALITY
t1	Informal / Local	Bulk	Very High	Very Low
t2	Informal / Local	Bulk	High	Low
t3	Informal-Formal / Provincial-Local	Bagged	Medium	Medium
t4	Formal / Provincial - National	Packaged and Labeled	Low	High
ONG	Formal / National	Bagged	Very Low	High
Institutions	Formal / National - Local	Bagged	Very Low	Low

Source: Compiled by authors

4.1.2. Price setting policy

Price setting should be conditioned mainly by three factors:

1. The price of production cost: depending on the production costs of each environment, the price can vary. With this calculation, the minimum price at which the seeds can be sold is set in order to provide product profitability.

Market of Alto Hama (Londiumbali – Huambo)

2. Purchasing power of the target customer: for this, the information in the rural farmer description is taken as a base, as well as polls or interviews undertaken on the potential customers. It is normal for an increasing price curve to appear in the first years of production, but the increase in the number of producers will cause prices to fall and make them reasonable for the potential customers.

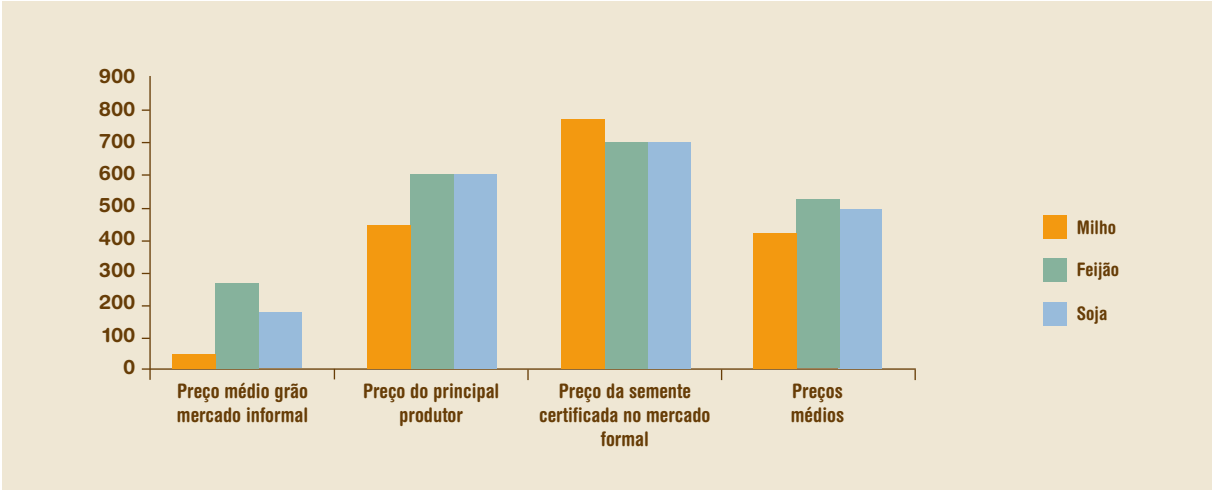
3. The price of competing products: this is the most conditioning factor when setting prices, as the market will either accept or not the seeds produced by the project depending on the competing products and their quality.

   In this case, there are two references to base decisions on: (1) the grain price in the planting season for seeds on the informal market and (2) the price of certified seeds.

   As has been seen in the table on seed type differentiation, the Quality Declared Seeds have a much higher quality than the informal market seeds, and a quality which is a little bit less than those on the formal market. Therefore, the price setting strategy will vary between prices of the two.

   As can be seen in the chart, three seed acquisition sources are compared in the intervention area: (1) an average price of grain for seed (2) the seed price of the main national seed producer (3) the certified seed price on the formal market. With this data, an average price has been created based on all these prices in order to have a reference value which will help us to position our seeds on the market.

CHART 5. COMPARISON OF SEED PRICES ON THE FORMAL AND INFORMAL MARKET



Source: Compiled by authors

Analyzing this data, it was decided to set prices which are less than the average market prices as the purchasing power of the potential target customers (some t2 group members and the t3 group) was not high enough to pay those prices. These reference prices later must be verified on the market.

4.1.3. Definition of positioning strategies: the Sementes do Planalto case

As has been mentioned previously, the aim is to promote differentiation of the seeds produced by the multipliers in order to set a seed price which is greater than that of grain and which aligns with the multiplication process and provides the potential of improved production. To this end, the strategies which may be applied, from least to greatest complexity, are the following:

Differentiation by packaging:

One of the strategies followed when differentiating the seeds produced under the grain program sold on the informal markets is that of packaging. In markets which are not very developed, packaging is a differential factor when selling. Therefore, it is necessary to understand the buying dynamics of the potential customers (mainly amounts) in order to adapt packaging to the tastes of the consumer. To this end, bagging is a simple way to differentiate these seeds at a low cost. It is only necessary to acquire bags or sacks and a sewing machine to close them.

Another plus which will help to improve differentiation is to create labels. The complexity of the labels can vary from a mere description of the product (product, variety, production year) to a technical description if one can be guaranteed (germination percentage, cleanliness, and purity) and there can even be recommendations on the use and production techniques for the seed (planting density, use of fertilizers, maturity period, etc.).

It would be necessary for an institution to join producers to be able to develop seed differentiation as, since this methodology is adapted to production by small producers, their production volume does not allow them to assume the costs of marking their seeds. A centralized producer unit could be the seed bank, which is, likewise, the entity in charge of technically supporting the seed multiplication process for the producers – along with the NGO at the beginning of the project.

Differentiation by private branding:

Another differentiation strategy, which is much more ambitious than the previous one, is to create a private brand which bases its differentiation on the quality of the seeds and a brand image. This process requires production control and, therefore, control over the producers. This strategy fits well with cooperatives that have a full sense of cohesiveness and which are of adequate size to be able to justify the creation of a brand – a brand which should be referenced on all packaging.

The creation of a brand can additionally give rise to legal problems that must be dealt with (legalization of the brand, legalization of the cooperatives to be able to invoice, etc.). This is a process which would allow the cooperative to enter into the formal seed market, provided that local legislation permits it and the patent market in the country is still open. To put it another way, the base seeds used must not have a legalized patent in the country.

It would also be necessary to associate a marketing and expansion plan with the brand to be able to make the product known on the market. All these conditions indicate a significant level of scope and sophistication.

Differentiation via the public stamp of Quality Declared Seeds:

Another strategy which is even more ambitious than the previous one, but also compatible, is that of using a public Quality Declared Seeds stamp to validate the seeds. This process, regulated by FAO in 2003 [26], involves the creation of a technical protocol for seed multiplication by the competent State entity (generally a national seed department). Additionally, it requires a seed control and certification process which is quite standardized and allows access to the formal seed market, competing on all levels with other certified seeds. The quality declared seeds stamp likewise requires some minimum percentages for germination, cleanliness and purity. These must be guaranteed in the seeds.

CASE STUDY

CREATION OF A SEED EVALUATION AGENCY – "SEMENTES DO PLANALTO" – PROMOTED BY CODESPA

Another very new alternative that has been implemented by CODESPA in Angola is the creation of a seed evaluation agency. In a certain way, this strategy for diversification is based on the evaluation of the quality processes implemented for the improvement of the quality of the seeds in this project[27] through a quality certification process which likewise allows for sales management support being provided to several producers grouped together in different seed banks. That is to say, it's a strategy to support sales for a high number of producers dispersed throughout the region. Simplified, the methodology used is very similar to that employed by the Wine 'Region of Origin' System.

Sementes do Planalto is a cooperative for seed producers whose aim is to support, promote, and certify the local production of quality seeds with small producers based on certain production protocols which uphold the Quality Declared Seeds criteria.

The cooperative is structured in the following way:

Company bodies: (1) Producers' Assembly, (2) Management, and (3) Financial Council. Technical bodies: (1) Regulating Council and (2) Technical Quality Office.

The Producers' Assembly is the sovereign body of the cooperative and all the seed producers who decide to join and who meet certain basic criteria as established in the statutes are part of it.

The Management is the management team created by the Producers' Assembly and the Financial Council and is in charge of assuring transparency and good management of the funds that are in the hands of the cooperative.

The Regulating Council is in charge of defining the technical protocols for seed multiplication and is represented by different institutions which are both public and private in nature and which have vast knowledge on seed production and a stable relationship with the producers. CODESPA is part of this Council.

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26 Quality Declared Seeds. 2006. FAO.

27 Certified base seed, specific technological package, negative selection, positive selection, differentiated harvest, cleanliness, and conditioning in hermetic barrels.

The Technical Quality Office is the operations body for the cooperative and the CODESPA technicians participated initially in it (initially financed by the NGO, but with the intention of transferring costs to the cooperative). These are the individuals in charge of carrying out the support processes for the seed banks and implementing the protocols for seed quality certification for the seeds produced by said seed banks, granting them – if applicable – the "Sementes do Planalto" quality seal, as well as being in charge of providing other associated services to the cooperative.

In summary, the objectives of the cooperative are as follows:

- *Improve agricultural production for the rural farmers in the provinces of Huambo and Bié through the promotion of micro-businesses related with seed multiplication.*
- *Promotion of an endogenous, local seed multiplication model for quality declared seeds by applying technical regulations, monitoring, and quality control.*
- *Facilitate market access for the seed produces, as well as their sales options.*

In order to create this cooperative, a financial feasibility study and marketing plan have been created, based on the provision of the following services:

- *Technical Support to implement the technical multiplication protocols.*
- *Certification and handover of the Sementes de Planalto seal of quality.*
- *Support in the sale and marketing of the seeds produced under the project.*

In summary, Sementes do Planalto is a for-profit service provider which belongs to the producers and whose aim is to establish a private production and certification process based on the brand, and which aspires to achieve the Quality Declared Seeds certification. For this last process, work is being done with the Angolan authorities to try to get the technical protocols approved by the agency the Quality Declared Seal [28].

Seed promotion strategies:

Once the differentiation strategy is chosen and the price of the seeds is set, a promotion strategy should be developed in order to sell the seeds. It is important for the promotion of the seed to be carried out in a unified way; therefore, there should a common entity through which the brand promotion activities are carried out. Thus, it is recommendable to use common logotypes and brand images to support sales for all the producers.

28 For more details, see the document titled "Plano de viabilidade para a Agência Sementes do Planalto."

The actions which are planned to be carried out for seed promotion are quite diverse in nature:

- Advertising at the point of sale in the retail location: it is fundamental to promote the seeds at the point of sale – whether this be a formal or informal market. To accomplish this, negotiations must be undertaken with the main seed sellers to obtain uniform positioning of the seed sacks, as well as preferential positioning.

- Setting of sales prices for the end consumer: it is also important for the producers to be able to influence the final sales price and for the price to have a high enough incentive for the intermediary. Therefore, it is recommended to place the recommended price on the seed labels, avoiding – in this way – speculation on the price and protecting the product's prestige.

- Promotion in the media: it is also necessary to carry out advertising on the radio and television in both a direct way (through advertising messages) and indirect way (through agents, news, events that may have an impact on the general population).

- Development of, and search for, large private or institutional clients: if seeds of a high quality have been achieved, sales to large clients can also be undertaken, such as sales to NGOs, public bodies, or even large commercial farms.

PHASE 4. DEVELOPMENT OF DEMAND	TOOL	AIM	RESULT
4.1. Differentiation and certification process			
4.1.1. Description of the client	Description of farmers and interviews	Determine the purchasing power by customer type	Table on customer requirements
4.1.2. Price setting policy definition	Interviews and/or polls	Set the price with three main factors in mind	Comparison of prices on the formal and informal market
4.1.3. Definition of positioning strategies: the Sementes do Planalto case	Evaluation Agency's Feasibility Plan	Establish the basics for the cooperative's workings Establish a financial plan Establish a marketing plan	Action plan for the implementation of the Evaluation Agency
	Cooperative statues for seed producers	Create the internal regulations on the workings of the cooperative	*Founding of the cooperative Sementes do Planalto*
	Constitution minutes for the Cooperative	Formalize the cooperative before a notary	
	Sementes do Planalto Logotype	Support the cooperative's visibility plan	

Mothers who are working on their crops while taking care of their children

CHAPTER 4
Results

4. Results

A rural market development project of this type needs an established timeframe which is long enough for the creation of a seed multiplication system. Although the basic time unit per cooperative is a minimum of three years, in order to achieve real, sustainable market development, it is necessary to have project continuity over a timeframe which is much longer – around 5 to 7 years.

Nevertheless, and with three years of actions under this project, the main results can be highlighted – these having been calculated based on the establishment of a model with combines real data collection with data extrapolation. Differentiation can be made between the results, the quantitative, and the qualitative impact of the actions taken.

The main results can be seen in Table 15. Data on the approximate results of the Sementes do Planalto project undertaken in Angola have been obtained in the area of food security. To this end, it is important to note that in the three years of project execution, 6,215 kilograms of seeds have been produced for multiplication and almost 50,000 kilograms of seed for sale and production. Approximately 2,000 families have benefited from the quality improvement of the seeds, with an impact in the increase of food production for vulnerable rural farmers of more than 685,580 kg in total.

Likewise, this project has been able to improve the outlook of local businesses and the economy in the intervention area, generating 314 jobs associated with seed handling[29]. In addition, a profit for the multipliers (micro-entrepreneurs) has been generated of more than 70,000 USD. The improvement in the social and business outlook of the area has, as a direct consequence, the improvement of the living conditions of the populations by increasing the income of the region.

Likewise, we must highlight other positive impacts which are less quantifiable but also deserve to be included in our analysis. On the one hand, there is the fact that agricultural production once again has an incentive in some areas where, due to the lack of supplies and support, it had hitherto been losing momentum. This, in turn, has given agriculture its dignity back.

What's more, through this component, the existence of agricultural cooperatives has been reinforced, strengthening their mission and their ability to manage and provide services to their members – a fundamental factor for the project's success.

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29 This work has been undertaken based upon employment as day-workers, but the calculations have been made based on full time work by adding all the workdays used.

TABLE 15. DATA ON THE APPROXIMATE RESULTS OF THE SEMENTES DO PLANALTO PROJECT UNDERTAKEN IN ANGOLA

		SEPT-2014			
CROP	CROP	SURFACE AREA (HA)	NO. OF MULTIPLIERS	SEEDS FOR MULTIPLICATION (KG)	SEEDS FOR PRODUCTION (KG)
Bean	Manteiga	24	48	1,008	7,392
	Katarina	8,5	17	357	2,618
Soybean	Tabarana	19,5	39	819	6,006
	Pintado	10,5	21	441	3,234
Corn	Sam-3	16	32	3,590	26,330
Total		**78.5**	**157**	**6,215**	**45,580**

	FOOD SECURITY BENEFITS		ECONOMIC BENEFITS		
CROP	RURAL FARMERS BENEFITED BY THE SEEDS	POTENTIAL INCREASE IN FOOD PRODUCTION	ANNUAL BENEFITS BY MULTIPLICATION BUSINESS (USD)	TOTAL GENERATED BENEFITS (USD)	EMPLOYMENT GENERATED
Bean	370	38,808	525	25,200	96
	131	13,745	525	8,925	34
Soybean	300	31,532	600	23,400	78
	162	16,979	600	12,600	42
Corn	1,053	584,517	1.850	59,200	64
Total	**2,016**	**685,580**		**70,125**	**314**

Source: Compiled by authors

CHAPTER 5
Lessons learned, recommendations, and challenges for the future

5. Lessons learned, recommendations, and challenges for the future

Below, the main lessons learned, critical factors, and recommendations from the experience of CODESPA are shared in hopes of inspiring the application of this methodology in other contexts.

- This methodology is aimed at creating an alternative seed market. Its aim is not to produce certified quality seeds; instead, it is to improve the quality of the seeds that rural communities have access to. The implementation of this type of project depends on the seed regulations in question in each country.

- The diagnosis phase and the classification process of the rural farmer by type represent a crucial step which is absolutely necessary to carry out a project of these dimensions. Without this type of classification, fundamental errors can be made when working with the beneficiaries, touching upon the problem of the cumulative advantage and phased in diffusion of benefits adapting to the circumstances of the most vulnerable farmers, reducing their risk and increasing their adoption of improved seed and farming practices.

- The participatory methodology is necessary both in the diagnostic phase and throughout the entire execution of the seed multiplication system. "Ownership" of the project is a key factor in its success. Therefore, it is necessary to achieve involvement on the part of all actors. The field schools must be established in areas which are accessible for all the multipliers in order to facilitate participation.

- Adaptation of technical protocols for the multiplication of other crops and new varieties requires exhaustive understanding thereof; thus, it is very important to carry out a controlled research process which allows all the options – under the growing conditions of the rural farmers be they technical, social or economic – to be evaluated. In spite of everything, it is important to keep the five basic characteristics established in this methodology:
  (1) base seeds with a proven quality, (2) controlled planting density, (3) negative selection process, (4) positive selection process, and (5) differentiated harvest and storage.

- It is necessary to develop the sales and distribution channels which allow the rural farmers to have access to seeds – this being adapted to their capabilities, logistics, and financial situations. Therefore, it is necessary to establish in parallel both the seed bank system – with the granting of seed loans – and conventional sales channels in informal markets.

- The way the seed banks work is key to the project's execution and there should be incentives (positive incentives and negatives incentives) for it to work well. It will be necessary to establish penalties for the multipliers and rural farmers who do not comply with the amount and quality criteria established by the seed banks. Therefore, it is necessary to establish transparent processes which allow the community itself to award and review the acts of its members.

- The generation of incentives for each one of the actors who participate in the entire process must be clear from the start. Thus, it is necessary to establish business plans and models for seed multipliers and banks which allow the participants to have true incentives (if possible, financial/economic incentives) to keep their activities up.

- It is fundamental to perfectly understand the local seed market, its legislation, and its workings in order to develop a project of these dimensions. In the majority of the cases, developing this system for the informal market is the most viable market. Nevertheless, as was the case with Angola, the possibility of considering a public seal of Quality Declared Seeds may allow the producers to tap into a market which is much more profitable (although also more competitive).

Women producing soybean paste by using a large mortar

The challenges for the future are laid out in the following points:

- One of the main challenges that a project with these dimensions can face is promoting the creation of a legal framework for Quality Declared Seeds. To this end, it is important to get the body in charge of monitoring seed production processes to be an ally of the project so that it supports the promotion of the production model for seeds with small producers within the public authorities.

- In the case of Angola, it is recommended that, before a legislative process, approval of the technical protocols be simply achieved from a Public Institute (IAR or SENSE). This helps to impulse the promotion of the private brand and to take the first steps towards public recognition of quality declared seeds.

- The establishment of an efficient and profitable model for seed guarantees is one of the necessary steps for the system to work. Therefore, it is necessary to establish a guarantee model which dissuades fraud by monitoring seed bagging. The bagging procedure is recommended to be carried out at seed banks with the sewing of the bag being atop a label so that the label breaks when the seeds are opened and so that it cannot be reused in the future.

- Development of demand is one of the fundamental factors for the project's success. The establishment of a comprehensive promotion and marking plan for the Sementes do Planalto is crucial in this sense.

- It is necessary to establish a business model for the Sementes do Planalto agency which must comprise service provision to multipliers and invoicing by them. These services should obtain benefits based on the members' benefits -- never before the members earn benefits -- to thus minimize the risks faced by multipliers. The three main services should be:

(1) Technical support: which would be compensated through the sale of Sementes do Planalto sacks and labels; that is to say, charging for the certification process.
(2) Intermediation in the sale of seed and even grain to large companies (public institutions, NGOs, large commercial farms), with an invoicing per intermediation action model -- and the
(3) sale of barrels for storage could also be channeled through the organization to make it more sustainable.

- CODESPA, at this time, is involved in the model and that makes the model more sustainable. Thus, it is important to begin to transfer knowledge (and income) to Sementes do Planalto and create the necessary incentives for financial sustainability. The success of the cooperative depends strictly on the business model and the people who are at its helm. Therefore, financial monitoring of the organization is considered to be fundamental for several years in order to guarantee transparency in funds management.

- Another important challenge is increasing crops and varieties. This will require a great effort in cooperation with public partners for their participation in the seed research phases. It would be recommended to establish a project with IAR in order to strengthen the validation processes and experimentation with varieties.

Angola
Help View

fundación CODESPA

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AngolaHelpView, an alternative “Street View”

In 2014, CODESPA created AngolaHelpView.com, a campaign which brought real people (not digital versions) closer together and told true stories from spectacular places. That was the solidarity version of this “Street View.”

The objective was to make people aware of the fact that one of the poorest countries in the world had been forgotten. And the fact of the matter is that Angola did not appear in the news. Months passed without mention of the country in the media and, to top things off, none of its streets appeared in the most popular “Street View” application online.

Luanda is the most expensive city in the world, above Tokyo

Paradoxically, after 27 years of ward, the capital Luanda is the most expensive city in the world, above Tokyo. The lack of crops and infrastructure make buying a liter of water something more expensive than buying a liter of gasoline.

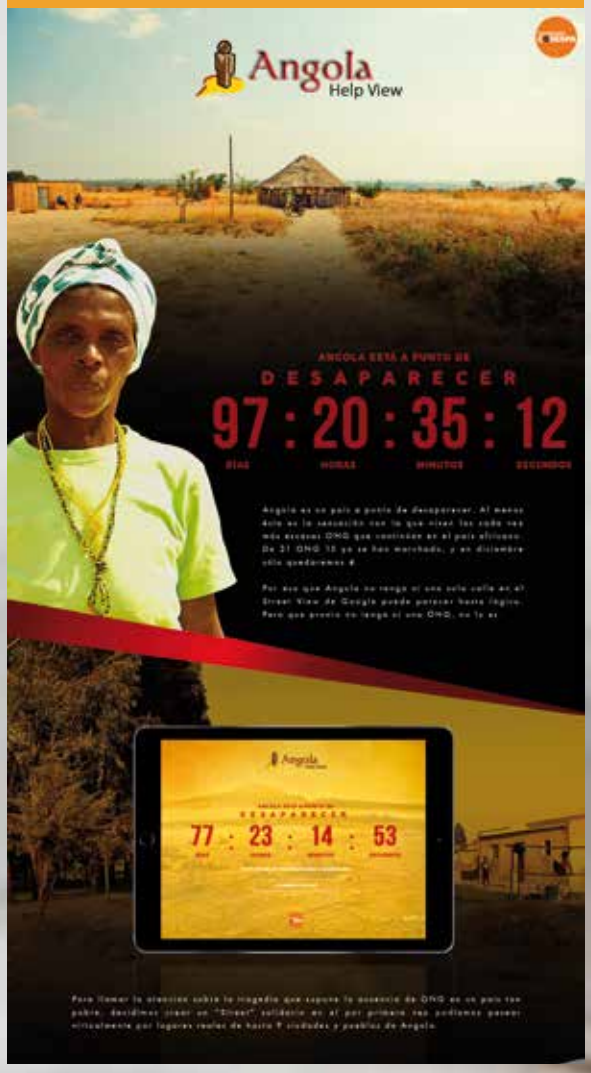
The food insecurity level reaches 50% of the population, with hunger affecting more than 90% in provinces like Huambo.

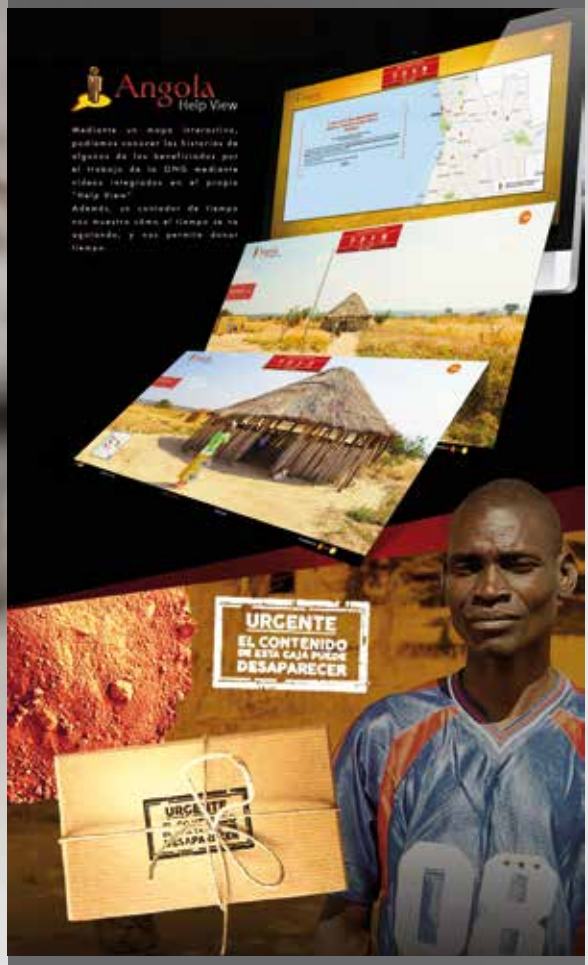
Thus, we created AngolaHelpView.com where you could get to know the stories of its people and an alternative map, with spectacular images. We had to keep Angola and its people from being forgotten.

We took to the street and told things as they were. Hundreds of people were shocked by Angola, we appeared in blogs and in the media and – most importantly of all – we found that Spanish society really DID care about Angola.

Companies joined in to give us their support in the projects we were developing in Angola and the campaign got international recognition by earning a Bronze Sun at FIAP 2015.

You can find out more about this campaign by visiting **www.angolahelpview.com**.





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Nova Esperança Tchihanha Cooperative in Ngove (municipality of Caála, Huambo)

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CODESPA is a not-for-profit organization which has 30 years of experience in cooperative international development efforts. Based on trust in human ability to construct a more fair and just world, its mission is to provide opportunities to people so that they can, with their work, develop their skills and be the protagonists of their own development. Since its beginnings, CODESPA has managed around 800 projects in 33 countries of Latin America, the Middle East, Africa, and Asia – helping millions of people to be able to improve their living conditions. The organization currently has 17 international and national offices. Its honorary president is His Majesty the King Felipe VI.

CODESPA believes in economic and social development as an engine to achieve human development, working through various lines of work: micro-loans for development, creation of businesses, rural agriculture and livestock development, community management tourism, professional training and occupational inclusion, migration and development, and alliances with the private development sector. Likewise, CODESPA carries out intensive work in knowledge management, as well as in research, innovation, and training for development professionals and companies, and for society in general – always from the viewpoint of cooperative work being the key to eradicate poverty.

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