

**Post Harvest Management in Sub-Saharan Africa  
(PHM – SSA).**

**Support on the Promotion of Improved Post-  
Harvest Technologies in the North of Mozambique**

29.6 - 15.7.2015



**Mission Report**

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Pemba / Switzerland, 31.7.2015

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## **SUMMARY**

The PHM-SSA is coming to a more decisive moment to bring PH solution closer to farmers in a more effective way. For this the project has to have a clear strategy how to mobilize more local players in promotion and training and design training material for Trainer of Trainers and Lead farmer as well conduct training and promotion events. This includes a promotion strategy which addresses the general public, the development institutions, the authorities as well as farmers and extension people. The project target in terms of adoption to reach till 2018 is very ambitious and if maintained needs a reinforced project team to guaranty an effective capacity for installation of demonstration of the different technologies and improved practices in the two provinces (Nampula and Cab Delgado).

It is a good entry point to start the validation of six technologies, and combine it with demonstration events at the same time to assess the effectivity of these innovations and acceptance among farmers.

The monitoring and quality control has to be installed to avoid bad handling and low quality standard of metal silos.

The metal silo enjoys a good acceptance among farmers but it is difficult for small farmers to buy because of lack of cash. There are few financing mechanism available in rural areas to overcome these constraints. It is therefore advisable to explore financing options, such as GAPI, other microfinance options and Community Banks. The installation of a seed money fund for community banks which benefits artisans to produce their first 10 promotions silos is a good combination to launch silo production and promotion. But also a subsidy model for metal silo should be discussed with government officials.

Finding good artisans with entrepreneurial talent and good skill is not easy. Therefore it is important to ensure a good post-training support to avoid bad silo quality. The start of silo production after training should not take more than one month after training.

MMI Steel in Nacala can supply the required metal sheets for silo manufacturing. MMI Steel is showing interest in collaborating with the project in the promotion of galvanized metal sheets. This has to be further discussed and analyzed. To reduce the price of metal sheets, a deal for tax release is an option which the company is interested in. A distribution network has to be identified but this can only work after the demand for metal silo is real.

For all training and promotion, visual communication materials have to be prepared, such as posters, flipcharts, stickers, leaflet, comics, etc. The training should include practical demonstration modules and connect theoretical knowledge with practical exercises. A module based training program can be adapted in a flexible manner to the target population instead of having one manual.

## **1. Introduction / Context**

Helvetas Swiss Intercooperation is implementing on behalf of Swiss Development Cooperation (SDC) the Project “Reducing Food losses through post-harvest management in Sub-Saharan Africa” (PHM-SSA) in partnership with FANRPAN, AFAAS and AGRIDEA, in which Benin and Mozambique have been selected as pilot countries. The project started in April 2013 after a three months inception phase.

In 2014, a study was conducted by a free-lance consultant (Kurt Schneider) regarding the promotion of Improved Post-Harvest Technologies in northern Mozambique by reassessing the cost structure for metal silo fabrication and exploring potential business models for successful marketing of the metal silo. As result of the study 4 different business models were established and storage PHM technologies were documented as proposal for further testing and validation. These options, including metal silos, were chosen by the following selection criteria: Price, Handling, Accessibility, Effectivity, Adaptability to local conditions, Availability of local material, previous experience, Durability, Space. A training of 4 artisans was conducted. The study identified new lines of the metal sheet supply chain and on other hand revealed deficient supply of good quality inputs and tools for production of metal silos. However, the existing artisans are based in the provincial towns, and only one at district level. The transport of the ready-made silo is costly and over long distances prone to damages. This means that a lot more artisans at local level would have to be trained to become silo fabricants.

**The objective** of the consultancy is to:

- Advice or comment on the existing training materials, tools / manual of ToT on PHM.
- Support and advise the project in the prioritization, testing and further development of business models for successful promotion of best PHM technologies in the communities;
- Advise the project in quality control of metal silo production and skills development of artisans, including training of 2 master trainers and monitor 1 training and experimental production of 3 types of metal silos (300, 500 and 700Kgs).

This mission took place from the 29.6 to the 15.7.2015 and the following activities, institutional meetings and field visits were implemented:

- Assessment of Silo quality produced by trained artisans in Pemba, Chiure and Nampula
- Visit of MMI Steel (KIBOKO Metal Sheet) and Material Supplier
- Training of 6 new artisans with one Master Trainer
- Field visits with meetings with farmers, officials and local institutions
- Conduct a workshop with representatives of different institutional representatives.

In this report the most relevant findings on project progress are analyzed and recommendations and inputs for the further development are presented.

### **Acknowledgements**

I would like to present my gratitude to Helvetas Mozambique in Pemba and Maputo as well in Switzerland for the preparation and assistance during this mission. A special recognition goes to Mauricio Negas, who organized all the meetings and activities in the field and gave me all the necessary inputs during my stay. In a short time we could carry out a very intensive working agenda. Thanks a lot to all.

## 2. Business Model and Role different Players

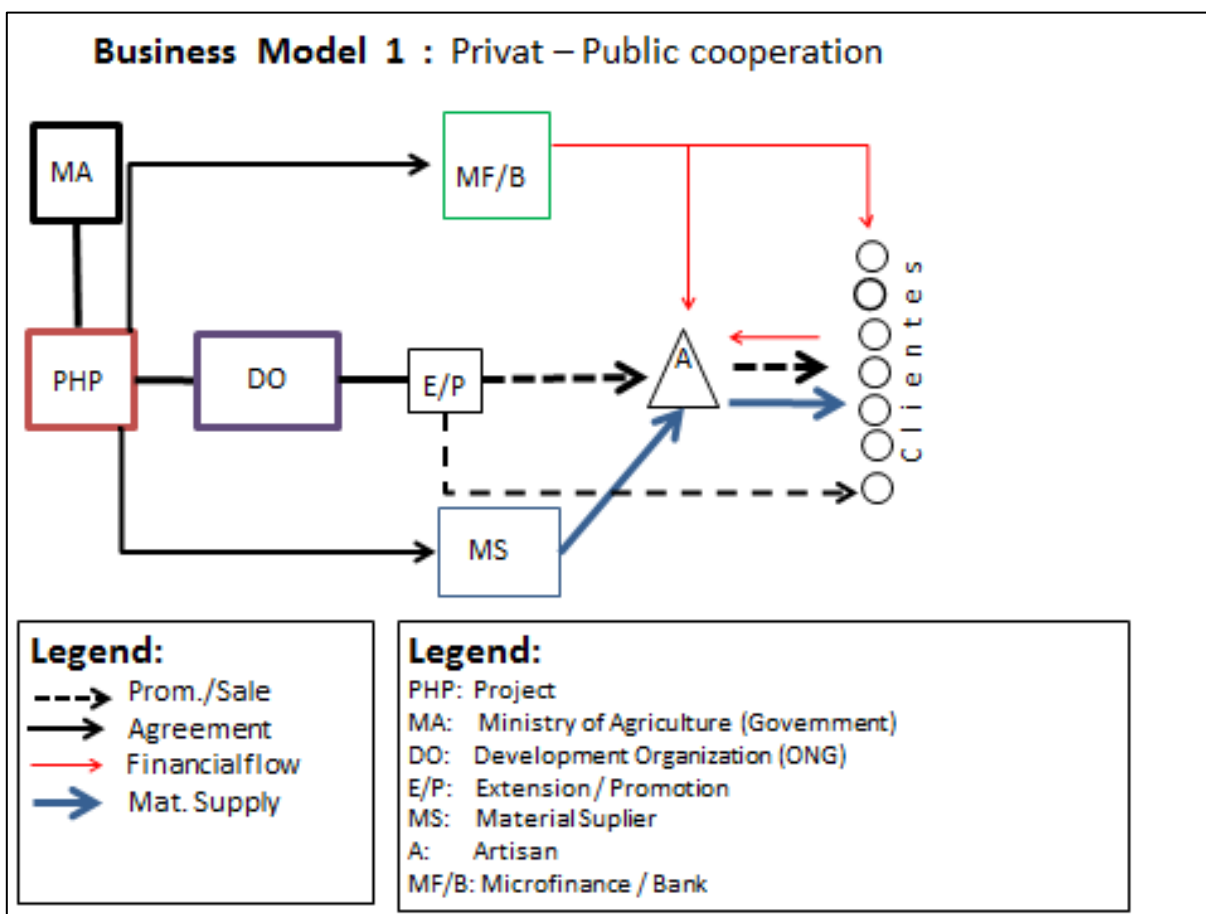
### 2.1 Public private cooperation model

In the workshop the representatives from different organizations expressed that the cooperation between public and private organization is the most promising way to share the task of introducing the metal silo and other Postharvest management to farmers in rural areas. The main arguments were: Promotion at the beginning is cost relevant where no private business will invest as long as the demand is not at view. It is the task of public institution to advise farmer and create awareness. This is understandable and logic at the beginning.



Permanent Secretary in Mecuburi

Graphic No. 1 Business Model



## 2.2 Role of different participants

**Table No. 1 Role of different participants**

<b>Participants</b>	<b>Role</b>	<b>Period</b>	<b>Critical moments</b>
<b>Ministry of Agriculture</b>	PHM Policy Regulatory Frame Project agreement	Permanent	
<b>Project</b>	Technical Inputs Training of artisans and extension people Institutional agreements Quality control	During introduction, first 6 to 10 years	Find the right partners
<b>Development Organization</b>	Extension and promotion policy on local level Financial contribution	Promotion period 4 – 6 year	Sustainable approach
<b>Extensionists / Promotor</b>	Training of farmers Demonstration plots Supervision	Promotion period 4 – 6 year	Selection of good Demonstration Farmers
<b>Artisan</b>	Production of silos Promotion of silos Purchase of Inputs	Permanent	Entrepreneurial skills and quality of silos
<b>Material supplier</b>	Offer of Inputs on local level	Permanent	Availability of material on local level
<b>Microfinance / Bank</b>	Financing of Farmers and Artisans	Permanent	Credit conditions and Local presence
<b>Farmer</b>	End user Participant in training session	Permanent	Change of traditional practices Acquisition power.

The main players in the long run are: the artisan, the farmer, the material supplier and the Microfinance institution. Once these players are involved and the demand is established, it's for all a win win situation.

Nevertheless for small farmers a subsidy option has to be analyzed, see explanation in chapter No. 7.3 because of poor access to credit and low purchasing power.

The business model has to be seen as a flexible combination of the different participants. The driving force in each region can vary. In one region the artisan can be the driving force, in another region the Lead farmer or the extensionist can be the motor of change.

At the beginning the driver relays in the project and the partners who are in charge to start with awareness creating and awaking the interest of farmer to change. This is an essential input of

change. Therefore training and promotional activities and the corresponding training and promotional material are a main task.

### 2.3 Monitoring and Quality Control

Monitoring and Quality control has two main essential purposes, one is guiding the project in the right direction and guarantying correct handling of innovations. This task corresponds at the beginning to the project and can be managed through local representatives, such as extensionists or local partners, working in the village. Especially concerning silo manufacturing a strict control system has to be in place to ensure that every silo fulfills the required quality and hermeticity, but also when it is at farm level to be correctly placed and handled. See a check list at annex No. 1. On the other hand the correct handling of the silo at farm level can be supported



Local promotor, Mecuburi

putting a sticker with the instructions on the silo, see sticker at annex No. 5. The instructions consist of 13 steps, which have to be explained at the moment the silo is handled over to the farmer, either by the artisan or by extension people. On the same sticker the following information has to be placed: Name of institution, name of artisan, date of manufacturing, Capacity of silo, Name of farmer, Address, number of Phostoxin tablets, Number of silo.

The above mentioned aspects are more oriented towards the silo as the main innovation but quality control has to include also the other aspects and technologies. For these also a sticker for improved management has to be developed and serve as guidance when training lead farmers and farmers. See example in Annex No. 15.

The quality control and the information on project progress have to be collected and analyzed on a quarterly base.

### 2.4 Outreach and geographic extension

As the experience shows in other countries, the adoption rate takes time and need some initial effort in promotion and demonstration. Based on past experience we can reach the following projected silo adoption in the two district, see Table No. 2 , where the project is working assuming an adoption rate of : First Year 1%, second year 2%, third year 4%, forth year 8%.



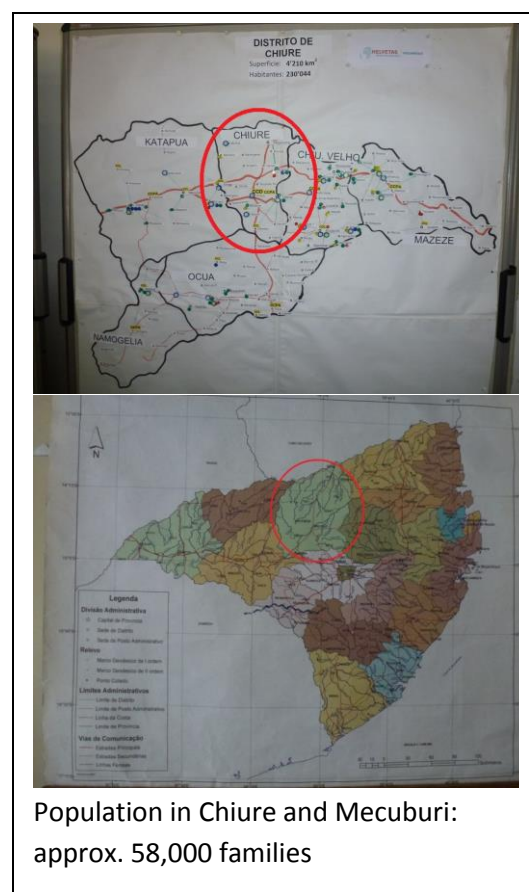
**Table No. 2 Adoption rate of metal silo in 2 Regions**

Area / Region	# families involved in sensitization activities	Demo silo installed # lead farmers	Adoption 1 year # silo	Adoption 2 year # silo	Adoption 3 year # silo	Adoption 4 year # silo	Total after 4 years # silo
Adoption rate			1%	2%	4%	8%	
Chiure	1680	54	10	23	49	101	183
Mecuburi	1950	60	12	27	57	117	213
<b>Total</b>	<b>3630</b>	<b>114</b>	<b>24</b>	<b>50</b>	<b>106</b>	<b>218</b>	<b>396</b>

The project has a planned outreach for 2018 of 5000 farmers, see annex No. 7, who adopted technologies and 45,000 farmers with awareness about Postharvest management. This target is very ambitious and only reachable if a multiplication effect can be reached through other institutions in the regions. In the two districts (Chiure and Mecuburi) we count a rural population of 58,000 families, this means at the end of 2018 9% of families adopted some improvements and 78% are sensitized.

As the project is working in two districts in two provinces with a distance of 600km one from each other it is necessary to ensure a more permanent presence for training, promotion, monitoring and quality control in both districts and reinforce the project staff.

On the other hand more districts have to be integrated to reach the projected target. This is not realistic for this first intervention and a more realistic outreach plan has to be analyzed.



### 3. Menu of technology / Improvements

#### 3.1 Menu of technologies

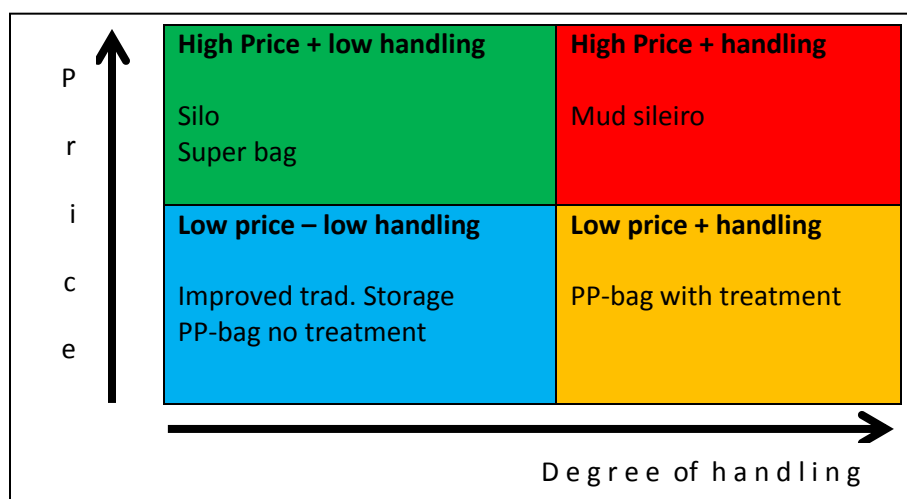
The idea to have a menu of technologies is to cover a whole range of options and improvements which combine innovation and traditional knowledge and make adoption more available for smaller and medium size farmers. The options combine price and handling effort. Therefore we choose the following options:

**Table No. 3 Comparison of Price and Handling of Technologies**

<b>Option: Menu of Technologies / Improvements</b>	<b>Price</b>	<b>Handling effort</b>
Metal Silo	xxx	x
Super bag	xxx	x
Mud Sileiro	xxx	xxx
PP-bag with treatment	xx	xx
Improved traditional storage	x	x
PP-bag no treatment	x	x

**Legend:** xxx high, xx medium, x low

**Graphic No. 2 Comparison of Price and Handling of Technologies**



This variety of options facilitates farmers' decisionmaking process but all options represent improvements and contribute to the sensitization process without imposing a solution.

### 3.2 Validation and Promotion

The adoption process has to consider the choice of farmers, therefore it is good to test the newly introduced options at farm level and demonstrate the advantages and efficiency of each option in practice. The validation should consider:

- The handling steps
- The investments
- The efficiency
- The availability of inputs.

The efficiency includes a Loss assessment study, which includes regular sampling of grain from each storage facility during the whole storage period. A protocol has been designed for this purpose. The protocol foresees that in each community 2 families are chosen and in each family three technologies will be installed. In total we will have 32 families with a total of 96 technologies installed. Each improvement will be repeated 16 times. See Annex No. 8. It would be interesting to compare the new technologies with the traditional system.

At the same time periodic meetings with neighboring farmers to show them the new practice can contribute of a better understanding and dissemination of improvements.

#### **4. Artisans**

##### **4.1 Training and silo quality**

Actually there are 10 artisans trained in two Districts, Cabo Delgado and Nampula, distributed in 7 communities. 5 artisans in two communities (Pemba y Chiure) in Cabo Delgado and 5 artisans in 5 communities (Murapanima, Faina, Mecuburi, Namina y Mualua) in Nampula. 3 artisans were in a refresher training in 2014, one was trained in 2014 and 6 were trained in July 2015, see Annex No. 17.

Only the first 3 artisans have produced silos. 178 silos were produced before 2014 for different institutions (Helvetas, CLUSA). In 2014 Helvetas ordered 48 silos. The new artisans trained in July are waiting for further instructions.



Quality control silo in Chiure

##### **4.2 Selection of artisans**

To have a good selection of artisans the following criteria's should be analyzed and assessed, see also Annex No. 19:

- Good manual and artisanal capabilities
- Good entrepreneurial capabilities and vision
- Having good relations and connections with village leaders and authorities
- Can write and read (Basic education standard, ideally/ desirable primary school diploma)
- To know basic mathematics (4 operation: addition, subtract, multiply, divide) desirable: percentage calculations.
- Skills and practical experience in manual activities special in metal work.
- Good record in the village
- Space to install a small workshop: 5m x 5m
- Capacity to do some investment for tools and materials
- Living in the production areas, near population.

- Capacity to make a simple workbench

It is probably more advisable to have a mix between three types of artisan:

- An entrepreneurial artisan, which has some mobility to get input and can deliver the silo nearby the farmer. With some financial capacity.
- A local embedded established diversified artisan, who works with metal.
- A local artisan with occasional activity.

#### 4.3 Starting production

What is really important is that after training the artisan can start the manufacturing of the silos. This period should not be longer than 1 month. The first silos should be done under supervision of a master trainer being on the site for 2 to 3 days. To be more effective on this it is advisable to equip the artisan with the necessary tools and material for 10 silos of three different capacities: 2 silos with 200kg, 6 silos with 400kg, and 2 silos with 800kg silo. The package would include:

- 35 metal sheets (1m x 1.6m)	:	Mt. 21,700.-
- 20 tin sticks (220gr)	:	Mt. 5,720.-
- 2 dl Hydrochloride Acid	:	Mt. 120.-
- 1 dl aluminium paint	:	Mt. 20.-
- 1 tool set	:	Mt. 6,000.-
- <b>Total</b>	:	<b>Mt.33,560.- (US\$ 840.-)</b>



Artisan Chiure, First production of silos.

With this initial effort we can combine two objectives, one to promote the silo and the other to help artisan to go into the business. The artisan has to pay back the tools with the manufacturing of the first twenty silos. For each silo he will give Mt. 300.- for the metal tools.

#### 4.4 Silo quality and Quality control

The quality of silo is directly related to two aspects:

- The manufacturing capacity of the artisan and
- The quality of the materials

Both are important factors which have to be guaranteed and accurately controlled by the project, especially at the beginning. See a list of aspect to control in annex No. 1. The importance of being precise is the only guaranty that the silos is hermetic, an undeniable requisite for good conservation conditions.

The older and local artisans are used to work with metal sheets but it is often difficult to change their habits. Therefore it is not always good advice to select traditional artisans, because they very often don't accept change.

At the beginning the first 20 silo of each artisan have to undergo quality control and need to be approved by the project or the master trainer. It is also important that the extensionists know the quality criteria very well.

For the quality of the material: The metal sheets have to have a thickness of 0.5mm and be well galvanized, check that there are no spots of rust or oxidation. The tin for welding has to have at least 40% of tin. Lower than that makes the welding process difficult and hermeticity is at stake.

<b>Quality norm:</b>	metal sheet galvanized: thickness 0.5mm or Gauge 26
	Tin bar: > 40% tin

In the annex No. 3 the main errors of the produced silos from the first trained artisans are illustrated. Some errors like size of cylinder dimensions are not so important but when the soldering quality or the folding of metal sheets is bad the silo cannot be accepted.

## 5. Material supply

For this moment the best option to get metal sheets is MMI Steel from Nacala with its brand name Kiboko. This is a new company from India which imports rough material and operates the galvanization process in Mozambique, in Nacala. Their main product is galvanized roofing metal sheets.

Flat galvanized metal sheets is not a commodity with a big demand, therefore the availability in local stores is not established.

MMI Steel showed interest in cooperating with the project because we share the same clients. They are willing to share some promotion cost and make special prices for flat metal sheets. See proposed agreement in Annex No. 11 and No. 12. MMI Steel would even go further if we can negotiate with the government a tax exemption, see chapter 7.3.

A Metal sheet distribution Network has to be organized and can be linked with the roof metal sheet retailers, this is a task which has to be organized at the same path of silo demand. Probably



MMI Steel, Nacala, Metal sheet, Marca Kiboko

the project should start buying a coil, around 1000 metal sheets (1.60m x 1 m) for promotion and foster the offer to awake the demand through demonstration plots.

Tin (50%/50%): It is difficult to find quality tin bar for welding purpose. The quality available is 30% tin and 70% lead. Probably MMI Steel could import good quality because they need tin in their galvanization process. Otherwise the project has to organize through a local dealer the import of such material.

The same situation presents for the soldering hammer made from copper. These can be imported from the following address:

**Table No. 4 Address Soldering Hammer Provider**

Dönges GmbH & Co. KG	
Jägerwald 11 D-42897 Remscheid	Inhaber: Thomas Pletsch Verantwortlich für den Inhalt: Thomas Pletsch
Tel. 0 21 91 / 56 26 - 0 Fax 0 21 91 / 56 26 - 1 99 info@doenges-rs.de	UST-ID: DE120767525 Handelsregister: Amtsgericht Wuppertal, HRA18588, HRB12398

## 6. Extension, Training and Promotion – Driving Forces

### 6.1 Effectivity of extension and Promotion: cascade effect

The project is now starting to build up the strategy on how to bring change closer to farmers and how farmers can be better informed about Postharvest management practices and improved technologies. Therefore a manual<sup>1</sup> has been prepared for training purposes. The Manual documents the whole Pre and Postharvest cycle, with the following chapters:

1. Pre-harvest, 2. Harvest, 3. Transport, 4. Drying, 5. Threshing, 6. Cleaning, 7. Storage, 8. Pests, 9. Control of insects.

The manual refers to different studies carried out by the project in the previous years and includes some illustrative pictures and drawings for better understanding.

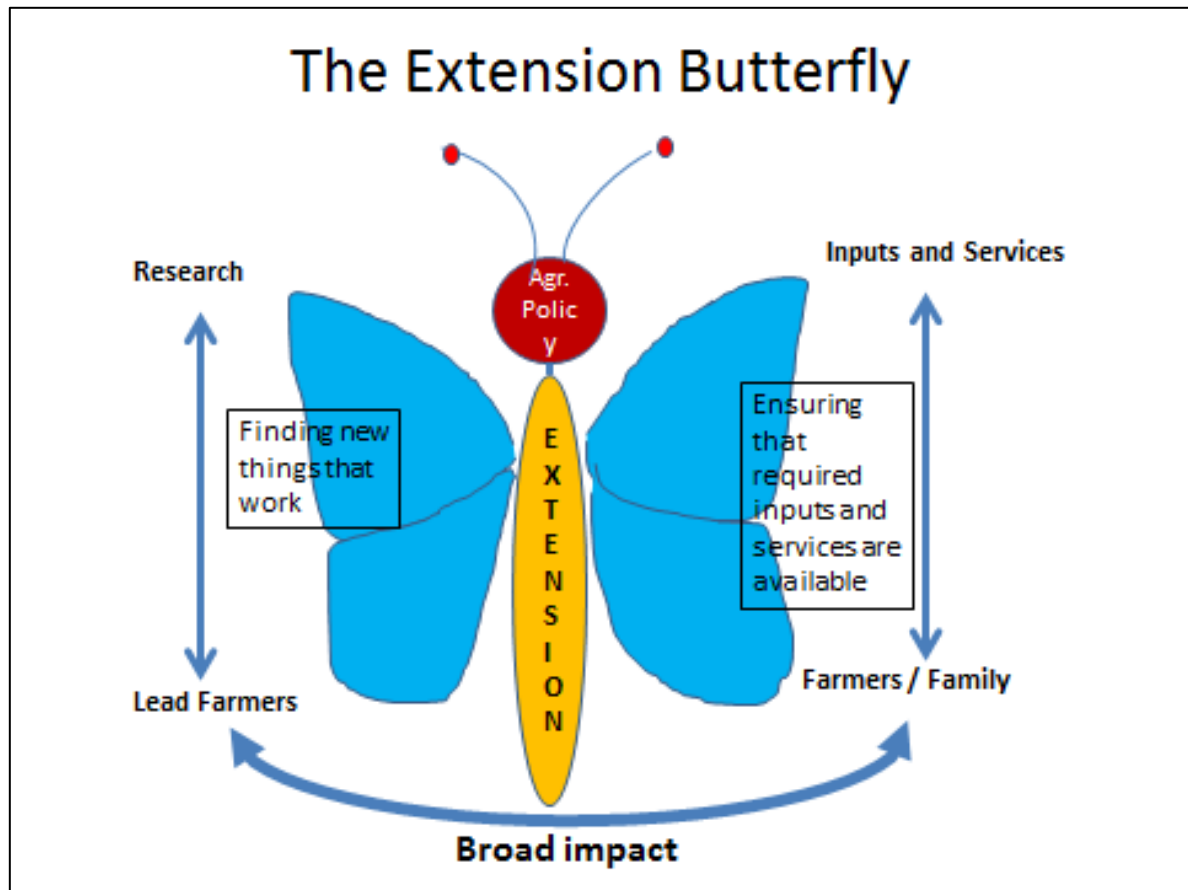
Until now no training has been carried out. The introduction of improvement in Postharvest management has to go inevitably through dissemination of knowledge and good practices. To



<sup>1</sup> Manual de Gestao Pos-Colheita, 2015

illustrate the connection between Action and Research, Extension and Adoption the following graphic is relevant:

**Graphic No. 3 the Extension Butterfly**

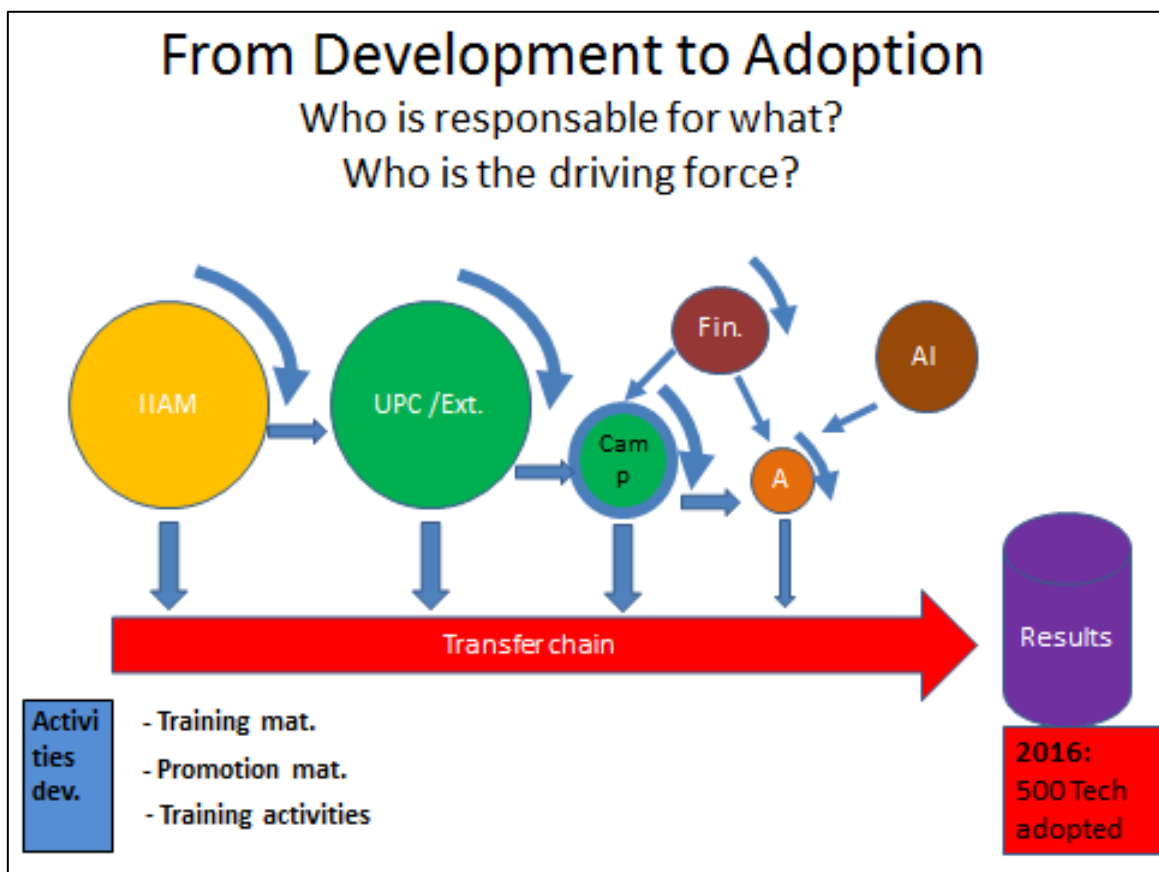


This graphics illustrates the role of extension services, which can be the mission of an official institution as well as private organizations. What is particularly important is the connection of Lead Farmers with Farmers and Rural Families as well as the connection to Inputs and service providers.

The big challenge is how the knowledge holder will transmit that knowledge in an efficient and effective way to the farmer and how the service provider can be effectively connected with the market in rural areas. Another question is who are the driving forces? The graphic below illustrates how these knowledge value chains are connected to each other and form at the end what we call the knowledge cascade and feeds the Transfer chain.



Graphic No. 4 from Development to Adoption



**Key:** IIAM: Instituto de Investigacao agraria de Mocambique, UPC: Uniao Provincial de Camponeses, Ext.: Extensionist, Camp: Campones, Fin.: Financial Services, A: Artisan, AI: Agricultural Inputs.

The biggest challenge is how effectively and how committed is each player in this interconnected transmission system? How committed for instance is IIAM that at the end of the Transfer Chain farmers adopt improvements?

## 6.2 Training and Extension material

Training and sensitization are unquestionably essential elements in this Transfer chain. For future steps the following **recommendations** are given:

- The training should include practical demonstration modules and connect theoretical knowledge with practical exercises.
- A module based training program can be adapted in a flexible manner to the target population instead of having one manual.
- For the extension people the project should prepare training tools, see list in annex



No. 21 such as:

- Flipchart:
    - Introduction to Postharvest management
    - Management of Metal silo
    - Management of improved traditional practices
  - Plastic banners
  - Posters
  - Technical sheets for each technology or improved practice
  - Support promotional activities with radio spots.
  - Etc.
- As much as possible people from the field should be trained either for sensitization and/or for technical training.
- In annex No. 20 a training program for a 3 days training program is attached.



Farmer Training with visual Material

The program includes technical aspects in Postharvest matter as well as operational aspects on how to foster adoption.

For the actual training material the following **recommendations** are given:

- Organize the manual in a modular structure, and reduce the actual manual in a short version of 4 – 6 pages as “Introduction to Postharvest management”.
- Use more pictures reflecting the real situation, and avoid pictures with technologies which don’t exist or are not in use.
- Prepare teaching materials which are used to illustrate and support the trainers activity such as power points, demonstration structures, tools, flipcharts, etc.
- Invite persons from the field (artisans, teachers, authorities, etc.) as well as people from the private sector to be part of the training.

### 6.3 Promotion through Demonstration

At the actual state of the project promotion has to be given most importance. Promotion has to have the following objectives:

- Show farmers the options for improvements
- Make farmers aware about the losses and the benefits of improvements
- Involve local and regional stakeholder in their role of facilitation of adoption process.

The promotion process includes the following main activities:

- Preparation of promotion materials, see annex No. 21
- Conduct sensitization meetings with authorities, local institutions and leaders
- Conduct sensitization meetings with farmers but especially with village leaders.
- Install demonstration plots with improved technologies (Silos, bags, improved traditional systems, etc.)
- Regular follow up and gathering together to show the experiences
- Ensure accessibility of materials and silos.
- Define a promotion price strategy for early adopters.

The most important is to convince farmers to have their first experience and that way get convinced of the advantages. Therefore the strategy has to foresee different options of improvements, not only the silo should be the option, also better handling and improvements of traditional systems can be options.

The most important is to give the extension people the promotion tools such as Flipcharts with pictures, Posters, Banners, small silos, bags, etc. See detailed list of options in the annex No. 21.

A certain intensity has to be reached in each region, so farmers can perceive that something is changing in their neighborhood.

## 7. Acquisition of silo and Financing options

The last calculation (July 2015) of prices, see annex 13 for metal silos give the following picture:

- silo 200kg Mts: 2,500.- (US\$ 63.-)
- Silo 400 kg Mts. 3000.- (US\$ 73.-)
- Silo 800 kg Mts 4,300.- (US\$ 108.-)
- Silo 1000 kg Mts 5,000.- (US\$ 125.-)

This price calculation is based on the following price for the main inputs:

- metal sheets (1.6m<sup>2</sup>) of Mts 620.- with 90% of distribution and retail margin
- Tin Mts 130.- per 100gr (Retail price at Hardware store)

The metal sheet and the tin represents a cost share of around 80% of the whole cost of a silo.

For a small farmer, even if the silo is profitable, the initial investment is high, therefore a mechanism of financing has to be found and put in place. Three options can be considered, but have to be further explored and developed:

1. Credit for Agribusiness through GAPI
2. Community Banks – Seed money
3. Subsidy model



Supply Chain: Material for silo production

## 7.1 Credit for Agribusiness through GAPI

GAPI (Sociedad de investimento SA), which is a national initiative, manages two financing lines:

1. AgroEmpreender: Promotion of Agribusiness, minimum amount Mts 50,000.- max 3,000,000.- for 12.5% interest rate
2. AgroGarante: Guaranty Fund to back credits from the bank, minimum Mts. 0.5 Mio, max 12 Mio, interest rate depends on the banks commercial rate.

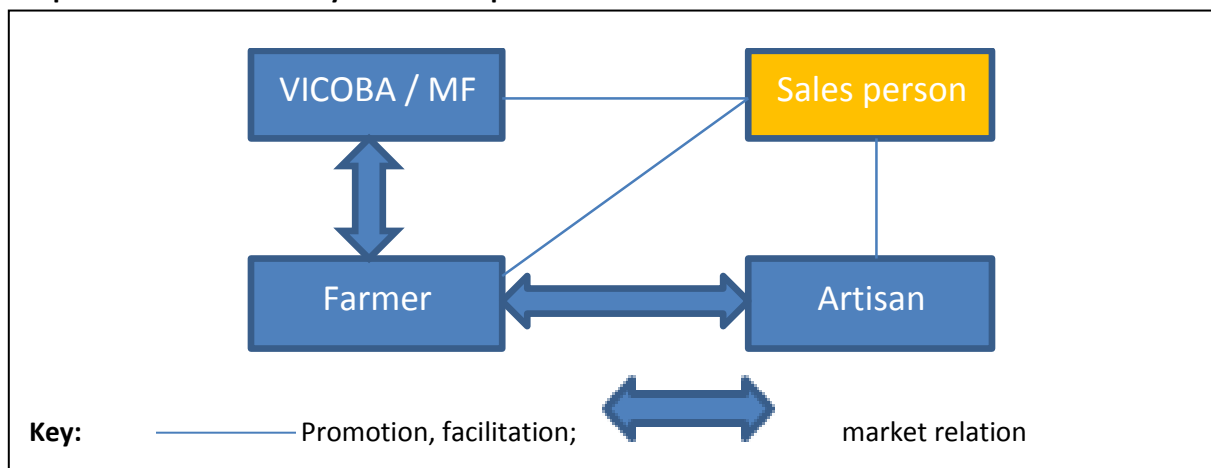
For our case only the first option is feasible, but still the amount is high for an individual artisan. Through a personal contact with GAPI in Nampula, GAPI mentioned that the door is open for negotiation. This should be explored more in detail.

## 7.2 Community Bank - Seed money

Community banks are not strongly developed in these rural areas. But this could be an option for financing the adoption of metal silo for a farmer. At this moment this option has to be better explored in the field. An option could be that the project starts with a seed money fund given to the artisans through materials, thus to build the first 10 silos after training. The silo is given through Lead farmers for demonstration purposes but with the condition that after one year the farmer has to pay to the community bank 60% of the silo price if he is interested in it. With this seed money the group then can buy more material and produce more silos for other members. See description annex No. 10.

The establishment of such a system needs the intervention of the field agent (Sales person) who promotes the silo and interlinks with the artisan, the farmer and the community bank members. see graphic below:

**Graphic No. 5 Community bank Concept**



### 7.3 Subsidy model

A Subsidy model can be considered when the social benefit is higher than the farmer can afford economically and if it is part of a national accepted policy. As the silo is a safe storage option which addresses two main objectives: 1. Food Security for the family and 2. good storage for surpluses. As it is difficult for small farmers to get the cash to buy a silo a subsidy is justified. There are three proposed operational modalities which can be considered:

1. Subsidy of metal sheets
2. Subsidy of Price release.
3. Tax release to metal sheets manufacturer

1. **Subsidy of metal sheets:** With this Subsidy model the government pays the wholesaler or metal sheet company for the metal sheets, where the subsidy benefits earmarked (selected) farmers. These farmers are previously selected and approved by local government.

2. **Subsidy of Price release:** Through a voucher system the local government pays to preselected farmers an amount of 50% of silo value. The disbursement is made through local artisans who are manufacturing and selling the silos.

3. **Tax release to metal sheets manufacturer:** The government accepts that the metal sheets company compensates a price reduction through VAT tax release on sales. The following modality could be worked out as the example show below.

#### Example:

Market price 1 metal sheet* incl. 17% VAT	Mt. <u>   </u> 330.-	(17% VAT: Mt 48.-)
Subsidized Price 1 metal sheet:	Mt. <u>   </u> 165.-	(50% reduction)
Price difference:	Mt. <u>   </u> 165.-	
Amount price difference for 5000 metal sheets	Mt. 825,000.-	= Tax release
*Dimension metal sheet: 0.5mm (1.6m x 1m), weight: 6 kg		

The amount subsidized (Mt. 825,000.-) can be deducted from VAT tax duties. This arrangement is limited for a certain number of metal sheets previously negotiated with the government.

The operating model of this third option has the advantage that the government doesn't have to cash out money.

**Way Forward: Next steps**

The project has to discuss these proposed subsidy models with government officials and reach an agreement on how to proceed. After this initial agreement the proposal has to be discussed with the metal sheet company and an operational modality has to be worked out with a convincing control and reporting mission mechanism. An agreement has to be signed between:

- a) the government,
- b) the metal sheet company and
- c) the retailers

MMI Steel showed interest in a joint agreement for this type of approach and commits both the government and Private Company.