

Business case “Sorghum as a cash crop”, a proposition for farmers in Nyando, Kenya

20 June 2021

- This business case is part of the co-creation track of the NWO-CCAFS research project “Climate-Smart Financial Diaries for Scaling in the Nyando Basin, Kenya”, led by the Amsterdam Centre for World Food Studies, in consortium with Wageningen Economic Research, University of Nairobi and CCAFS East Africa, 2018-2021 (<https://www.nwo.nl/projecten/w-08260310-0>).
- The goal of the co-creation track is to develop business models that can help the scaling of Climate-Smart Agricultural (CSA) practices.
- From a longlist of business ideas of farmers and commercial parties, a shortlist of most promising business ideas was selected. See [CCAFS Info Note - Nov 2019](#). This business case is one of them.
- Sorghum is by nature a drought-resistant crop. More resistant varieties have been developed, as one of the possible CSA practices in Nyando. Sorghum is currently produced as food crop, with surpluses being sold on the local market. The flour mills in the region are importing sorghum from Uganda, because there is a shortage on the local market. This represents a unique opportunity for Nyando farmers.
- The business case consist of two tracks: 1. could Nyando farmers produce sorghum as a cash crop? Possibly combined with aggregating sorghum through CBO storage. And 2. could a flour mill be established to process and market sorghum from Nyando and other production regions, and to provide a more stable market for them?

Three tracks

- Track 1 (pages 4-8): could Nyando farmers produce sorghum as a cash crop? And could the CBOs organize aggregation?

- Possible key partners:

- Magos enterprises (input supplier);
- CBOs in sub-counties of Nyakach, Kisumu (Foko, Ncodep) and Soin-Sigowet, Kericho (Kapsokale);
- Agricultural officers of the sub-counties.

- Track 2 (pages 9-10): could Magos set up a flour mill to process and market sorghum from Nyando and other production regions, and to provide a more stable market for the farmers? And participate in aggregation?

- Possible key partner:

- Magos enterprises (input supplier)

- Track 3 (pages 11-12): could the savings groups in Nyando make use of the services of a bank, to increase their savings and loan fund?

- Possible key partners:

- Commercial banks (Equity Bank, KCB Bank, Postal Bank, ABSA Bank/Barclays)
- CBOs in sub-counties of Nyakach, Kisumu (Foko, Ncodep) and Soin-Sigowet, Kericho (Kapsokale);
- Agribusiness officers of the sub-counties.

- Next steps (page 13)

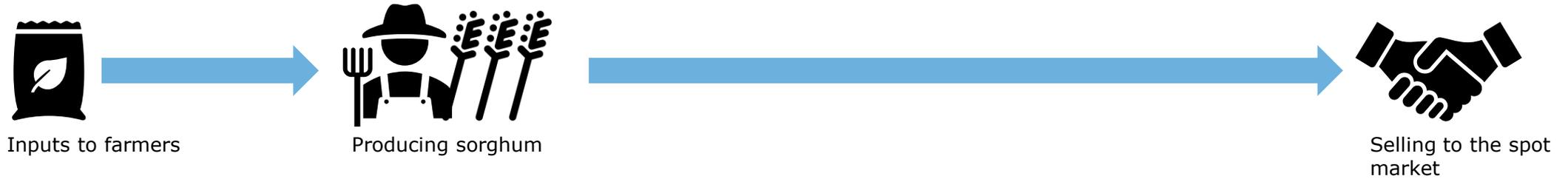
Process followed for track 1 and 2

- Step 1: Interactive elaboration of track 2, through weekly meetings with Magos Enterprises (Nov 2020-Jan 2021)
- Step 2: Consultative meeting with the 3 CBOs, about track 1 and 2 (Jan 2021)
- Step 3: Exchange visit with 12 delegate farmers from the CBOs, to Magos' demonstration field in Kolenyo, and to the flour mill of Kamichi-Kapondo CBO in Ahero (Jan 2021)
- Step 4: Elaboration of the business case, in an annotated Infographic (*this presentation*)
- Step 5: Validation of the business case with the stakeholders (*not possible because of Covid19 measures from March 2021 onwards*)

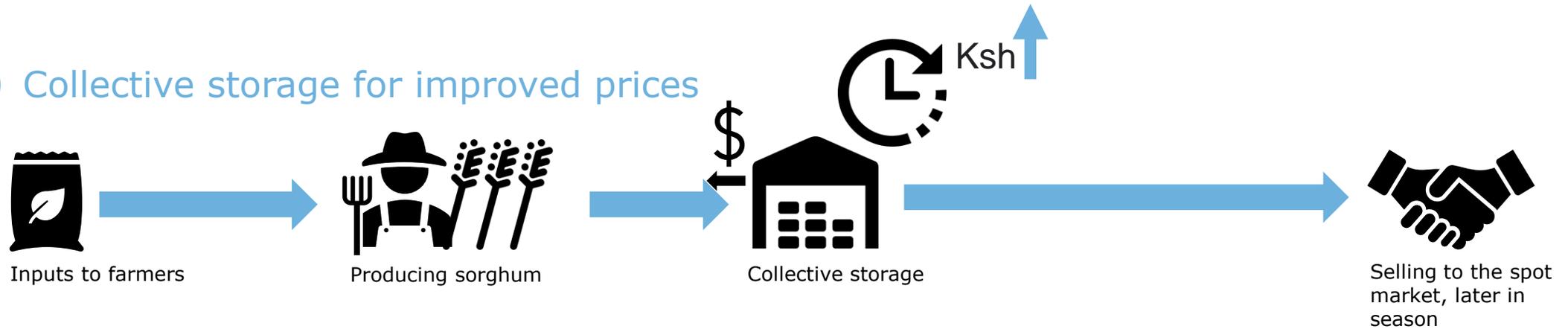
Note: Track 3 was limited to exploratory interviews with CARE Kisumu and one commercial bank. Should be further explored by the groups and the CBOs, in case the groups are interested.

Track 1: Model options for farmers - Sorghum as a cash crop

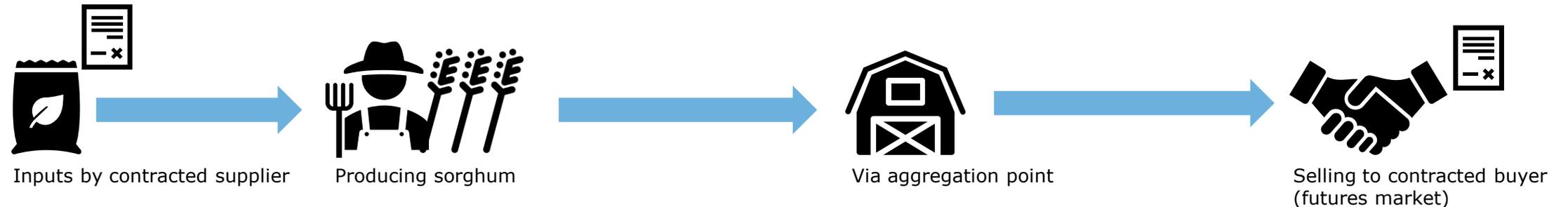
1 Simple and direct



2 Collective storage for improved prices



3 Contract farming, for inputs and off-take



1

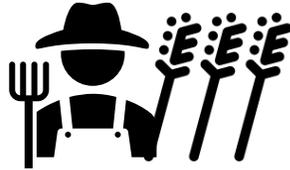
Simple and direct

Farmers buy inputs, produce a surplus of sorghum and sell directly to the market



Inputs to farmers

Mainly improved seeds and fertilizer for sorghum. This can be accompanied with a demo plot/ innovation centre, or other types of training and advice for farmers.



Producing sorghum

Farmers who produce a surplus of sorghum. They consume part of the produced sorghum, the rest is sold.



Selling to the spot market

Farmers sell as soon the production is ready. Any buyer that pays a market price is a possible client.



Opportunities

This business model is easiest to set up. It requires:

- Farmers that want to switch to commercial sorghum farming
- Farmers that can finance the needed inputs
- Enough buyers for the raw sorghum.



Risks

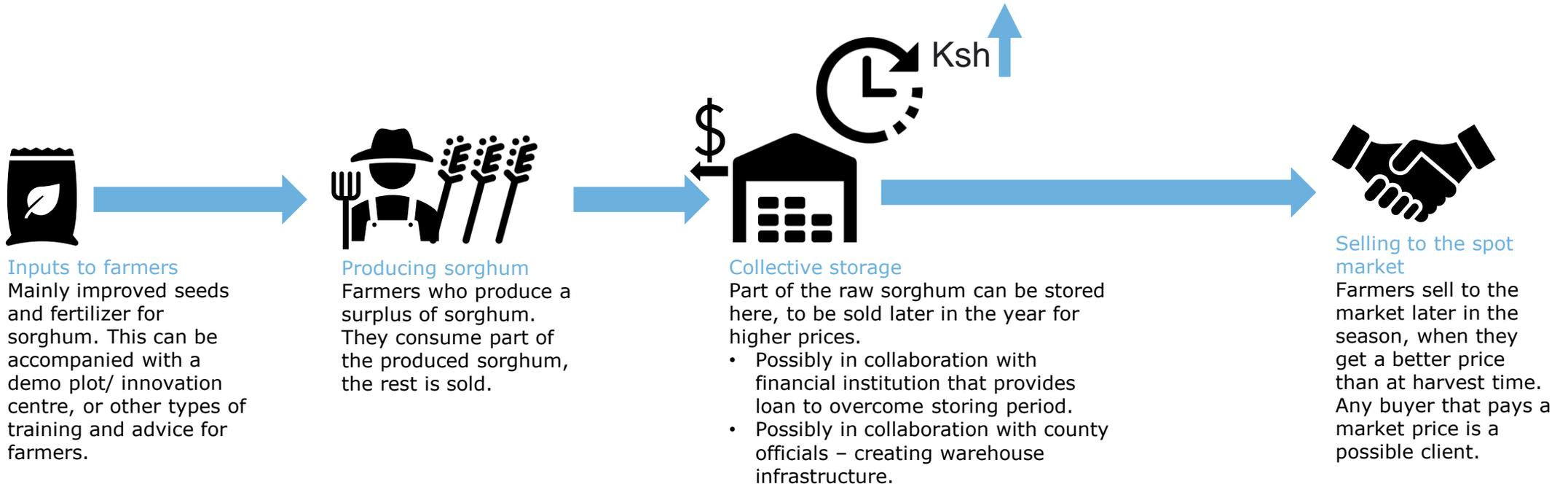
When there is no storage facility, all the raw products will hit the market at once, when prices are low.

Possible food safety issues if farmers store the product using pesticides. If farmers use traditional storage method (mixing ashes), storage losses can be a problem.

2

Collective storage for improved prices

Farmers buy inputs, produce a surplus of sorghum, store at a collective facility, may receive temporary loan, sell for higher prices



Opportunities

Farmers will arrange collective storage for the raw sorghum. This way the products can be sold during the year, when the market pays higher prices. Profits are therefore likely to increase



Risks

- Storage infrastructure (warehouse) needs to be in place
- The storage needs to be collectively organised and paid
- Delaying sales also delays farmer payment
- Delaying sales is no guarantee for higher prices
- Delaying sales may increase storage losses

3

Contract farming, for inputs and off-take

Farmers buy inputs with contract, produce a surplus of sorghum, picked up and brought to aggregation point, sold to a contracted buyer



Inputs by contracted supplier
Mainly improved seeds and fertilizer for sorghum. This can be accompanied with a demo plot/ innovation centre, or other types of training and advice for farmers.



Producing sorghum
Farmers who produce a surplus of sorghum. They consume part of the produced sorghum, the rest is sold.



Aggregation point (buyer- or farmer-owned)
At the aggregation point the raw products are collected and stored, before the sorghum is sold.



Selling to contracted buyer
Farmers sell as agreed on before the season to a buyer.



Opportunities

Contract farming will give the farmers more security. It can also give financial security to finance the investment needed for commercial farming



Risks

It requires a network of buyers and input suppliers to make this business model work. Or one party that combines input supply and off-take. Prices farmers receive can be lower than market prices. Farmers could side-sell if spot prices become higher than contract price, or if they are cash-constrained. This can compromise reliability of deliveries. Contract farming can create dependency of farmers.

Business model - Sorghum as a cash crop

1. Simple and direct

Farmer will invest more per acre: KSh 33000 instead of KSh 24000. This is mainly because of higher costs of improved seeds and fertilizer (KSh 9800). Labour cost of KSh 24000 is similar, mostly family labour calculated at a daily wage of KSh 500. In return the farmer expects to get a higher yield: 12-16 bags of 90 kg per acre, compared with 6-8 bags in traditional sorghum.

Commercial sorghum is profitable with a minimum yield of 7.51-9.39 bags/acre, depending on the sales price (KSh 50 or 40/kg). So it is profitable if yields meet expectations.

Farmers do need to pre-finance the input costs (KSh 9800) and maybe part of the labour.

Conditions for success:

- Many farmers growing sorghum in same locality (collective bird control measures, visibility for attracting services and support).
- Farmers agree to actually use improved varieties and fertilizer appropriately and apply healthy and sustainable CSA practices.

2. Collective storage for improved prices

This model can be profitable:

- If the price fluctuations during the season are predictable; in Nyando the prices at harvest time are usually 40-50/kg and can increase to 60-70 at peak times.
- If the margin from higher prices is larger than the warehouse fee and the warehouse losses; manual drying every 2 weeks makes storage costs quite high. Yields should be higher than 12 bags/acre) and/or the price differential larger than KSh 10/kg, to make storage profitable.

Conditions for success:

- Support from county government to build community warehouses
- Strong farmer organisation for trustworthy warehouse management
- Training of farmer organisation, in warehouse management and in relations with MFI/bank
- Partnership with MFI/bank, for warehouse receipt financing.

3. Contract farming, for inputs and off-take

This model can be profitable:

- If contract prices are more attractive for the farmers than the spot prices at harvest time
- If stable deliveries are more attractive for the mill than the cheapest price
- If an MFI/bank can finance the inputs, based on the delivery contract with the mill

Conditions for success:

- Reliable volume of production and delivery
- Side-selling risk should be under control
- Aggregation point logistics (storage, transport)
- Strong farmer organisation for trustworthy supply to mills, trustworthy service to farmers and strong bargaining position of farmers
- Trustworthy contract compliance by the mills
- Partnership with MFI/bank

Farm costs

Labour costs

8 persons x 6 days = 48 person-days per acre
@ KSh 500 per day
= KSh 24000 per acre
Same for traditional and commercial farming.

Input costs

- Improved seeds: KSh 800
 - Fertilizer: 1.5 bags x KSh 6000
- Zero inputs in traditional farming.

Threshing

Optional: machine threshing

Yields

Traditional sorghum

6-8 bags per acre
(bags of 90 kg)

Commercial sorghum

12-16 bags per acre

Storage costs

Storage per acre per month

Storage: 2 persons x 1 day
Drying: 2 persons x 1 day for each drying round
@ KSh 500 per day
Materials: KSh 2000-2500 for polythene paper

For 3 months of storage, and biweekly drying rounds, this would be KSh 9000-9500 per acre of product.

Prices

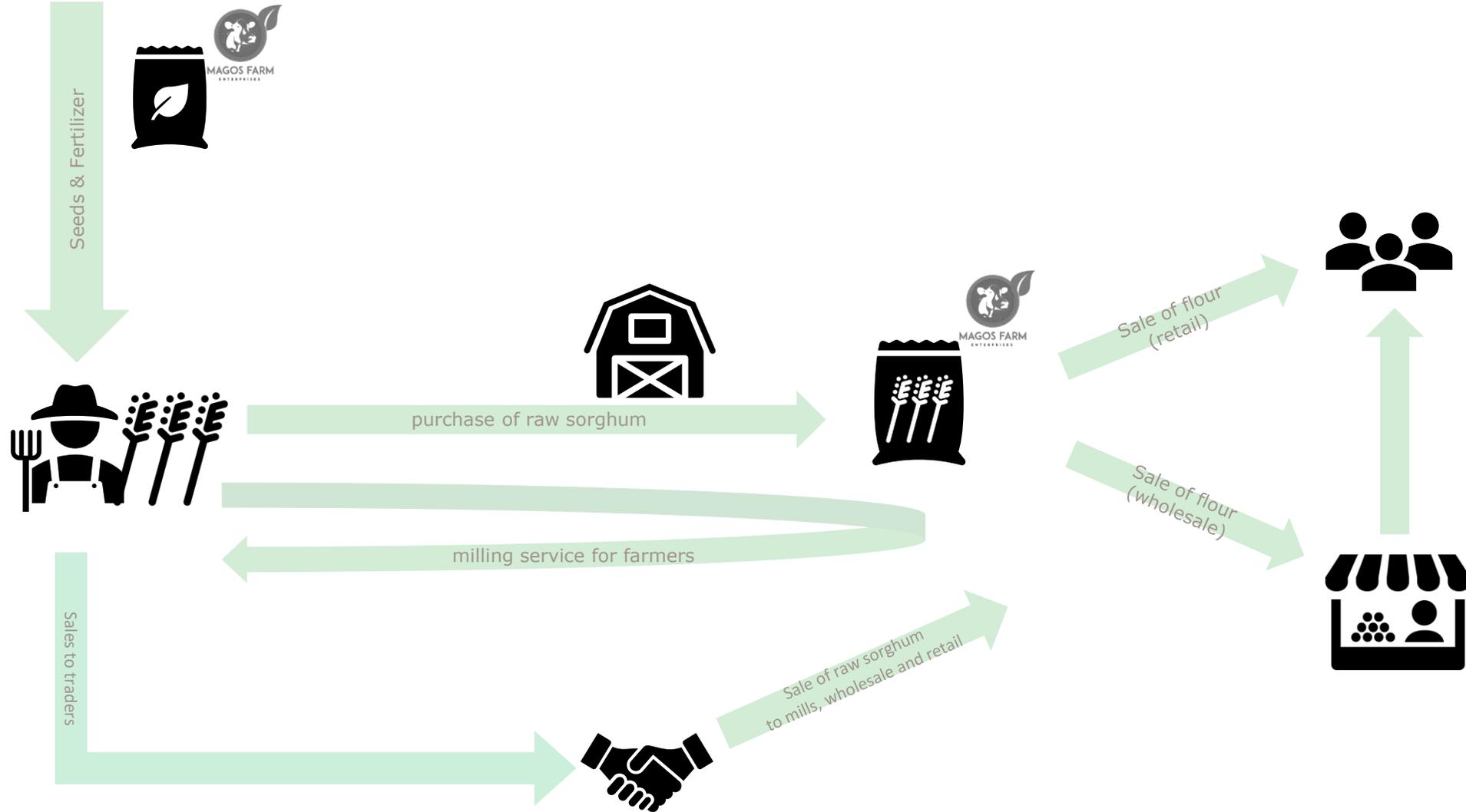
Prices at harvest moment

KSh 40-50 per kg

Prices at peak of season

KSh 60 per kg
(up to KSh 70 exceptionally)

Track 2: Magos setting up a flour mill for sorghum



A flour mill for sorghum - explanations

Production stream



Selling inputs to farmers

Mainly improved seeds and fertilizer for sorghum. This can be accompanied with a demo plot/ innovation centre, or other types of training and advice for farmers.



The sorghum farmers

Farmers who, with the right input, produce a surplus of sorghum. They sell their surplus via an aggregation point to the mill of Magos. Farmers in Kisumu, Siaya and potentially Nyando.



The aggregation point

At the aggregation point the raw products are collected and stored, before the sorghum goes to the mill.



Processing of the sorghum

At the processing joint the raw sorghum is

1. Milled
2. Mixed with other flour types
3. Packaged
4. Stored before being sold

Marketing stream



Selling the milling service to farmers

Farmers can bring their own raw products to the mill. Having it processed and take it home. This can be used by farmers for own consumption or local marketing.



Selling to retailers & hotels

For a 10% discount on the consumer price retailer and hotels can buy the packaged flour.



Selling to consumers directly

This is mostly the farmer population.

Other buyers



Farmers selling to other buyers

A large and stable market is key for farmers to transition to commercial sorghum farming. Therefore, we include also other buyers in the business model overview. Other buyers are most likely other mills that can also absorb large quantities of raw sorghum.



Do farmers want to switch to commercial farming?

- Families have to be willing to switch their farming business model
- Minimizing risks by (drought-/pest-) resistant inputs and knowing enough buyers
- Possibility to hire threshing machines from local CBOs?

How much security can Magos provide to farmers?

- Contract farming – assurance that the company can buy whatever volume the farmers produce
- Attractive minimum price?



How much supply security can the farmers provide to Magos?

- Sufficient volume?
- Aggregation and transport
- Risk of side selling



How can farmers pre-finance more expensive inputs?

- Self-financing
- Loans from saving group
- End-to-end finance system such as Agri-Wallet?
- End-to-end finance system with input supplier and buyer?
- Saving group at a bank
- Individual loan at a bank



Besides Magos, would there be enough buyers for farmers?

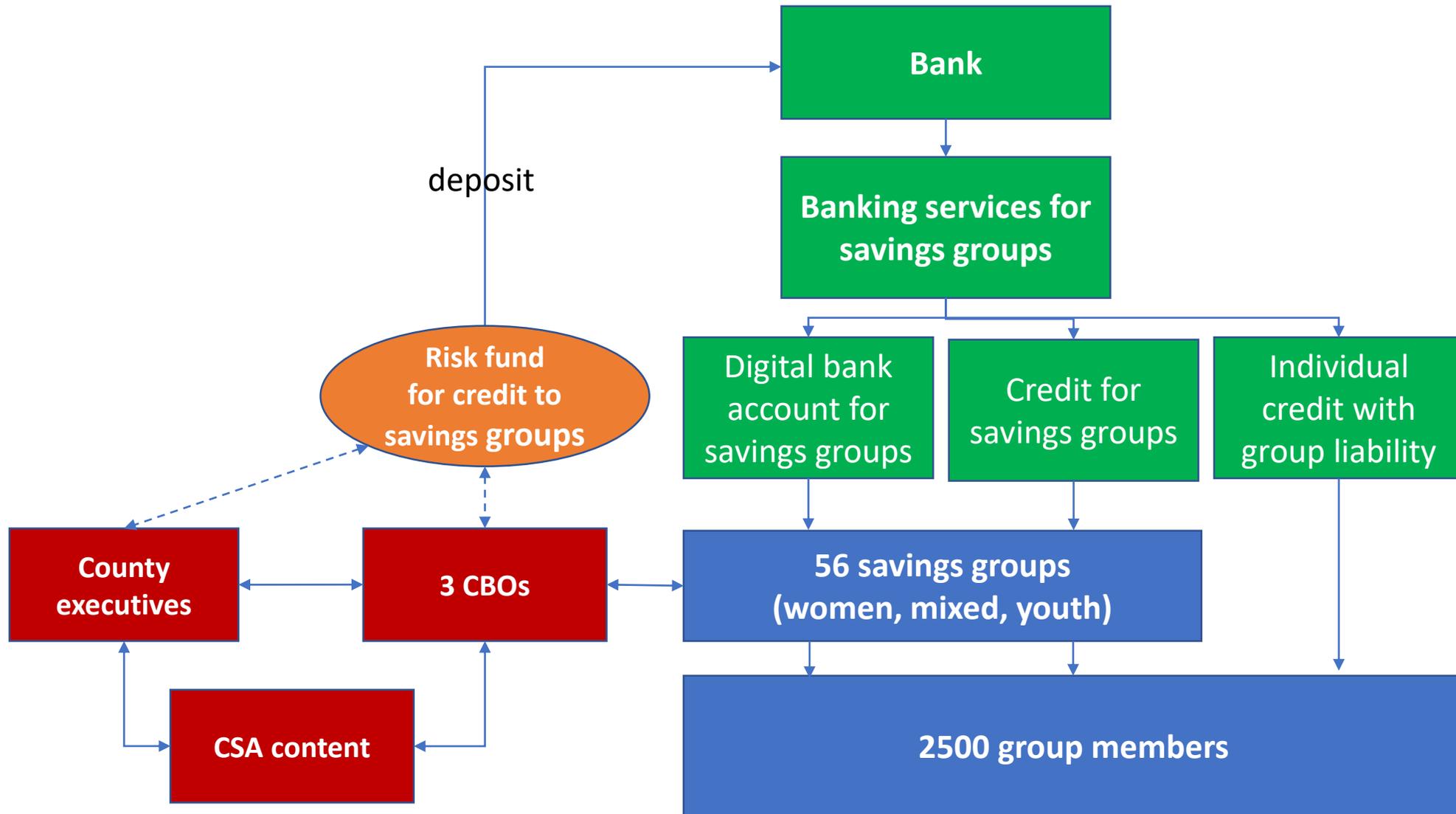
- Other mills
- Other buyers for raw sorghum
- Buyers of milled flour, after use milling service



Is it lucrative enough for Magos to source from Nyando?

- Assurance of minimum quantity of raw products. Scale!
- Other competitive advantages?

Track 3: Bank services for the savings groups in Nyando



Bank services for savings groups - explanations

Setting



58 savings groups, 2500 members
In Nyando there are 58 savings groups, operating under the umbrella and support of three CBOs. These groups cover 2500 households (among a total population of about 23,000). Approximately half of the groups are women-only groups, one third are mixed male-female groups, and the rest are youth groups. Group sizes range from 15 to 30. The total annual savings volume of these groups stands around US\$ 95,000 (roughly KSh 10mn).

Climate-smart practices

The groups and CBOs also play a role in the diffusion of climate-smart practices. The farmers have indicated high levels of trust and loyalty with their groups and see their groups as the most suitable vehicle to engage in commercial relations.

Possible benefits

- better relations with bank institutions
- improve money management and savings
- access loans that could reinforce lending to members.
- increase investments in CSA practices or in any other businesses

Savings groups



Save and lend as usual

The savings groups operate their savings and loans as they always do.

Bank services 1 - savings

If they prefer, the groups can use a mobile money account of the bank, instead of their physical cash box. The account can be used to make their member deposits into the group fund, and to disburse and repay the loans between the members and the group fund. If the group has idle money, it can store it at the bank against an interest.

Bank services 2 - loans

The bank can issue loans:

1. to savings groups that show an active and good track record;
2. or directly to group members, through the bank's group liability loans (group guarantee);
3. or to individuals in case of larger amounts (with individual guarantees).

These loans are regulated by the normal bank procedures for microcredit. All parties have to be clear about the obligation to repay and to pay the interest.

Conditions



Risk fund

For loans to savings groups the bank requires a risk fund, to share the repayment risk. Such a risk fund can come from an external party (an NGO, the county government or a project), or it can be brought in by the CBOs themselves. The rules of such a risk fund need to be negotiated with the bank (examples are available).

Negotiation

The exact operation and conditions of this model need to be agreed with the bank. The bank might agree to negotiate these conditions with the CBOs. But it will probably do its transactions directly with the groups and their members.

Training

Usually, the bank offers explanations and training to the groups, to make sure that everybody is well acquainted with the model and with his/her rights and obligations.



Are the bank services useful for the savings groups?

- Useful for managing savings? And for increasing loan fund? How does that work?
- Affordable? What are the costs? Can we have interests on our savings?
- Accessible? Can we access the service with our mobile phones? Where is the nearest bank agent?
- Fair? What happens if someone has difficulties to repay the loan?



What can Nyando farmers learn from savings groups elsewhere?

- Visit farmers that have been using this system already for several years (can be organized with CARE-Kisumu).
- Hear their experiences.
- Discuss bad experiences with banks. Can this model work better?



What is needed to trust each other?

- What do the groups need to trust the bank?
- What does the bank need to trust the groups?



How exactly does the model work?

- Invite several banks to explain their offer (Equity Bank, KCB Bank, Postal Bank).
- Ask the CBOs and the county officers to advise.



Other questions and ideas?

- ..

Next steps

a) Unfinished business

The business models are just examples elaborated by the researchers. They can inspire, but other steps are needed to make them a reality.

Who should take the initiative?

- The CBOs
- the county officials
- the groups themselves

Best is probably to do it together, to learn from each other and to make the best decisions possible.

If nobody takes the initiative, nothing happens.

You can seek support from others to realize your ideas: the researchers, the county government, NGOs, projects.

b) Next steps for sorghum production

1. Discussing the pros and cons of commercial sorghum production, among the CBOs and the farmers, with support of the county officials.
2. Inviting Magos to come and make a presentation of their service offer for the Nyando farmers.
3. Then: discuss and decide how to proceed.

c) Next steps for bank services for savings groups

1. Discussing the pros and cons of the bank services, among the CBOs, the savings groups and the group members, and with support of the county officials. This should include a reflection on any negative experiences with banks, and whether this model could work better.
2. Organizing an exchange visit through CARE Kisumu, with the savings groups (VSLAs) who have had longer experience with the bank linkage model.
3. Inviting several banks (f.i. Equity Bank, KCB, Postal Bank, ABSA) to come and make a presentation of their service offer for savings groups.
4. Only then: discuss and decide how to proceed.

Wishing you well, and good luck!

The research team

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