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# Maano—Year 1—Zambia

## Virtual Farmers' Market, Pilot Project Report (Oct. 2017)



# The Problem

The picture below was taken in a village of approximately 100 people in rural Mumbwa district. The village is located about 20km off tarmac roads and about 200km from main markets in the capital, Lusaka. No-one there has a car or truck, there are only a few bicycles. The man in the picture is the village headman. Behind him is his community's harvest, mostly maize, which they have bulked while they wait for a trader to come. For the last few years they have sold to the same trader who comes from Lusaka with a truck. In 2016, when this picture was taken, the trader was buying their maize at 40 percent of its market value in Lusaka on the same day.

Farmers in this community cannot make informed decisions about where and to who they should sell their produce because they lack information and remain effectively invisible to other traders who may be willing to pay them a better price.

There are approximately 500,000 rural smallholder farming households in Zambia in a similar situation, and 500 million smallholder farmers in the developing world who lack accurate, reliable, real-time market information and connectivity with other market players to enable them to act on such information.

This is a crucial element of a problem preventing hundreds of millions of people breaking cycles of poverty and building better lives for themselves and their families.



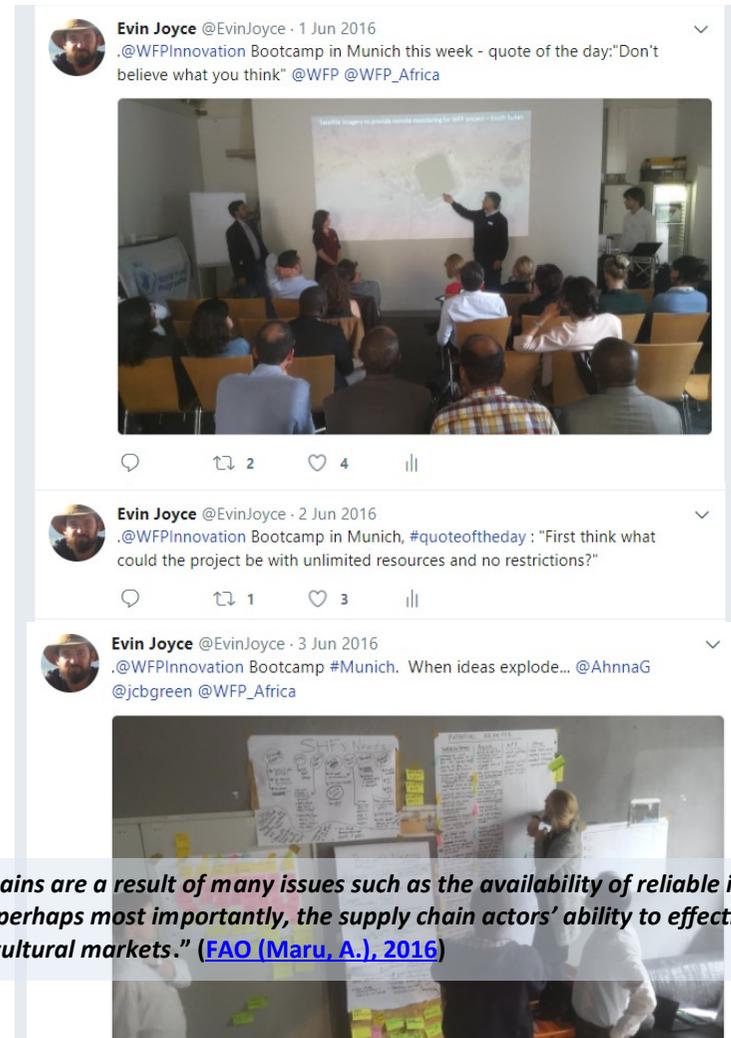
***“Significant asymmetries of information flows between farmers and other actors in agricultural market chains are a result of many issues such as the availability of reliable information, its accessibility, affordability, relevance, usefulness, accuracy, precision, timeliness and trustworthiness, and perhaps most importantly, the supply chain actors’ ability to effectively manage and use the information. These asymmetries inhibit the equitable and fair participation of farmers in agricultural markets.” (FAO (Maru, A.), 2016)***

# The Brief

In June 2016, WFP’s Innovation Accelerator challenged WFP staff to propose ideas that:

- Improve the food security and nutrition of the world’s most vulnerable people
- Reduce costs and increase efficiencies in systems to benefit these people
- Have the potential to scale quickly to reach millions
- Contribute to achieving zero hunger in the world by 2030

With support from the government of Germany, WFP’s Innovation Unit assembled a team of staff and entrepreneurs experienced working with smallholder farmers in Gambia, Sudan, Tanzania and Zambia. During a 10-day ‘Innovation Bootcamp’, they designed a project to be tested in Zambia during the 2017 agricultural marketing season: the Maano\*—Virtual Farmers’ Market.

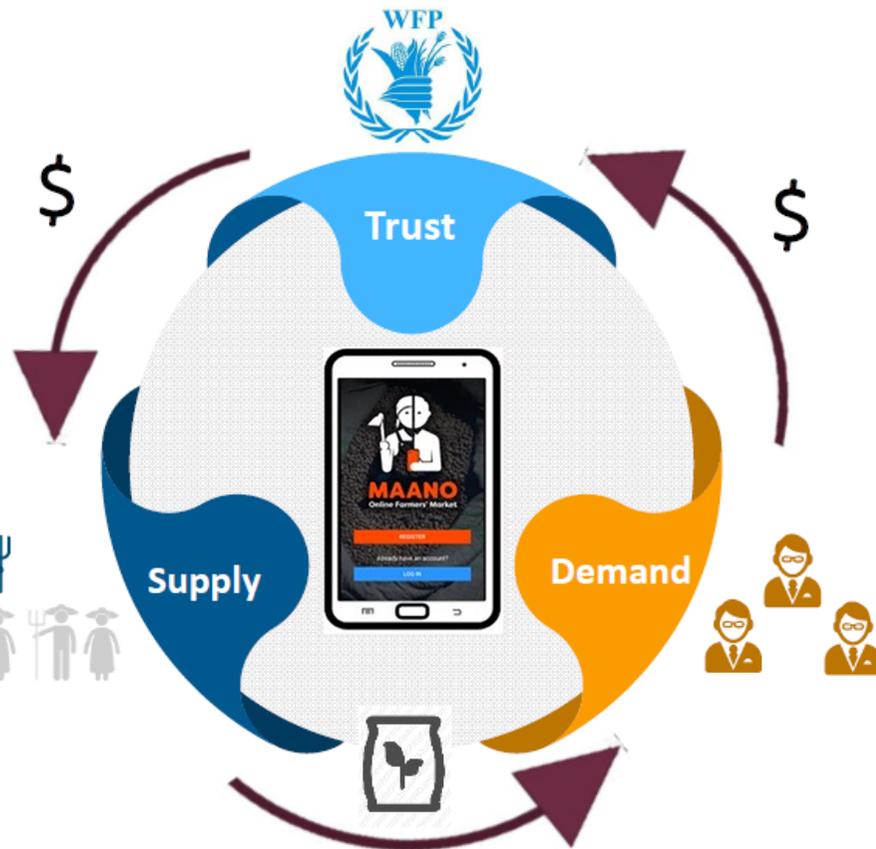


# The Idea

Maano aims to connect farmers and buyers, and enable them to negotiate prices and make transactions through a smart phone app. In doing so, Maano aims to make rural Zambian smallholder farmers (RSHF) visible to new buyers, reduce transaction costs for both buyers and farmers, thereby increasing the profitability and scale of trade for both sides.

Maano aims to do this by:

- > making information on farmers' supply and buyers' demand, identity and location visible to everyone through a smartphone application
- > facilitating farmer-buyer discussions and price negotiation
- > facilitating the sale of farmers' produce through an escrow payment system where WFP acts as a guarantor



*\*The name 'Maano' was not given to the project until October 2016, when farmers at the first training camp suggested it. Maano means 'intelligence' in Tonga.*

# How it works

Rural smallholder farmers (SHF), organised by lead farmers, accurately determine their community's production and an acceptable minimum sale price. The lead farmer (Maano Ambassador) then advertises their produce on the Maano app. Buyers see these advertisements and make their bids. Once the Maano Ambassador is happy with the price offered, she accepts the bid. Then the buyer has 48 hours to make payment to WFP's Maano bank account (escrow) to secure their purchase. The moment the payment is received by WFP all farmers in the community and the Maano Ambassador receive a bulk SMS informing them how much of their produce has been purchased, at what price and when it will be collected.

The farmers are only paid once the buyer checks the quantity and quality, and the produce is exchanged. The buyer gives the Maano Ambassador a 5 digit payment code, specific to that transaction, which the farmer enters in the app to release digital money payment directly to the Maano Ambassador's phone. **If the quality and quantity of produce offered by the farmer do not match the farmers' advertisement, the buyer is entitled to a 100 percent refund.** Both farmers and buyers give each other a one to five star 'Reliability Rating' once the transaction is complete (for more detail, see 'How Maano Works - Step by Step' graphic on next page).



Farmers get access to more buyers and:

- ✓ Better prices
- ✓ Higher incomes
- ✓ Increased production



Traders get direct access to rural farmers and:

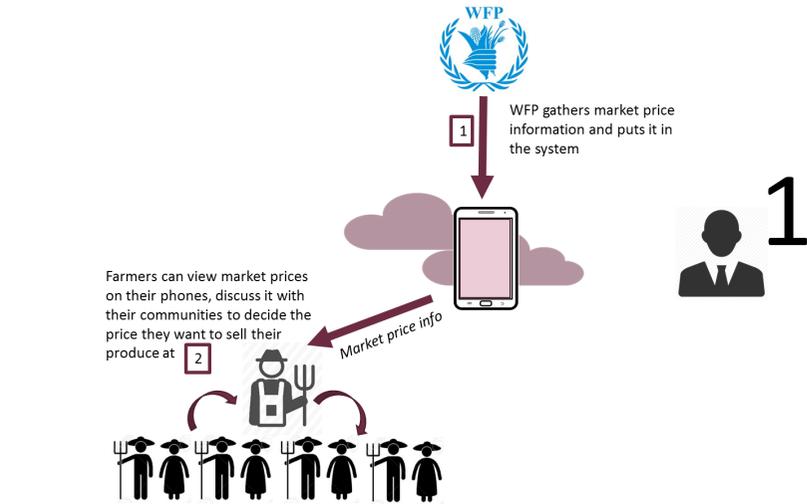
- ✓ Bigger volumes
- ✓ Stable & traceable supply
- ✓ Business growth



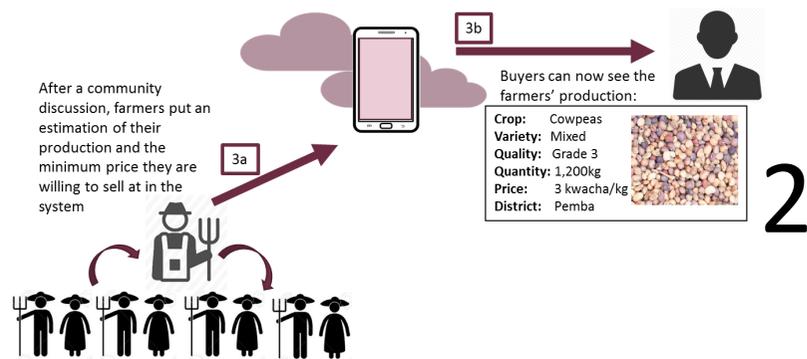
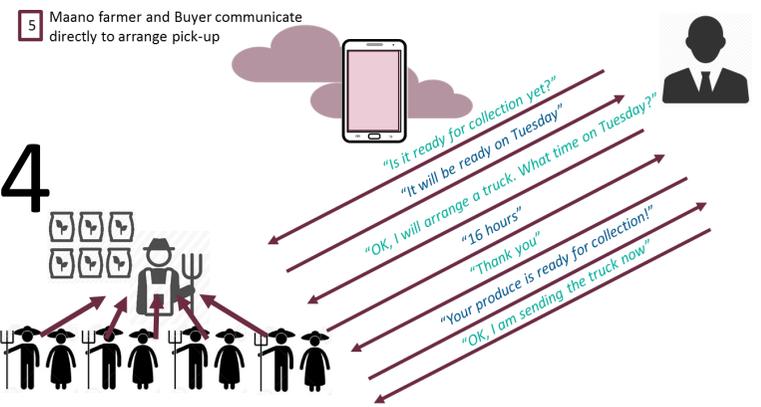
Reduced transaction costs

# Benefits for Both Sides

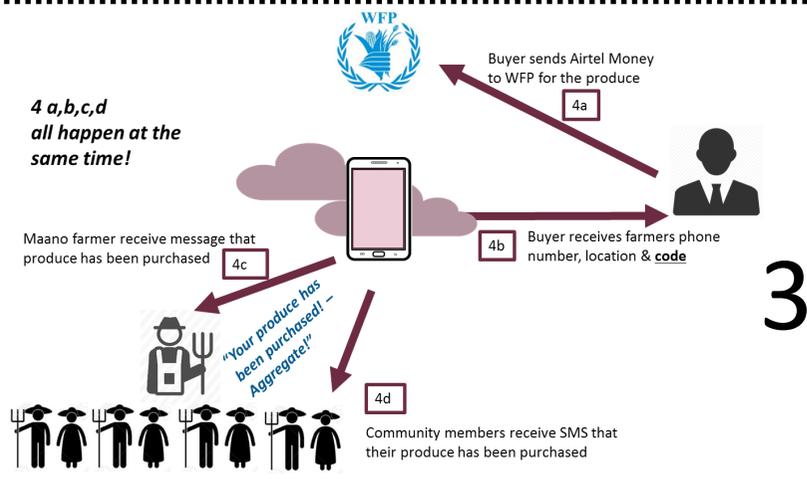
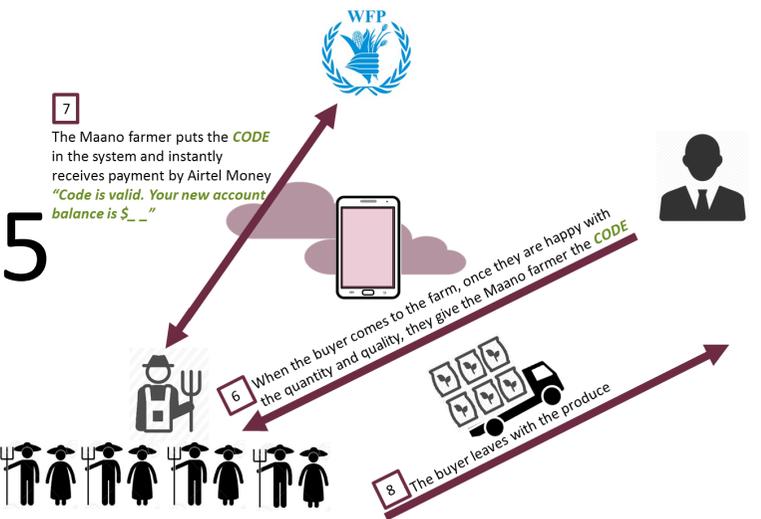
# How Maano works—Step by Step



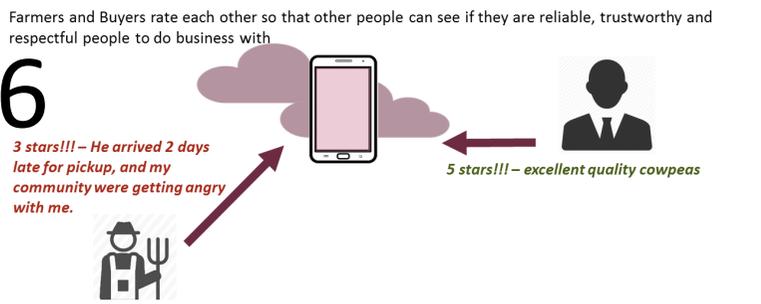
In October, 2016, after 3 days in the classroom, 13 farmers and 7 traders, with an average age of 56 (including some in their 70's), all but four of whom had never used a smart phone before, learned how to use WhatsApp, Google Maps and Mobile Money, to advertise produce, share and find their locations, and trade.



Mainer (left) is a farmer from a rural area in Pemba district. Charity (right) is a small-scale trader in Lusaka's Soweto market. In September 2017, Charity purchased 150 kg of bambara nut from Mainer through the Maano app.



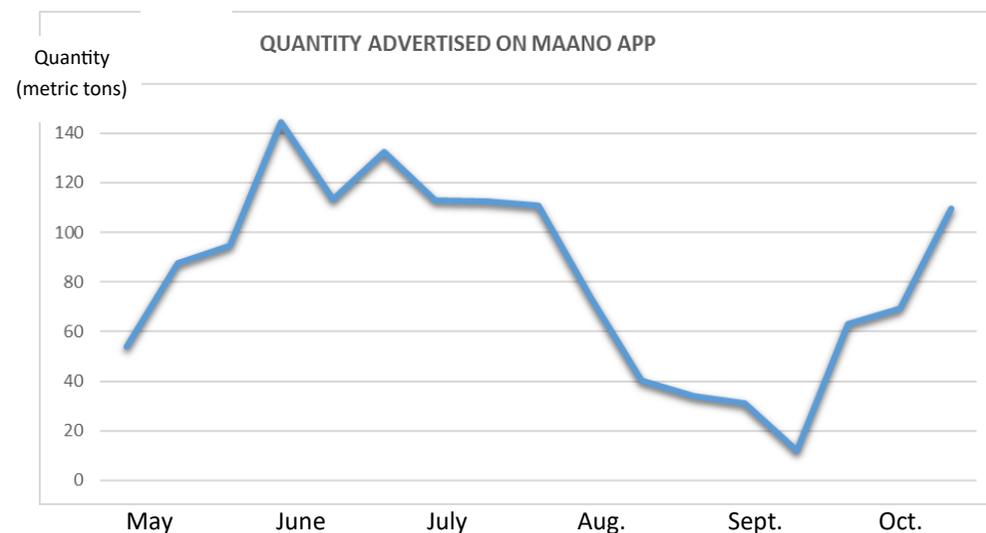
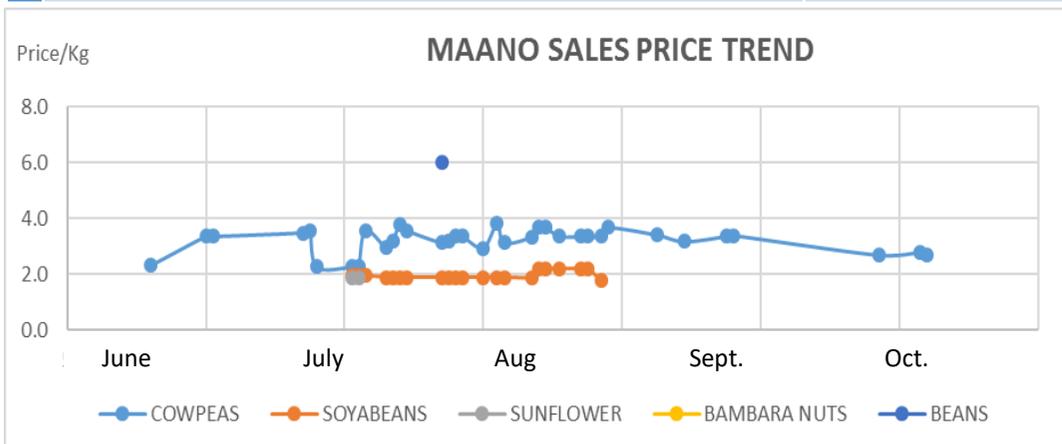
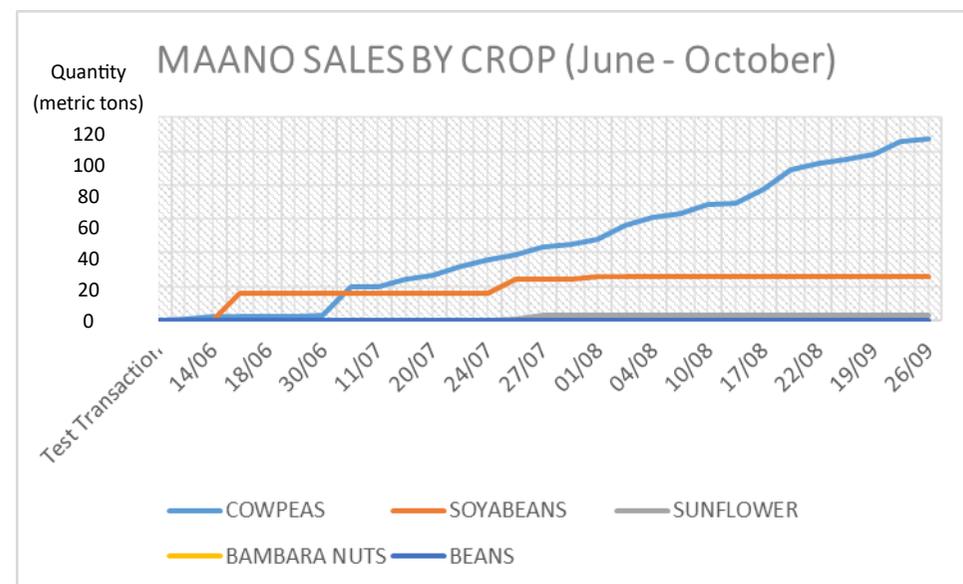
New farmers sign up to sell through Maano after a community meeting organised by their Maano Ambassador Farmer



# What happened?

Between June and October 2017, smallholder farmers in 29 rural communities in Southern and Central Provinces sold 148 metric tons of their cowpeas, bambara nut, soya beans and other beans, for more than 456,000 kwacha (US\$48,000) in 101 separate transactions to five buyers and 40 schools served by the national Home-Grown School Meals programme.

| Key Performance Indicators                    |  | As of 10/10/17                   |
|---|--|----------------------------------|
| Number of transactions facilitated by Maano   |  | 101                              |
| Quantity of crops traded (metric tons)        |  | 148                              |
| Value of crops traded (US\$48,000)            |  | 456,000 kwacha                   |
| Number of Maano Ambassadors trading           |  | 46                               |
| Other Important Indicators                    |  |                                  |
| Number of Traders purchasing through Maano    |  | 5 (+40 schools)                  |
| Number of Follower Farmers registered to sell |  | 3,685 on paper / 1,084 digitally |
| Women as a percentage of Ambassadors          |  | 42%                              |
| Women as a percentage of Follower Farmers     |  | 29%                              |



# How did it happen?



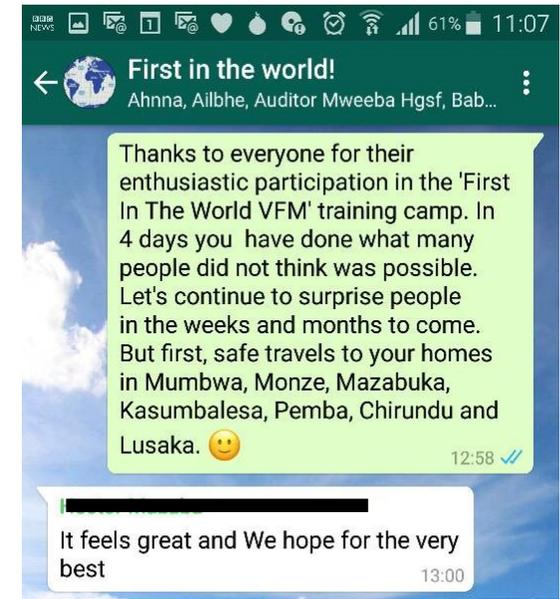
Selecting farmers in Monze, Mazabuka, Mumbwa and Pemba districts

Analysing markets prices & identifying traders in Soweto, and districts and border towns.

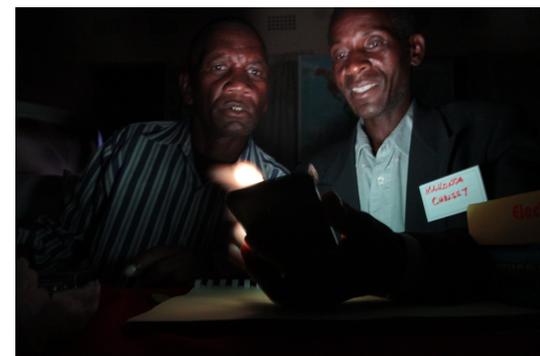
Farmer Training Camps  
All Maano Ambassador Farmers spent attended at least two week-long

August  
2016

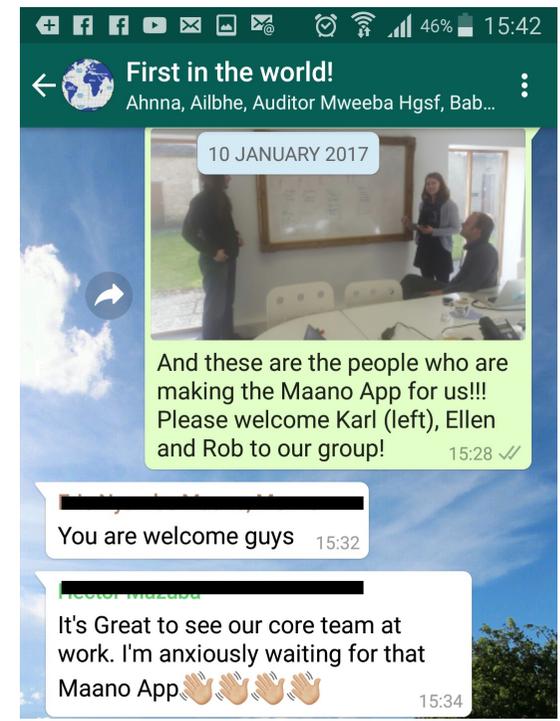
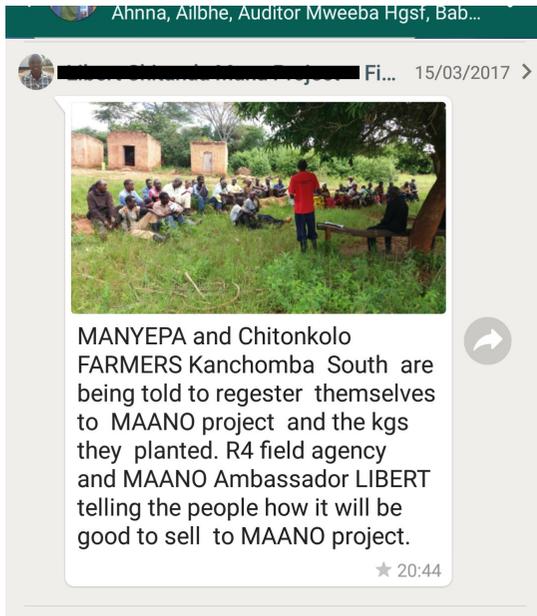




g training camps in Ministry of Agriculture facilities, where they learned how to use a smart phone, WhatsApp, mobile money, Google Maps and the Maano app

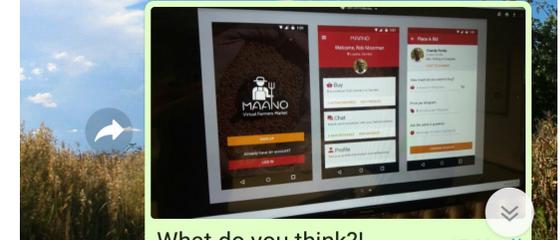
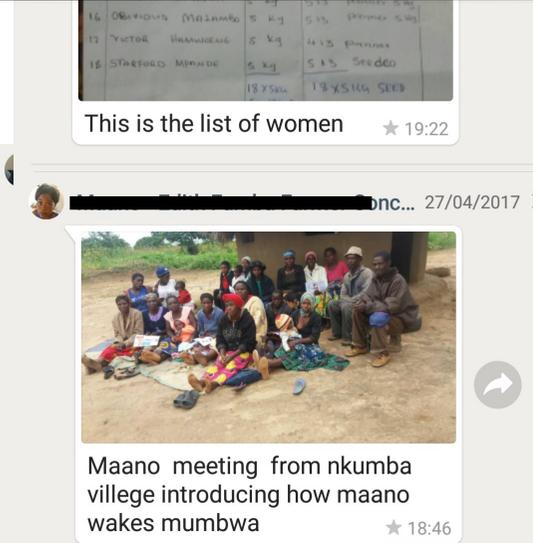


# How did it happen?



**Community Meetings**— After attending their first training camps, Maano Ambassador farmers held meetings in their communities to explain the new system and register ‘follower farmers’ interested in selling through Maano.

**Building the Maano app**—Following successful prototyping using TorchBox, to build the Maano app. By April, the Maano app was

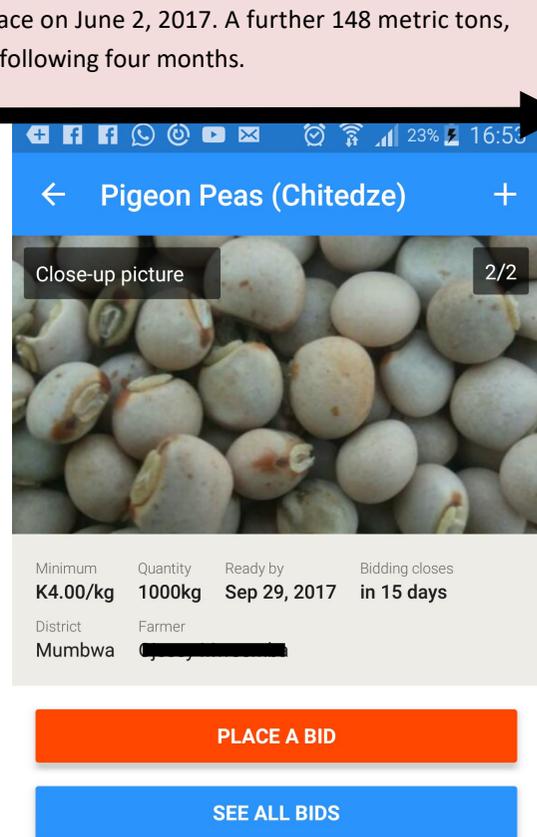




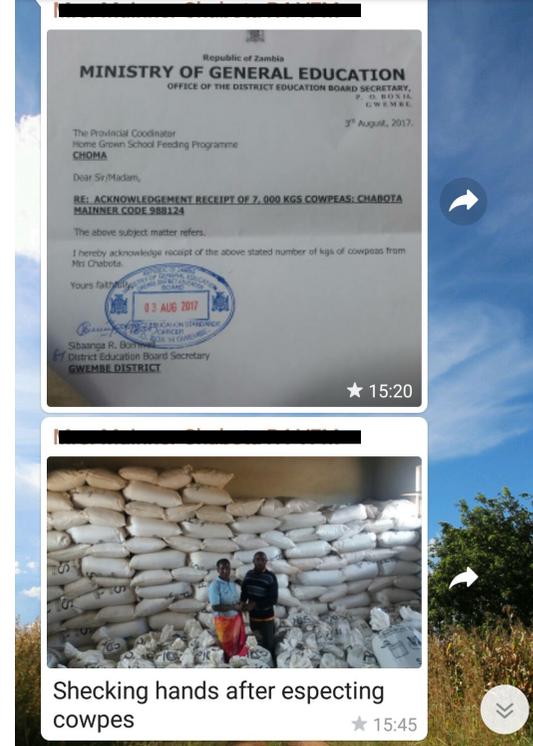
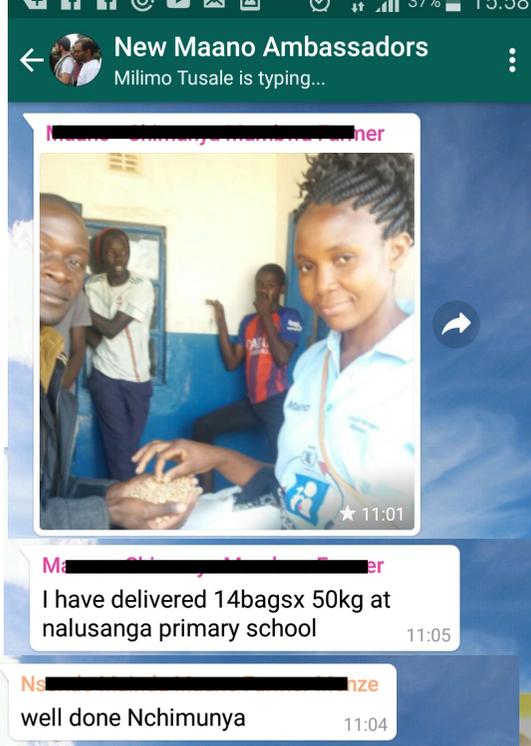
ing WhatsApp, in January, work began with a UK company, s available on Google Playstore.



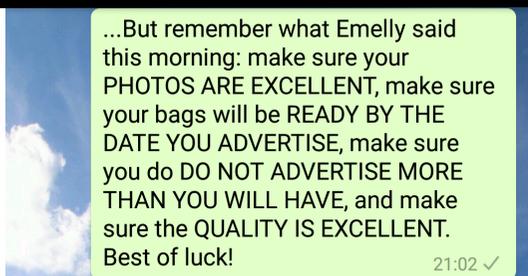
**Transactions Begin!** - The first Maano transaction took place on June 2, 2017. A further 148 metric tons, worth US\$48,000 was traded in 100 transactions over the following four months.



# How did it happen?



**Maano School Meal Deliveries** — The Maano team were given the challenge to procure and deliver to schools in three districts covered by the National Home-Grown School Meals programme. Ambassadors completed the delivery of 62 tons of cowpeas to 43 schools and stores at approximately half the cost of standard processes.

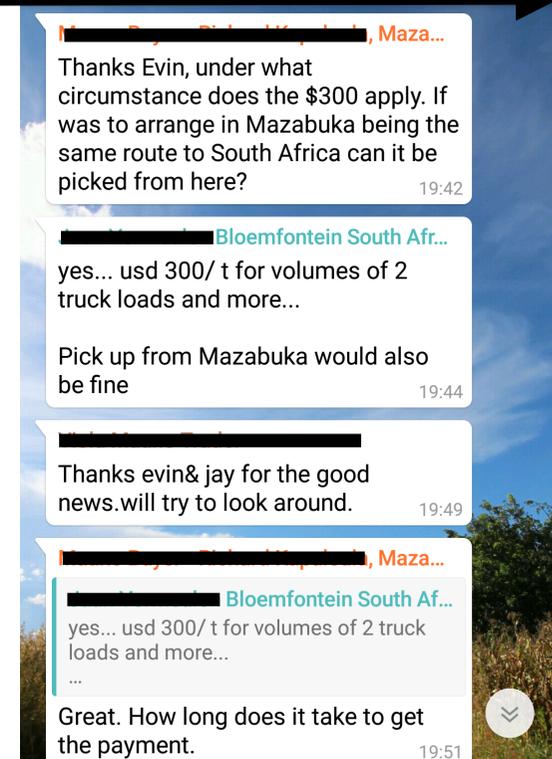




**The Invisible Hand** — At every step of the way, WFP's team were on hand to solve problems.



**Interest from Elsewhere**—Farmers and traders from DRC, Lesotho and South Africa kept a keen eye on Maano's progress in Zambia, and expressed interest in having Maano in their countries.



# Who did Maano reach?

## Who are the Maano Follower Farmers?

Based on information received from Maano Ambassadors, 1,196 follower farmers from Pemba, Monze, Mazabuka and Mumbwa districts, sold their produce through the Maano app with the help of their Ambassador farmers.

## Collecting Data about Maano Follower & LN1B Farmers

At WFP's request, the Maano Ambassadors interviewed more than 1,000 of their follower farmers before the marketing season. Towards the end of the marketing season, Ambassadors and WFP's Maano staff conducted follow up interviews with 165 follower farmers. Some of this data is presented in the tables and graphs on the following pages.

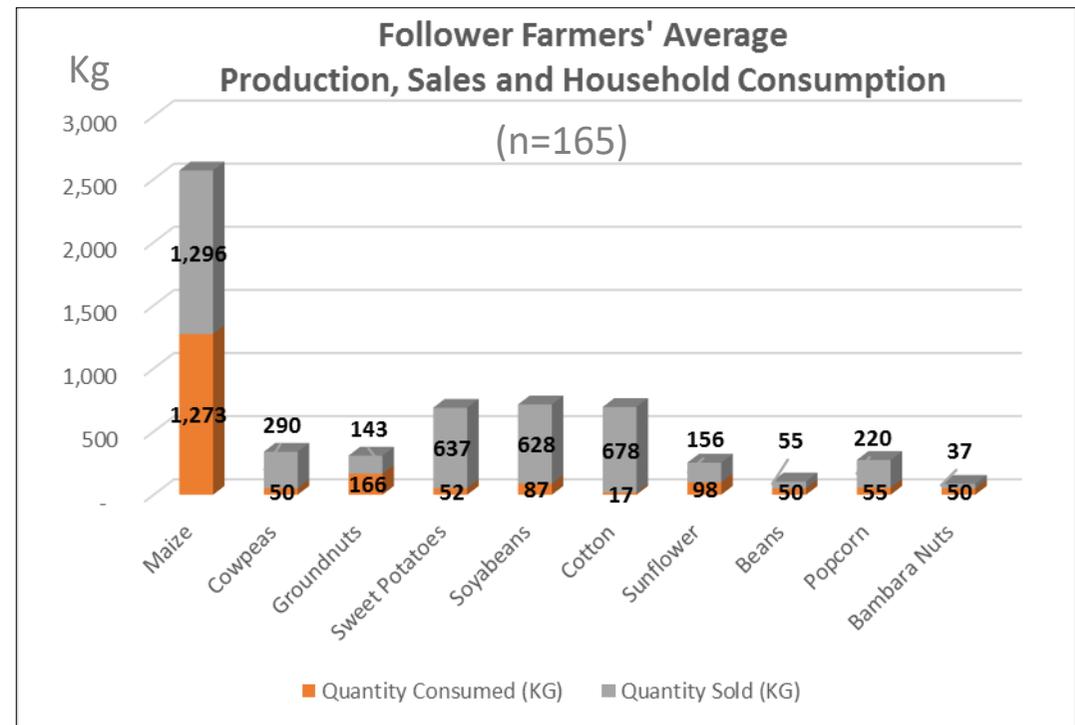
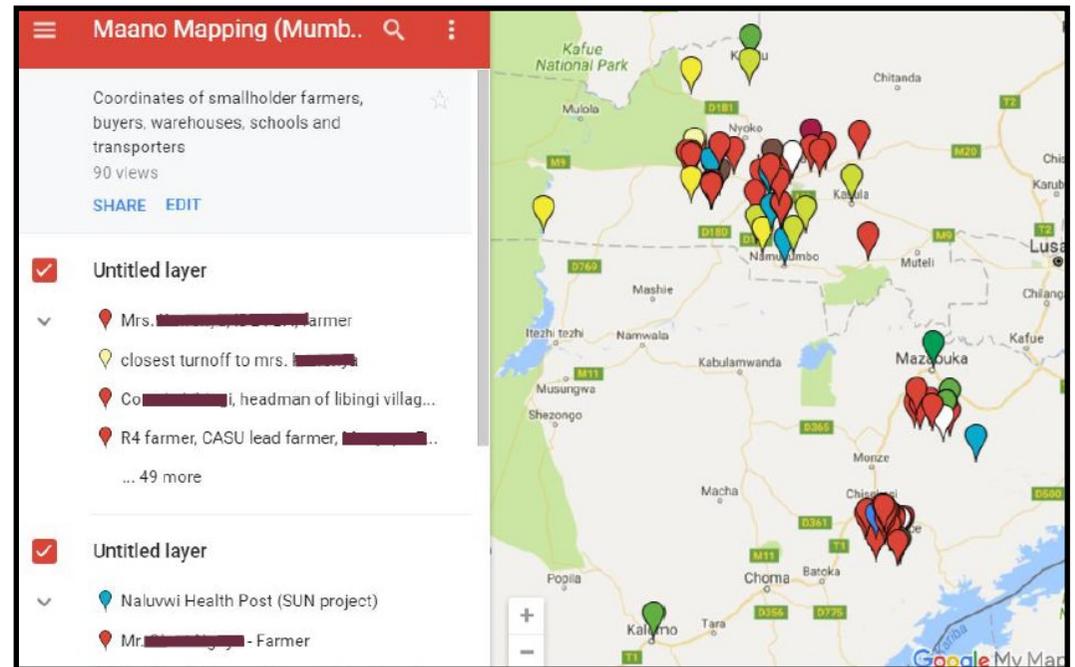
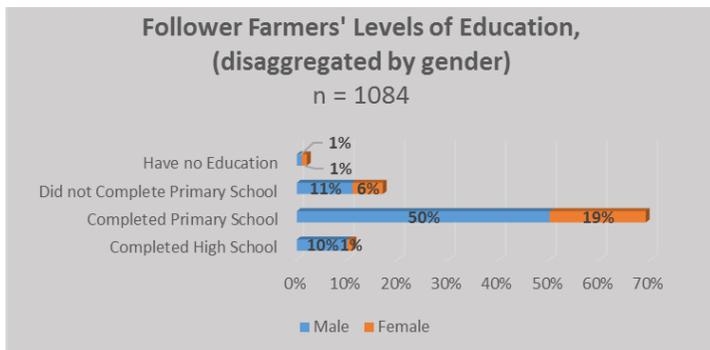
By having Ambassador Farmers collect this information using data collection software on their smart phones, WFP can also see where these farmers are located. Although the validity of this data needs to be verified, in theory this system offers a means to trace Maano produce back to individual smallholders who grow it.

Besides for the purposes of trading through the Maano app, all personally identifiable information provided by Ambassadors and follower farmers is held by WFP and will not be shared with third parties without the explicit consent of the farmers who it relates to.

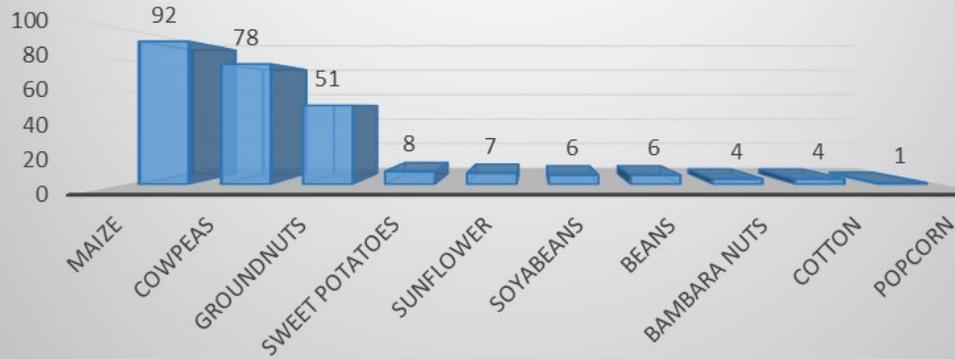
## Gender

WFP aims for women to benefit from Maano as much as men. However during Year 1, Ambassadors recruited more male follower farmers (72%) than female (28%). Table 1 shows some of the traits of the 1,084 follower farmers interviewed, disaggregated by gender:

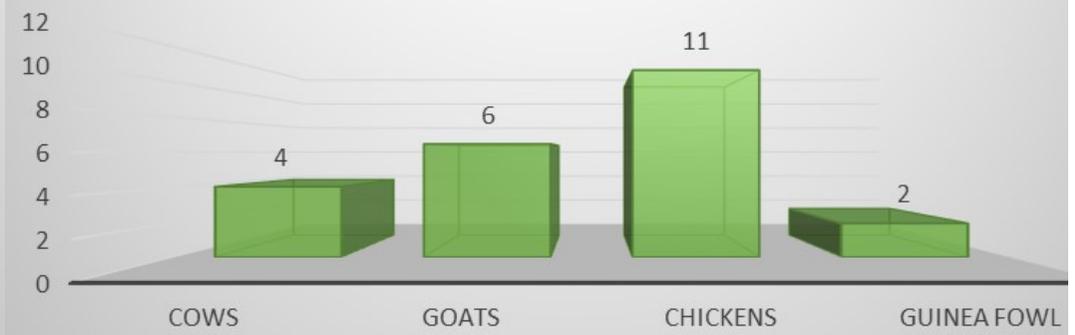
| General Information on Follower Farmers (n=1,084) | Percentage (Men/Women)   |
|---|--------------------------|
| Male/Female                                       | 72/28                    |
| Under 35 (35% of follower farmers were Under-35)  | 79/21                    |
| Head of household (average age)                   | 86/14 (41years/48 years) |



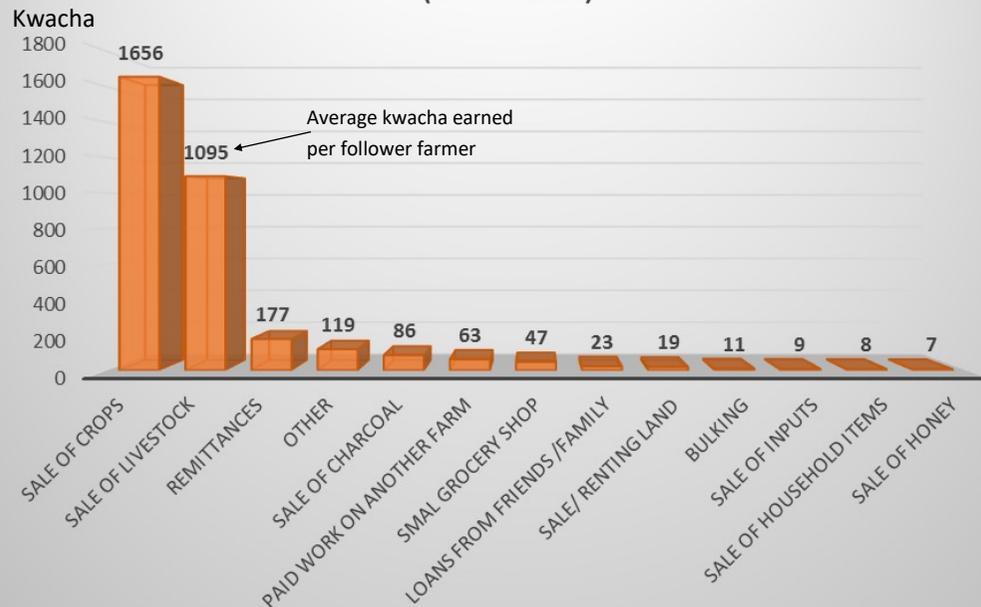
### % of Follower Farmers Growing Each Crop (n = 165)



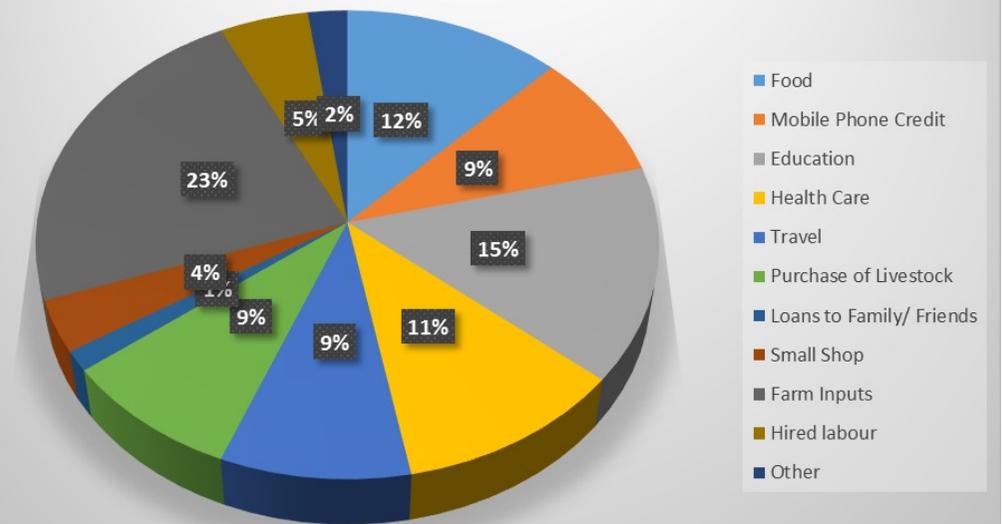
### Average Number of Livestock per Follower Farmer (n = 43)



### Follower Farmers' Sources of Income (n = 1084)



### Follower Farmers' Expenditure (n = 1084)



## Maano's Priority to "Leave No-One Behind" (LN1B)

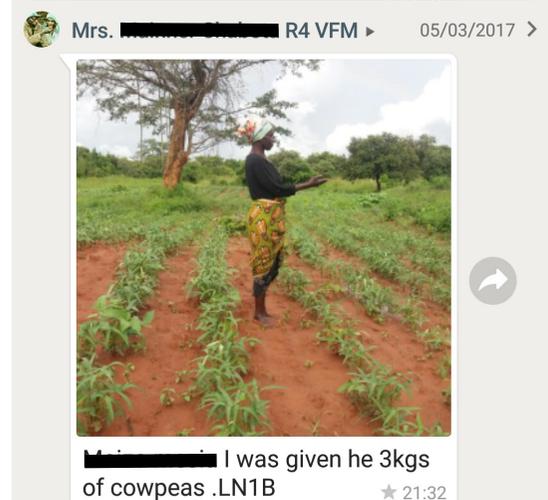
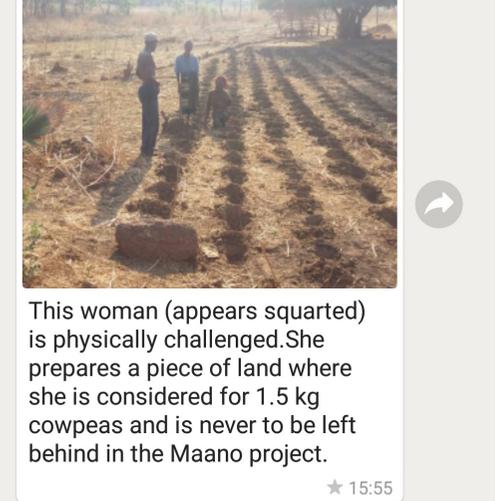
Maano is a part of WFP's [Pro-smallholder Food Assistance Strategy](#) – where food assistance is defined as a comprehensive range of instruments, activities, and platforms that together empower vulnerable and food-insecure people and communities to access nutritious food. As such, if Maano is not helping the poorest people in the communities where it operates, it is not working properly.

All Maano Ambassador Farmers have signed a 'Code of Conduct' in which they commit to actively help the poorest community members to sell their produce through the system, even if this is only a few kilogrammes. Some Ambassadors recruited during the 2016 planting season also committed to giving at least 5kg of seed to 5 of the most vulnerable people in their communities (see pictures, right).

### LN1B Farmers' Participation

During the 2016 planting season, 14 Ambassadors reported that they gave 74 LN1B farmers in their communities a total of 135kg of cowpea and groundnut seed. At the end of the marketing season, these Ambassadors reported that 25 of these 74 LN1B farmers had given them a total of 2,200kg of produce to sell through Maano (see picture below).

Ambassadors reported that they did not receive more from LN1Bs because LN1Bs kept their production for household consumption. This was corroborated by WFP staff's interviews with LN1Bs at the end of the 2017 marketing season. While systems need to be developed to better understand and verify how Ambassadors are selecting LN1Bs, these results from the pilot present a foundation to build on (e.g. Maano community seed banks).



## Maano School Meal Deliveries

During the pilot, WFP-Zambia worked with the Ministry of Education to test how Maano could be used as a tool to deliver produce to primary schools covered by the Government's national Home-Grown School Meals (HGSM) programme. This test involved the purchase and direct delivery of 62.4 metric tons of cowpeas to 40 schools and 3 stores through 61 transactions completed by 30 Maano Ambassadors. By matching Maano Ambassadors to the closest schools, the following benefits were observed:

- Faster and earlier deliveries to schools
- Lower transport costs for Ministry of Education and Agriculture
- Reduced carbon footprint of the Government's School Meals programme
- Lower procurement costs for WFP
- More money in the hands of farmers
- More accountability (Teachers said they liked that they could follow up with the farmer if quality or quantity was an issue)
- Communities growing nutritious produce to help their children perform better at school

The following table compares procurement costs incurred by WFP and the Ministry of Education by procuring through the Maano app and by procuring through standard procedures and arrangements (contracts with aggregators and transporters).

The costs listed in this table require further analysis and costs must also be modelled for more rural and food-deficit districts as well as those served under the Year 1 pilot (Gwembe, Mumbwa and Namwala districts). However initial indications warrant a continuation of testing Maano to meet HGSM demand, especially for districts where there is local pulse production. For example, if procurement cost savings of 59% held true for all districts covered by the HGSM programme, procuring school meals through Maano would save enough funds to feed a further 80,000 primary school children per year.

| Procurement Cost Comparison for Standard School Meals Deliveries Vs. Maano School Meals Deliveries |             |  |             |               |
|--|-------------|--|-------------|---------------|
| WFP-contracted aggregators delivering to District Education Boards (DEBS)                          | ZMK/kg      | Maano Ambassadors delivering directly to Schools         | ZMK/kg      | % Cost saving |
| Transport from farm to DEBS (paid to Aggregator)   | 0.24        | Transport from farm to school (paid to Maano Ambassador) | 0.10        | 58%           |
| Offloading/Loading at DEBS   | 0.0078      | N/A  | 0.00        | 100%          |
| Storage at DEBS  | 0.0055      | N/A  | 0.00        | 100%          |
| Admin costs at DEBS  | 0.04        | N/A  | 0.00        | 100%          |
| Transport from DEBS to School  | 0.26        | N/A  | 0.00        | 100%          |
| Commission (paid to Aggregator)  | .50         | Commission (paid to Maano Ambassador)                    | 0.16        | 68%           |
| Associated WFP Staff Costs   | 0.06        | Associated WFP Staff Costs                               | 0.19        | -218%         |
| <b>Standard procurement costs</b>  | <b>1.11</b> | <b>Maano procurement costs</b>                           | <b>0.45</b> | <b>59%</b>    |



## Who are the Ambassadors?

WFP selected 50 Maano Ambassador Farmers with the help of Ministry of Agriculture extension officers, DAPP field staff and WFP colleagues who worked with cooperatives under the Purchase For Progress programme.

The main criteria for selection were:

- come from a rural community near the limit of mobile network coverage,
- be a respected and trusted member of their community,
- be literate in English,
- have experience bulking neighbours' produce for sale

In order to maximize learning from the pilot and identify the most important attributes of successful Ambassadors, these criteria were not strictly adhered to.

## What is the hardest part of being a Maano Ambassador?

"Trust building with follower farmers"

"Late payments, explaining price to farmers in school deliveries"

"Convincing farmers to aggregate"

"Moving up and down on foot"

## Why did you not bulk more produce for more farmers in your community?

On average, Maano Ambassadors bulked for 27 of their community members. The main reasons they gave for not bulking more produce from more neighbours were:

- Not having a shed to store bigger quantities safely.
- Follower farmers did not trust the new system: "They doubted, thinking the system cannot work."
- Follower farmers prefer cash payments: "People wanted cash on spot"
- There were not enough follower farmers close-by.

- Follower farmers sold as much as they wanted to and were keeping the rest for household consumption.

## What was the most difficult part of Maano to explain to your community?

Quotes from Maano Ambassadors:

"Explaining the channel of money movement and convincing them that WFP is trust worthy"

"The hard part was convincing follower farmers about Maano's trust worthiness considering a lot of organisations have collected farmers crops without any payments"

"Farmers believe in cash and carry. But with this year's experience they believe Maano will pay."

"They wanted to sell their produce on cash basis not on credit basis"

"The entire concept was received with perceptions of witchcraft and theft"

"Process of getting money from Airtel money"

"The payment system was hard to explain"

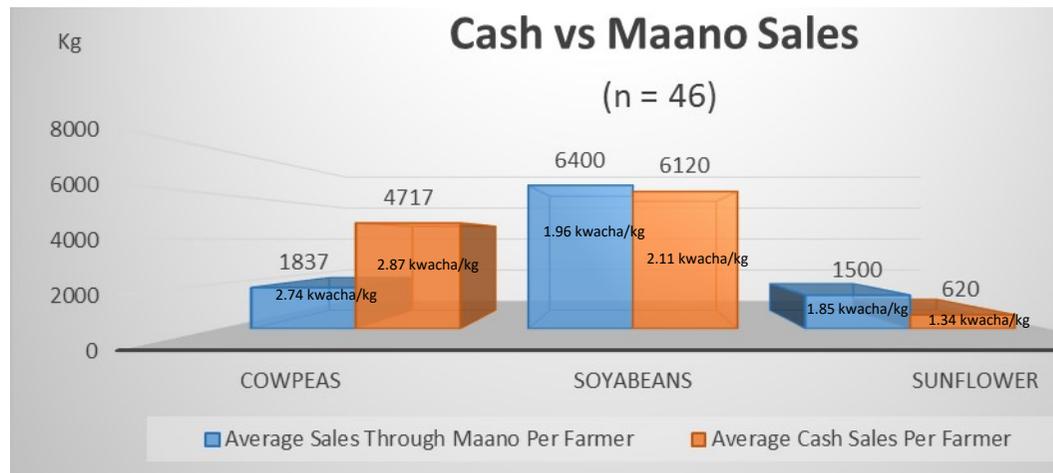
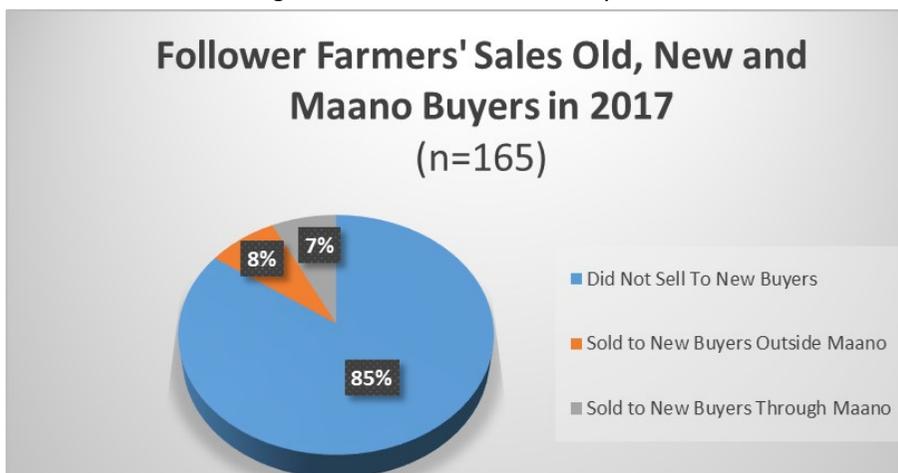
## Maano versus Cash

Most of the Maano Ambassadors also sold produce through cash transactions. This table shows a comparison of the average quantities and sale prices of the top three crops that Ambassadors sold in cash transactions and through the Maano app.

Ambassadors reasons for selling for cash included:

- Myself and/or my follower farmers needed cash quickly
- The buyer was not on Maano
- I have always sold to this buyer for cash

The lower sale prices for soya and cowpeas through Maano is likely due to traders' transportation costs as most of these Maano transactions took place in rural areas or close to Ambassadors' farms.



## Do you want to be a Maano Ambassador again next year?

All Maano Ambassadors said ["Yes"](#).

### Why?

*"I love Maano and to help my community"*

*"Because I am committed. I bided (advertised) but no buyers"*

*"Price information and market. Better price."*

*"I love this programme and I have become a good marketer for my people. I'd love to continue serving them but I must graduate"*

*"I have learnt so much. I've become a learned person. I have managed to help my community"*

*"I have helped the poor in the community and I know their problems"*

*"I have already joined so if I am not next year I will give problems to the farmers because they know me"*

*"It's a really interesting programme"*

*"I have enjoyed working with Maano"*

*"This is a learning process and next year I master it"*

*"Because people here need Maano more especially farmers that have few quantities. Hence I can organise them and bulk together to cut on transports"*

*"I want to succeed with this project more and more because we are the founders."*

*"Because I have hope that one day Maano will be as it was promised. I want to serve my community"*

*"It is bringing the market closer to them "*

*"My people and I have learnt a lesson"*

*"I want to help others"*

### Top Performing Ambassadors

From the 50 Ambassador Farmers who took part in the pilot, 46 managed to complete at least one Maano sale. However there are significant differences between Ambassadors' performance in terms of the number of transactions they completed and quantities they sold, and the support they required to do so.

This table compares the top 10 performing Ambassadors with the bottom 10 performers, in terms of number of transactions and quantities sold through Maano. The categories in the table loosely group indicators relating to human capital (lines with 'H', e.g. age, education, household size, gender), social capital (lines with S), productive assets (P), openness to technology (TEC), business acumen and/or capacity (BUS). The bottom line of this table "Were among the first cohort of Ambassadors (trained in October 2016)" refers to the amount of classroom training and WhatsApp group participation the Ambassadors had. While these sample sizes are too small to put weight on any inferences, they indicate where further study may be worthwhile.

| Notable Similarities & Differences between the Top 10 Performing Ambassadors, and the Bottom 10 |   |                        |                      |
|---|---|------------------------|----------------------|
| Category  | Indicator   | Top 10 Performers      | Bottom 10 Performers |
| H   | Education (highest grade) (avr and range)                                       | 10 (7-12)              | 9 (7-12)             |
| H   | Household size  | 11 (6-20)              | 12 (7-16)            |
| H   | Age (average and range)   | 40 (31-62)             | 41 (32-56)           |
| H   | Gender  | 7 men, 3 women         | 5 men, 5 women       |
| S   | Number of community meetings they organized                                     | 7 (3-20)               | 5 (3-7)              |
| S   | Number of follower farmers registered (on paper)                                | 113 (16-200)           | 84 (0-110)           |
| S   | Gave seed to LN1Bs  | 100% gave seed (7/7)   | 50% (1/2)            |
| S   | Helped LN1Bs to sell*   | 6/7 (2,300kg in total) | ½ (20kg in total)    |
| P   | Owned an ox-cart  | 9/10                   | 5/10                 |
| TEC   | Feel safe leaving mobile money in your phone                                    | 9/10                   | 0                    |
| S & TEC   | Have opened a Facebook account  | 4/10                   | 1/10                 |
| BUS   | Number of Maano transactions (avr and range)                                    | 4 (2-8)                | 1 (0-2)              |
| BUS   | Quantity sold through Maano (avr. and range) (kg)                               | 9,455 (3,100-22,000)   | 200 (0-550)          |
| BUS   | Reported cash sales (average quantity sold for cash, kg)                        | 6/10 (18,040)          | 1/10 (3,550)         |
| BUS   | Previous experience bulking for your community                                  | 7/10                   | 6/10                 |
| BUS   | Feel that you have better information about market prices because of your phone | 8/10                   | 4/10                 |
| BUS   | Feel that you have better information about farming because of your phone       | 8/10                   | 4/10                 |
| TR  | Among the first cohort of Ambassadors (who began training in October 2016)      | 7/10                   | 2/10                 |

# Lessons, Insights & Ideas

## How did Maano work for you?

(Follower Farmers' answers, n=91)

### 68% of answers were positive

- "Maano helps us because we just bring our produce to the Ambassador and they look for the trader who comes to get our produce"
- "Helped me sell my produce on time"
- "Helped me sell close by and the money came quickly"
- "Helped me sell cowpeas when I had no money to travel to Monze"
- "The experience was great. All my cowpeas were bought and I was paid on time at a good price"
- "You can be just seated at your home and they (Ambassador) go to town and they bring money home for you"

### 6% mixed

- "Its a good program. It worked well but took forever to find a buyer"
- "Short distance to market despite the poor prices"

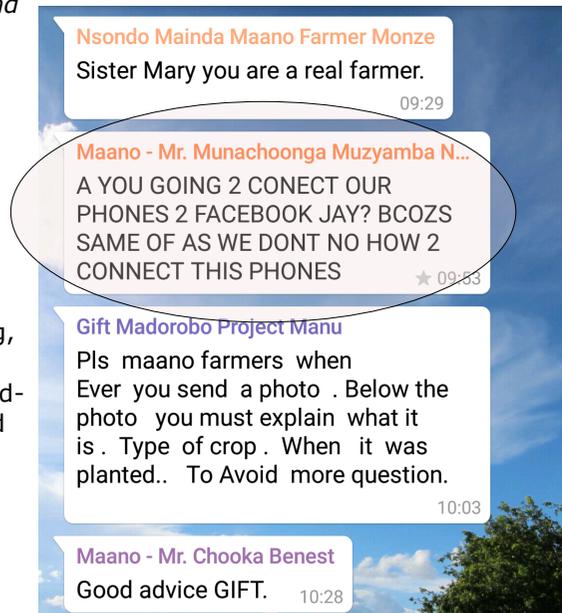
### 28% negative

- "I have not experienced it yet"
- "Not so well because it took long to find a buyer"
- "The buyers delayed to pick up my produce and the price was low"
- "It is ok but I doubted at the beginning and when I sold eventually, the money took long."

## Connectivity

Placing smart phones with internet connectivity in the hands of rural smallholders can offer them many more benefits than market access.

Besides sharing information about farming, the Ambassadors' WhatsApp groups are imbued with a sense of community, shared-responsibility for the project's success and accountability towards others that comes with being part of a social group.



## What are the advantages of Maano? (Follower Farmers' Answers) (n=165)



## What's the best thing about your smart phone?

The quotes below are a sample of Ambassadors' answers to this question:

- "Whatsapp. I learn a lot"
- "No need to travel all the way to market to do transactions. Business becomes easy and I use it as a bank"
- "Keep in touch with family that is far off. Google maps helps me find my way"
- "Reports from friends, and business moves more quickly"
- "I keep money in the phone"
- "It has opened my eyes to the outside world"

## Mobile Money as a tool to accelerate financial inclusion and digitise village economies

Less than 20 percent of Ambassadors had used mobile money before the pilot. All now have Airtel & MTN Money accounts. When asked if they had used their mobile money accounts for anything besides cashing their Maano payments responses included:

- To send to or receive money from family (47%)
- As a savings account (32%)
- Send money to someone in town (26%)
- To buy talktime (11%)
- To pay a follower farmer (5%)

## Mobile Money as a savings account

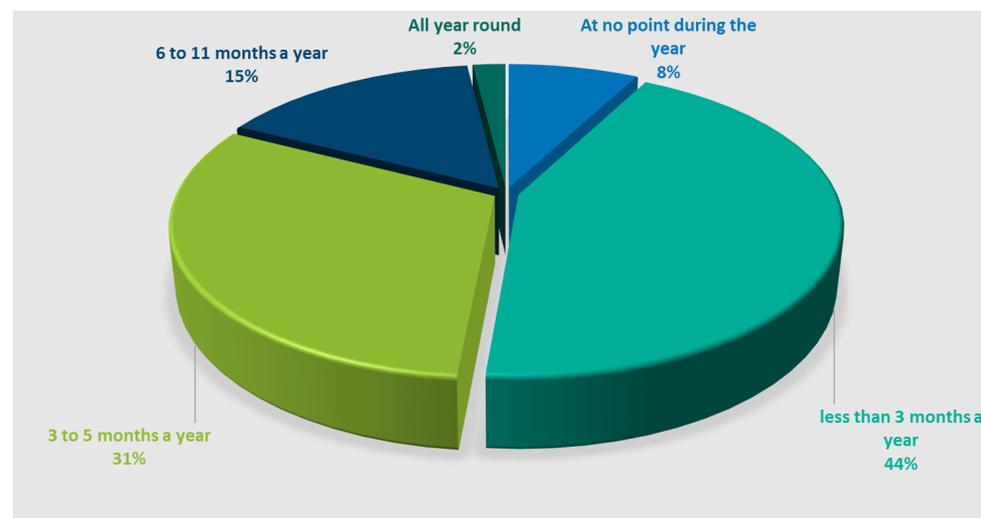
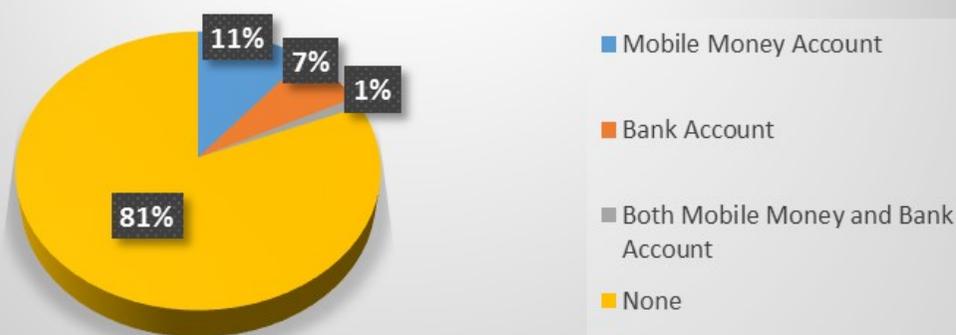
The graph below shows how many months of the year follower farmers reported having at least 500 kwacha (US\$50) of cash savings in their household.

When Ambassadors were asked "Do you feel safe leaving the money in your phone (mobile money account)?", 92% of respondents said 'Yes'.

Although this topic needs further study on larger samples, taken together these findings suggest that smallholders are willing to use and save with mobile money if mobile money services are accessible and affordable.

### Follower Farmers' Financial Inclusion

(n = 165)



## Did you have any problems changing your mobile money payment into cash after your Maano transaction?

- No problems (33% of responses)
- I could not withdraw the money because the agent did not have enough cash or because my payment exceeded the maximum withdrawal limit (33%)
- Withdrawal charges were too high (30%)
- Transport costs to get to the agent were high (3%)

These responses illustrate the potential usefulness of mobile money by Maano Ambassadors once a critical mass of users in rural communities is attained. To this end and to increase the speed of Maano payments to follower farmers, during the 2018 season, Maano will also help follower farmers open mobile money accounts.

Other requirements to reach a critical mass of rural users of mobile money include:

- improved network coverage in rural areas
- an increase of mobile money agents with sufficient liquidity and
- an increase in the maximum withdrawal limits from mobile money accounts

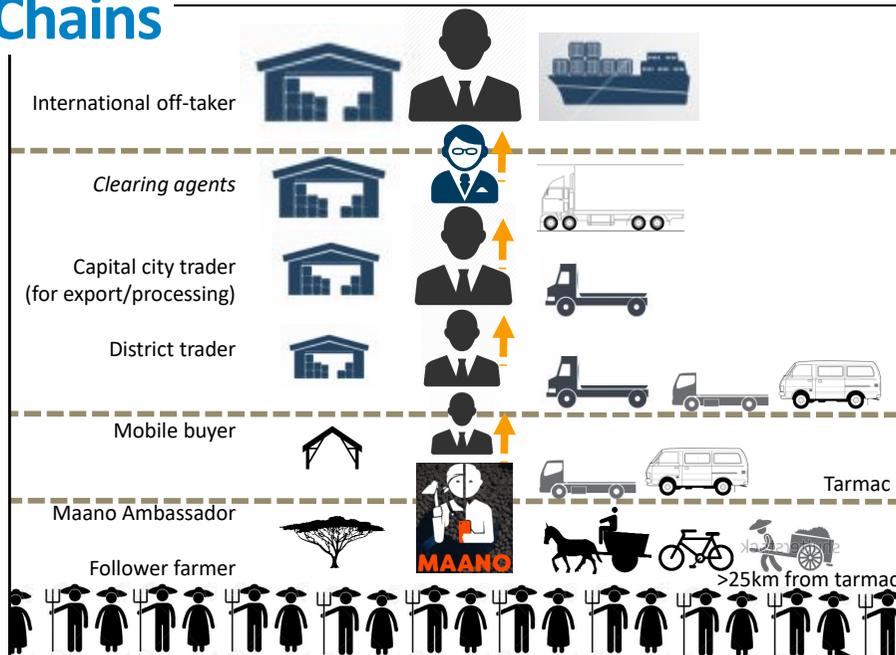
For the 2018 season, Maano intends to partner with mobile network and mobile money providers that aim to expand their activities into more rural areas.

# Understanding Supply Chains

If the Maano app is to attract more users and become a 'first-to-mind' choice for rural small-holders and traders of their produce, it must offer farmers and traders a quicker, easier, more secure way to trade than all of their other options on any given day.

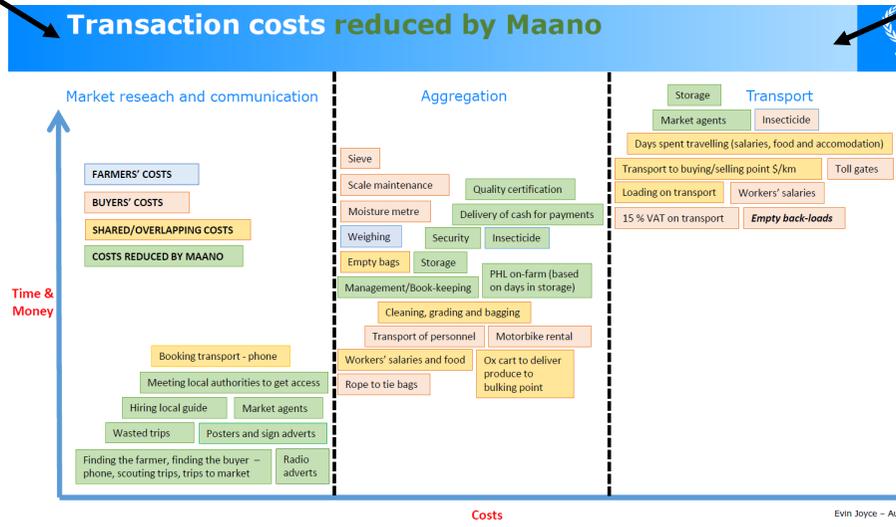
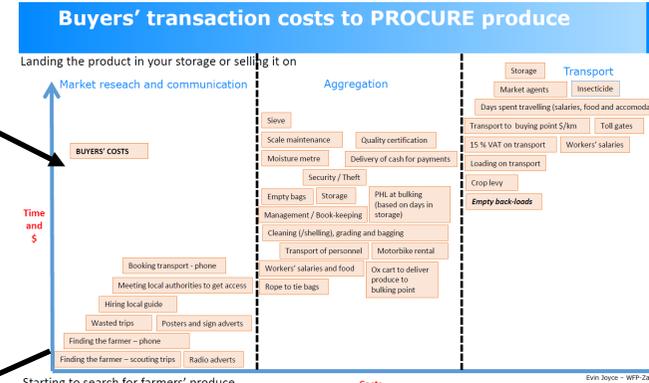
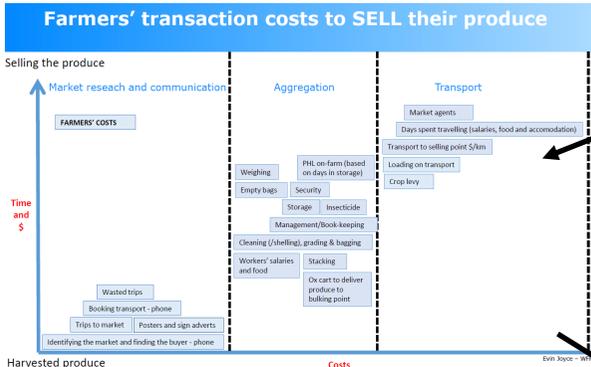
To achieve this, a detailed understanding of the supply and value chains of the crops traded through the Maano app is required.

During the farmers' and traders' training camps, transaction costs incurred by farmers and local traders were analysed. The graphics on this page detail these transaction costs for both farmers (left) and traders (right).



During the first year, only local traders purchased through the Maano app. This included inter-provincial purchases (Southern to Central) and purchases by small-scale traders in Lusaka's, Soweto Market from Maano farmers more than 200km away.

Linking Maano farmers to the constant, albeit finite demand of Lusaka's urban population, is an avenue to be explored over the next year. Attention will also be given to understanding the transaction costs involved in getting Maano farmers produce to international off-takers. Although more volatile, the international markets may provide a level of demand that can incentivise Maano farmers to invest in increased production and/or productivity.



and traders (right). For clarity, these transactions costs are grouped under three headings: 'Market Research and Communication', 'Aggregation' and 'Transport'. The graphic below overlays the transaction costs the are common to both farmers and traders (for example, farmers' phone calls and trips to markets to identify traders, and traders phone calls and trips to farmers to identify where they can buy produce). The transaction costs in green in the bottom graphic are those Maano will target to reduce, and in doing so become a more appealing marketing option for traders and farmers.

To increase and incentivise user adoption, WFP requires a granular, highly detailed understanding of micro to international supply chains and the price points within these supply chains at different scales of trade for each of the crops traded through Maano.



Eric Nyambe and Auditor Mweemba as they complete the first ever Maano transaction on June 2, 2017.

## Vision

To achieve zero hunger by 2030, the digital technologies changing lives and the way business is done in the rich world, must be applied to improve lives and efficiencies in economies in the developing world. In Zambia, WFP is adapting the technologies eBay, Uber and AirBnB have used to revolutionise their respective industries, to help rural smallholder farmers sell their produce at more equitable prices.

The Maano - Virtual Farmers' Market aims to make these farmers visible to new traders, increase competition for their produce, and reduce transaction costs and increase profitability and the scale of trade for both sides.

In its first year of piloting, Maano has enabled a group of 50 lead farmers, 90 percent of whom had never touched a start phone less than a year before, to sell almost 150 metric tons of their communities' produce in more than 100 transactions for a total value of US\$48,000. By incentivising more traders to use Maano, these figures can grow along with the amount of money flowing directly into rural economies. Furthermore as the most commonly traded crops are indigenous, drought-resistant, protein-rich, pulse grains, such as cowpeas, they provide a boon to support these farmers' efforts to mitigate the impact of climatic shocks and to make their diets more nutritious.

The pilot also tested the Maano app's ability to increase the efficiency and speed of deliveries of food to primary schools served by the Government's Home-Grown School Meals programme. Maano farmers delivered 62.4 tons of cowpeas to 40 schools and three stores at lower procurement costs and faster speeds than current paper-based systems. And by procuring directly from rural smallholders, often in the same community as the primary school, these farmers were getting more money for their produce in a way that is boosting these villages' economies.

The last decade has seen almost every sector of rich world economies transformed by the latest digital and financial technologies, enabling people to do old things in new ways with greater efficiency. A similar revolution of digital and financial technologies (fintech) is about to begin in African agriculture. That it will occur, is not in question. What we need to ask is "How quickly?", and "Who will it benefit most?" If the world is to achieve Zero Hunger by 2030, we must answer "As soon as possible" and "To benefit those furthest behind first."

For Maano these two questions are inextricably linked: Maano is starting with the most rural smallholders that mobile network coverage will permit. In doing so, these farmers will have an 'early-adopter' economic advantage over other bigger supply chain actors. Currently, levels of smart phone usage for business activities is limited to a minority of traders. Maano places rural smallholders ahead of the fin-tech curve. By linking these rural smallholder farmers to national and international supply chains, they will be the first to benefit from this innovation. If Maano can successfully link the rural smallholders furthest behind, then all between them and urban markets, can also easily join and benefit from the system.

At scale, Maano is a sustainable business model that benefits the furthest behind first and contributes to four of the Zero Hunger Challenge's five objectives. By helping supply meet demand and sharing accurate market information with all supply chain players, Maano can make food systems more sustainable. By connecting rural smallholders to bigger, more stable and equitable markets,

Maano can help them increase their revenues and next year's productivity. By providing lead farmers with bags to safely store the produce they plan to sell until they are offered acceptable prices, Maano is helping farmers reduce their post-harvest losses. And by specifically targeting the most vulnerable members of these rural farming communities, Maano aims to improve year-round access to adequate food for all.

## What's needed for Maano to reach every farmer in Zambia by 2022?

- Build partnerships to complement national policy priorities, identify and train new farmers, to find new traders, to improve payment systems
- Understand impact in the community, benefits to LN1Bs, establishing a 2-way communications system with follower farmers
- Analyse markets, supply chains and incentives, for all crops, inside and outside Zambia.
- Develop the app, new digitised functionalities, automating payments, a platform to disseminate information on agriculture, weather, current affairs, etc.

The resources required to achieve this scale up will depend on the strength and synergies of the partnerships formed between the relevant stakeholders.



# Zambia's Smallholder Stock Exchange

## Maano Market Prices

Soya

Cowpea

Groundnut

Pigeon pea

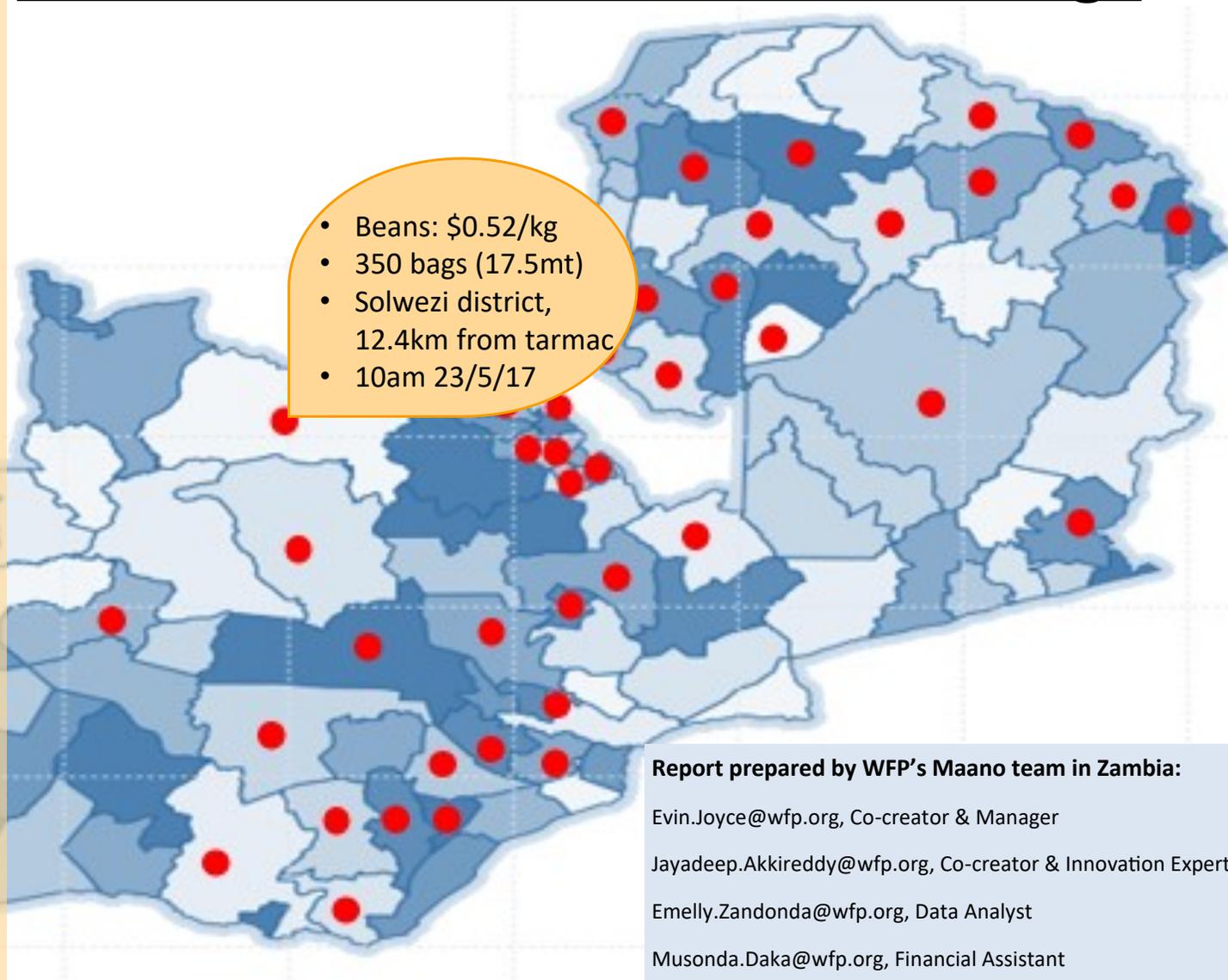
Bean –

*For 10 < 30 ton loads*

- \$0.75/kg in Lusaka
- \$0.60/kg in Kasama
- \$0.43/kg in Shangombo

*For 2 < 10 ton loads (averages)*

- \$0.62/kg, <100km to Lusaka
- \$0.52/kg, 100<300km Lusaka
- \$0.42/kg, 300<800km Lusaka



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Photos: Front Cover: WFP/Anna Gudmunds; Back Cover: WFP/Evin Joyce; Inside: The First 50 Meano Ambassadors



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