Scaling sustainable nutrition for all (SN4A) in Zambia

Report Community Mapping

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The Community Mapping was conducted for the Scaling Sustainable Nutrition for All (SSN4A) project, implemented by SNV Netherlands Development Organisation, and funded by the United Kingdom's Department for International Development (DfID).

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This report present the finding of community mapping exercise conducted in February 2020 in Zambia. The community mapping was done in six communities in the three new Scaling Sustainable Nutrition for All (SSN4A) districts: Lunte (rural), Mporokoso (rural, peri-urban) and Mungwi (rural, peri-urban, urban), with the goal to get familiar with the context and day-to-day realities of the targeted communities, find out about the resources in place (e.g. access to water, markets, agricultural plots), their condition and use by the community; find out which social structures and differences exist in the community, and to develop a common understanding about main issues opportunities, and challenges the community faces.

Keywords: community mapping, nutrition, food consumption, Zambia, livelihoods, agriculture, WASH, district nutrition coordinating committee

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Contents

List of abbreviations and acronyms

CHA	Community Health Assistant
CHW	Community Health Worker
DC	District Commissioner
DDCC	District Development Coordinating Committee
DfID	United Kingdom Department for International Development
DNCC	District Nutrition Coordinating Committee
DDS	Dietary Diversity Score
DYDCC	District Youth Development Cooperation Committee
FGW	Farming God's Way
FISP	Farmer Input Support Programme
FRA	Food Reserve Agency
FSP	Food Security Pack
GMP	Growth Monitoring and Promotion
ICE	Information, Communication and Education
IYCF	Infant and Young Child Feeding
JICA	Japan International Cooperation Agency
MCDPII	1000 Most Critical Days Programme
MOA	Ministry of Agriculture
MOE	Ministry of Education
MOY&S	Ministry of Youth and Sports
MSP	Multi-Stakeholder Partnership
NGO	Non-Governmental Organisation
ODF	Open Defecation Free
PD	Positive Deviance
RBF	Results-Based Finance
SBCC	Social Behavioural Change Communication
SN4A	Sustainable Nutrition for All
SSH4A	Sustainable Sanitation and Hygiene for All
SSN4A	Scaling Sustainable Nutrition for All
SNV	SNV Netherlands Development Organisation
SUN	Scaling Up Nutrition
T-COBSI	Technical Cooperation Project on Community-based Smallholder Irrigation
VIP	Ventilated Improved Pit
VND	Virulent Newcastle Disease
WASH	Water, Sanitation and Hygiene
WCDI	Wageningen Centre for Development Innovation, Wageningen University & Research
WRA	Women of Reproductive Age
WUR	Wageningen University & Research

Executive summary

1. Introduction

The DFID supported Scaling Sustainable Nutrition for All (Scaling SN4A) is a new two year programme which will expand the current SDC supported SN4A programme to three additional districts in the Northern Province of Zambia: Lunte, Mporokoso and Mungwi. The main objective of Scaling SN4A is to improve the diets of women of reproductive age (WRA; including adolescents) and infants (6-23 months). SN4A applies both a demand and supply side strategy, integrating four key pillars of (i) demand creation through triggering, (ii) social and behaviour change communication (SBCC), (iii) improved supply of safe, affordable and nutritious diets year-round and (iv) strengthened sub-national governance.

Wageningen Centre for Development Innovation (WCDI) has been subcontracted by SNV to carry out a Community Mapping exercise in the three new districts. The **purpose** of this Community Mapping is to get familiar with the context, and to develop a common understanding about main opportunities, and challenges the community faces. The community mapping results provide input for the triggering tools, the SBCC strategy, and the design of activities promoting community access to markets for selling and purchasing food. During the Community Mapping, information was gathered through observation and dialogue, whereby communities have started to engage with, and learn about the project.

2. Community Mapping Approach

The Community Mapping was done in six communities in the three new SN4A districts in Zambia: Lunte (rural), Mporokoso (rural, peri-urban) and Mungwi (rural, peri-urban, urban). The community mapping exercise involves a series of different techniques of data collection. A situation analysis was done based on relevant documentation. Key informant interviews (in total 32) were conducted with local policy makers and other stakeholders at district and community level. Then, at the community level, an asset mapping drawing (20 in total) was done to build an understanding of the community, its resource base and social structures, followed by focus group discussions (24 in total) and stakeholder mappings (15 in total).

3. Synthesis of findings

Agricultural profile

The three districts lie in the same agro-ecological zone within Zambia (zone III). The districts generally have conducive rainfall patterns, with a rainy season that stretches from October to April/May, and each district boasts various perennial rivers and streams.

Agriculture interventions: The Ministry of Agriculture (MoA) promotes several commodities, mainly (orange) maize, beans, groundnuts, and soya through its Farmer Input Supply Programme (FISP) and Food Security Pack (FSP). Beyond these programmes, cassava, sunflower, cattle, goats, millet, sweet potatoes, Irish potatoes, tomatoes, sorghum, poultry, sheep, pigs, rabbits, and fish are promoted by the Minsitry of Agriculture, together with NGOs active in the area. Similar crops are grown in all districts, with the notable exception that rice is only grown in **Mungwi**, where rice production is promoted by the MoA and FAO. It was reported that **Mporokoso**, where the highest agrobiodiversity scores were reported in the baseline (SNV Zambia; SSN4A Draft Baseline report; 2020), also receives relatively more NGO support targeting food productions.

The Food Reserve Agency (FRA) offers a guaranteed minimum price for maize and soya beans. The existence of the FRA seems to improve the marketability of these crops and therefore likely has an impact on the farmers' willingness to grow these crops. The prices fluctuate and can become too low but selling to the FRA is the only option people have. No agricultural activities were mentioned that specifically address youth. According to key informants, women are more involved in doing agricultural

work and men have more decision-making power and more access to land and finance. There are gender targets in government activities promoting agriculture.

Main *challenges* for the success of agriculture interventions in the districts are a lack of connectivity due to bad roads, long distances and lack of transport. Other barriers are lack of markets, poor prices, lack of storage centres, prevalence of animal disease, lack of animal feed, unsustainable farming practises, and limited reach of extension agents. A barrier to agricultural interventions that was mentioned for **Lunte**, specifically, was the fact that this is a relatively new district, which means that activities are still in the implementation phase.

Nutrition profile
The Scaling SN4A baseline found that the overall stunting rate for children under five in the three districts was 36.1% (30.5% in Mporokoso, 35.9% in Mungwi and 42.1% in Lunte). This is lower than the rate of 46% found for the Northern Province during the 2018 Zambian Demographic and Health Survey. The Scaling SN4A baseline showed that minimum dietary diversity was met by 38.7% of the sampled women. Differences between were groups were statistically significant between the three districts (Mporokoso: 54.0%, 33.6% in Mungwi and 28.2% in Lunte), and across the contexts (urban women being more likely to consume five food groups or more). Stakeholders at district level explained that low women's dietary diversity is linked this to seasonality and lack of knowledge and skills on food preservation. Several beliefs and preferences were also reported to be counterproductive in promoting a nutritious diet. Gender issues such as early marriages and unequal distribution of food between men and women were reported to be prevalent in the districts.

Nutrition interventions: Lunte, Mporokoso and Mungwi are new Scaling Up Nutrition (SUN) districts under the 1000 Most Critical Days Programme, hence government related nutrition activities are still limited. Many of the activities on nutrition are channeled through the Ministry of Health and its clinics. These include the Growth Monitoring and Promotion (GMP) programme, the promotion of Infant and Young Child Feeding practices during ante and post-natal care, community sensitisation on the importance of healthy diets and diversification, cooking demonstrations and integrated management of acute malnutrition. Until recently, many of these clinic-based nutrition services used to be funded by the World Bank Results Based Finance programme. World Vision, Jesus Cares Ministries and Caritas Zambia are implementing activities to improve nutrition in the districts. Also, schools play a role in nutrition activities as learners acquire knowledge about nutrition as part of their curriculum. No specific nutrition activities were mentioned for youth (19-35 year olds).

WASH profile
The Scaling SN4A baseline showed that most of the households in the three districts use unimproved drinking water sources. Most households do have access to a latrine (varying between 82.8% and 94.8%); in Mporokoso this is a pit latrine with slab for 49.4% of the households, but in Lunte and Mungwi, the majority does not have access to improved sanitation. Key informants working in the districts also reported persistent beliefs in the communities that hamper the adoption of optimal WASH behaviours.

WASH interventions: For WASH, the main intervention that was mentioned by the key informants was the use of Information, Communication and Education to promote specific behaviours. There are also activities related to WASH hardware. However, the most commonly stated barrier to improve WASH behaviors is a lack of proper infrastructure and materials, such as boreholes, toilets, and handwashing stations. WASH activities are organized in the districts and target 50/50 participation by men and women, but in practice, only women show up. Only in **Mungwi**, there was a WASH activity specifically for youth.

Field observations and focus group discussions
Related to *food consumption and nutrition*, important recurrent themes are

- FGDs confirmed the baseline finding that **diets** remain poorly diversified. The most common meal is porridge, accompanied by a relish such as beans, vegetables or, less frequently, meat). There is awareness on balanced diets (more so among adolescents), but fruits are often not mentioned in relation to that. Availability (mainly due to seasonality) and affordability are the main barriers

towards consumption of a diverse diet. Evaluation of the diets vary by age and sex. Adolescents seem to appreciate their diet whereas women are more concerned about the quality of household diets, as well as the nutrition situation in their communities.
- There is a need to preserve food to improve availability, but **food preservation** is not widely practised.
- Several **taboos** prevail that go again dietary guidelines.
- **Gender dynamics** affect food preparation and consumption. Women, and in some cases adolescent girls, are responsible for food preparation and feeding the children. However, her choices depend on what is available in the household, which is partly or largely determined by their husbands. Men hold significant **decision-making power** in what crops are planted, what portion is sold, and what is purchased with the proceeds. Special dietary needs of young children or pregnant and lactating women are not always acknowledged.

Related to *livelihood strategies and production*, important recurrent themes are
- Farming is a main livelihood strategy across contexts. The main barrier to increasing agricultural production was **access to inputs** (seeds and fertiliser).
- All contexts had **access** to small, local **markets**, but only the peri-urban and urban contexts had access to larger markets. There seems to be a reliance on the FRA to buy up produced commodities. A lack of quantity (bulking centres) and quality (meeting production standards) is reported to hamper access to markets.
- Not all households have **home gardens**. The home gardens reported in this study were only mentioned by the adolescent males, who work in them.
- Promotion of **animal rearing** has seen mixed results in the districts. There is a preference for chickens and goats.
- **Foods** that are consumed are mostly **grown** locally (e.g. maize, groundnuts, beans, cassava, soya beans, vegetables, sweet potatoes, millet and peas, mushrooms, kapenta). They are produced by the households themselves, traded with neighbours or purchased at local markets. **Purchased** foods are similar across contexts (fish, beef, chicken, Irish potatoes and orange maize; cooking oil, salt and sugar, rice, apples), although urban Mungwi seems to purchase a larger variety of foods. Alternative strategies that are practised to acquire food include picking of wild foods and seasonal **collection** of caterpillars for sale.

Related to *WASH*, important recurrent themes are
- Most households had **access to a latrine**. According to the community members, collapse due to rainfall is a common reason for latrine use to stop.
- It is very common to get **drinking water** from unsafe drinking water sources (rivers, streams and hand-dug wells), and treating drinking water (mainly boiling or flocculent) is not done by default, due to a lack of chlorine. Protected boreholes have broken down and communities cannot afford to have them repaired.
- The availability of **hand washing stations** is limited.

4. Recommended strategies for implementation

a. To address *behaviour related to nutrition and access to food* at community level, messages should focus on
- The concept of food groups, especially those that are currently consumed in small amounts (fruits; eggs; dairy; legumes; pulses; nuts and seeds)
- The needs of different groups and intra-household food distribution
- Food preservation techniques
- The involvement of adolescents in food preparation, with specific messages for adolescent girls who are married at young age

The messages should take into account intra-household decision making processes.

Channels that are recommended for the dissemination of messages related to behaviour, nutrition and access food, since they are important information sources for the communities are; counselling

services provided by health workers at health centres, the GMP programme, village saving groups, mother's groups, schools, churches.

b. Urban, peri-urban and rural contexts face similar issues when it comes to livelihood strategies, agricultural production and market linkages. It should be considered that according to community members across all districts, inputs are a limiting factor to agricultural production. SBCC messages addressing behaviours related to *livelihood strategies, agricultural production and market linkages* should focus on

- Crop diversity for vegetables, nuts and seeds, and fruit trees
- Sustainable practises for the collection of wild foods and edible insects
- Farmers organisation to face challenges related to transport and market linkages
- The long-term return on investment of spending income on nutritious foods.

Channels that are recommended for collaboration to disseminate messages related to livelihood strategies, agricultural production and market linkages are; schools (as they teach various agricultural practises), the Village chicken pass on programme, and agricultural extension workers/camp officers.

c. To address *WASH issues* that are common in the communities, messages should focus on:

- Treatment of unsafe drinking water.
- Construction and rehabilitation of latrines
- Protection and maintenance of drink water sources
- Demand creation for WASH-related infrastructure

Channels that are currently used and are recommend for tapping into to disseminate messages related to WASH are; neighbourhood health committees, community health workers and sanitation champions, health clinic-based programmes such a Safe Motherhood programme, GMP and malaria awareness programme, schools, village headmen, youth group organised through WhatsApp.

1 Introduction

The DFID supported Scaling Sustainable Nutrition for All (Scaling SN4A) is a new two year programme which will expand the current SDC SN4A programme to three additional districts in the Northern Province of Zambia; Lunte, Mporokoso and Mungwi[1]. SN4A Phase 2[2] is currently being implemented in the three districts of Kasama, Chinsali and Isoka in the Northern and Muchingwa Provinces of Zambia.

The main objective of Scaling SN4A is to improve the diets of WRA (including adolescents) and infants (6-23 months) over a 2-year programme. The project aims to cover at minimum 100% of wards in the district and 90% of households. To ensure validity and consistency of the monitoring and evaluation (M&E) framework, SNV will work closely with the National Food and Nutrition Commission. SN4A applies both a demand and supply side strategy, integrating the key pillars of demand creation through triggering, social and behaviour change communication (SBCC), improved supply of safe, affordable and nutritious diets year-round and strengthened sub-national governance. Recognising that improvement in nutritional outcomes is affected by gender roles within households, SN4A engages both men and women within the community to review and address intra-household decision making on food production, expenditure, consumption and allocation; access to resources and women's time and workload that often affect care practices. SN4A integrates behavioural motivators to create demand, followed by participatory SBCC. SNV operates at the interface of research, governance and implementation. It is investing in measuring the impact of its approach to fill the dietary data gap using validated dietary diversity and food environment indicators. SNV's model involves continual analysis and review of progress, also in line with district and national Government of Zambia (GRZ) targets. To encourage ownership, results, progress and data is shared with community members, who in turn are instrumental in demanding and shaping solutions to improve their own diets, health and nutrition. To ensure sustainability and scalability, SN4A works with District Nutrition Coordinating Committees (DNCCs) and Ward NCCs (WNCCs), strengthening their capacity to plan and implement nutrition sensitive strategies.

Wageningen Centre for Development Innovation (WCDI) has been subcontracted by SNV to carry out a Community Mapping exercise in the three new districts.

1.1 Purpose of the Community Mapping

The purpose of this Community Mapping is to get familiar with the context and day-to-day realities of the targeted communities, find out about the resources in place (e.g. access to water, markets, agricultural plots), their condition and use by the community; find out which social structures and differences exist in the community, and to develop a common understanding about main issues opportunities, and challenges the community faces. The Community Mapping was done in six communities in the three new SN4A districts in Zambia: Lunte (rural), Mporokoso (rural, peri-urban) and Mungwi (rural, peri-urban, urban). The community mapping results will provide input for:

- The refinement of the triggering tools developed during the previous phases of SN4A and tailor to the contextual needs of the three new districts.

[1] Mporokoso and Mungwi are in the stressed district category according to the Vulnerability Assessment Committee, 2018.

[2] The first phase of the SN4A project ran from January 2015 to December 2017 in Uganda and Zambia (the second phase is currently being implemented), led by SNV in partnership with the Royal Tropical Institute (KIT) and the Wageningen Centre for Development Innovation (WCDI), and was funded by the Swiss Agency for Development and Cooperation. SN4A is an integrated nutrition-sensitive approach. It seeks to improve nutrition outcomes by encouraging families to grow, and consume diverse food at the household level, particularly amongst women of reproductive age (WRA) and infants. Using the SN4A approach, Phase 1 of the project was successful in increasing the dietary diversity score for WRA and infants 6-23 months. More information available at http://www.snv.org/update/achieving-sustainable-nutrition-all-sn4a-phase-i-final-technical-paper

- Adjustment of the Behavioural Change Communication (BCC) strategy (what type of behaviour do we want to change, of whom, what messages do we need for that and what channels do we use?)
- Understanding market linkages and community access to markets for selling and purchasing food.

Community Mapping is about gathering information on the current situation based on observation and dialogue. By doing it in this way, communities have started to engage with, and learn about the project.

1.2 Community Mapping approach

The community mapping exercise consists of a set of information-gathering activities.

Activity 1: Key informant interviews. The purpose of interviewing key stakeholders was to gain insights in what local policymakers and other stakeholders at district and community level, perceive as positive and negative behaviour in relation to what people eat, produce and how they make decisions. Data collection was done in pairs and based on written notes.

Activity 2: Focus group discussions. The objectives of the focus group discussions were to understand the experienced and perceived barriers and driving forces in the household (for adult women, adult men, adolescent girls and adolescent boys), to consider nutrition as an important factor in agricultural decisions within the household.

Activity 3: Stakeholder mapping. The aim of this method was to gain insight into which actors are seen and valued by the communities in relation to agriculture, food and nutrition and WASH. This activity was carried out among adult women and adult men.

Activity 4: Asset mapping. This is a participatory method to build an understanding of the community, its resource base and social structures. It was done in four groups per location: adult women, adult men, adolescent girls and adolescent boys.

Activity 5: A (desk based) analysis to check and supplement the findings from the other activities. A key resource that is integrated in this report is the Scaling SN4A baseline report.

Data analysis of the different data sets was done using the interview guides for developing top-down coding using Nvivo 12 software. The use and interpretation of findings for the Scaling SN4A project was centred on the following key issues:

- Understanding the new context
- The refinement of the triggering tools and tailoring to new contextual needs
- Adjustment of the Social Behavioural Change Communication (SBCC) strategy
  - Identifying behaviours to target, including a focus on gender, youth and WASH
  - Identifying target groups, messages and channels
  - Identifying what messages and channels are already used/in place

Table 1 shows a summary of how the data from the different community mapping exercises were used:

Table 1 *Overview of key topics and methods of data collection*

Topic	Key informant interviews	Asset mapping	Focus group discussion	Stakeholder mapping	Desk review
Understanding the new context	x	x	x	x	X
The refinement of the triggering tools and tailor to new contextual needs			x		X
Adjustment of SBCC strategy	x		x	x	
Identifying behavioural changes to target, including a focus on gender, youth and WASH	x		x		X
Identifying target groups, messages and channels	x	x	x	x	
Identifying what messages and channels are already used/in place		x	x	x	

1.3 Implementation of Community Mapping

Following the systematic community mapping approach, as described above, a training was carried out on 22 February 2020 to introduce the approach, discuss and practice the interview questions and interview techniques. Thirteen key informant interviews were carried out among district staff during and as part of the training. Five interviews were held with Lunte DNCC officers, seven interviews with DNCC officers from Mporokoso, and one interview with a DNCC officer from Mungwi. After the training, the remaining Community Mapping activities were carried out as outlined in Table 1.

Table 2 *Community Mapping field activities*

District	Name of ward	Type of ward	Date
Mporokoso	Chisha Mwamba	Peri-urban	24 February 2020
	Lumangwe	Rural	25 February 2020
Lunte	Nchelenje	Rural	25-26 February 2020[3]
Mungwi	Chamfubu	Peri-urban	28 February 2020
	Kalunga	Rural	27 February 2020
	Central	Urban	26 February 2020

The wards were selected during the training by the District Nutrition Coordinating Committees (DNCC) of each district. They were asked to select a ward that is representative of other peri-urban, rural and urban wards in that district, keeping in mind its reachability travelling from Kasama.

[3] The community level key informant interviews took place on the 25th, the other activities on the 26th.

The core team consisted of two SNV staff (Tendai Gunda, Project Leader and Kennedy Chipampe, Monitoring and Evaluation Manager) and two advisors from WCDI (Sanne Bakker and Hermine ten Hove). The teams were completed at district level by members of the DNCC (Appendix 1).

In the period in which the field activities were planned, ritualistic killings and residential gassings were reported. This led to incidents of civil unrest and vigilante justice in multiple provinces throughout the country. In order to safely carry out the field activities, some adjustments were made to the original proposal. The activity of conducting observation walks was omitted in all but one location (Central Mungwi), as wandering around in the community while taking notes could be construed as suspicious in light of the residential gassings. The activity would have been further impeded by heavy rainfall.

Another unplanned alteration to the methodology was made because the Lunte team was unable to be present in numbers that were sufficient to carry out all of the activities. It was decided to prioritise the focus group discussions and stakeholder mappings, which meant that the asset mapping could not be carried out.

Finally, the stakeholder mapping activity was not carried out for both the adult men and adult women groups in Mporokoso and Lunte. In some cases, this was done to take more of the participants' time. In other cases, it was forgotten. In Mungwi, the stakeholder mapping exercise was carried out for all groups instead of just the adults.

Table 3 contains an overview of which activities were and were not carried out.

Table 3 *Activities carried out*

	Asset maps	Community KII	District KII	Focus group discussion	Stakeholder mapping
Mporokoso					
Peri-urban	Adult women (2x) Adult men Adolesc. boys ~~Adolesc. girls~~	1x WASH 1x Agric.	3x Nutrition 2x Agric. 1x Other	Adult women Adult men Adolesc. boys Adolesc. girls	Adult women ~~Adult men~~
Rural	Adult women Adult men Adolesc. boys Adolesc. girls	1x Agric. 1x General		Adult women Adult men Adolesc. boys Adolesc. girls	~~Adult women~~ Adult men
Lunte					
Rural	~~Adult women~~ ~~Adult men~~ ~~Adolesc. boys~~ ~~Adolesc. girls~~	3x General 1x Nutrition 1x Agric.	1x Nutrition 3x Agric. 1x WASH	Adult women Adult men Adolesc. boys Adolesc. girls	~~Adult women~~ Adult men
Mungwi					
Mungwi Urban	Adult women Adult men Adolesc. boys Adolesc. girls	1x Agric. 1x Nutrition 1x WASH 1x Other	1x Agric. 2x Nutrition 2x General 1x WASH	Adult women Adult men Adolesc. boys Adolesc. girls	Adult women Adult men Adolesc. boys Adolesc. girls
Mungwi Rural	Adult women Adult men Adolesc. boys Adolesc. girls	1x Agric.		Adult women Adult men Adolesc. boys Adolesc. girls	Adult women Adult men Adolesc. boys Adolesc. girls
Mungwi Peri-urban	Adult women Adult men Adolesc. boys Adolesc. girls	1x WASH		Adult women Adult men Adolesc. boys Adolesc. girls	Adult women Adult men Adolesc. boys Adolesc. girls

2 Findings

2.1 Situation analysis

2.1.1 Agricultural profile

The three districts lie in the same agro-ecological zone within Zambia (zone III). This means that the districts have conducive rainfall patterns, with a rainy season that stretches from October to April/May. Per annum, each district receives at least 1000 mm of rainfall on average (Mporokoso has an average of 1500 mm). Furthermore, each district boasts various perennial rivers and streams. Agriculture in the areas is mainly subsistence farming (Provincial Administration Northern Province, 2018a, 2018b, 2018c). Similar crops are grown in all districts, with the notable exception that rice is only grown in Mungwi.

Promoted agricultural commodities and practices
Various crops are promoted by the national government. The main avenue for promoting crops is the Ministry of Agriculture's **Farmer Input Supply Programme (FISP)**, which promotes production of maize and a legume of choice (beans, groundnuts or soya) by supplying seed and fertiliser. The **Food Reserve Agency (FRA)** offers a guaranteed minimum price for maize and soya beans. The existence of the FRA seems to improve the marketability of these crops and therefore likely has an impact on the farmers' willingness to grow these crops. It is reported in rural Mungwi that the FRA is far for some, and there are fewer centres each year. Furthermore, prices fluctuate and can become too low, but selling to the FRA is the only option people have. The Ministry of Community Development supports farmer households through its **Food Security Pack (FSP)**. This programme provides households with orange maize seed, beans, soya beans, groundnuts and fertiliser. The government also provides training to FSP beneficiaries on how to preserve, process and add value to the locally produced food stuffs.

The Ministry of Agriculture (MOA) was reported to have worked together with FAO to increase intensity of rice production in Mungwi. MOA has also worked together with the **Japan International Cooperation Agency (JICA)** to implement the **Technical Cooperation Project on Community-based Smallholder Irrigation (T-COBSI)** project (March 2013 to June 2017). "T-COBSI is supporting the farmers to improve their food security by diversifying and increasing their food production through the application of Community-based Smallholder Irrigation (COBSI). The project is a successor to the Development Study which implanted 423 pilot projects. COBSI has proven to be a highly efficient approach due to its low cost, manageability, and swift return of the investment, and opened up 572 ha of irrigated land in two dry seasons. It is also effective in the area not suitable for large-scale irrigation (JICA Japan International Cooperation Agency)." There are also reports of a new project funded by JICA that focuses on agrobiodiversity, in which farmers are encouraged to grow crops which are balanced in terms of nutritional content. This program is called E-cobis, and was reported only for Lunte. They have a nutrition department which deals with the nutrition aspects in crop production.

There are also NGOs present that promote specific commodities and practices. The practice of "Conservation farming" or "Farming God's Way" (FGW) is reported to be promoted by **World Vision** in Mporokoso. This way of farming links biblical metaphors and conservation agriculture principles (Spaling & Kooy, 2019), and is reported to advocate for minimum tillage, crop rotation and no burning. In Mporokoso, collaboration with World Vision is reported to obtain good quality fingerlings and to link small-scale (bean) farmers to markets. They also have activities that support households to consume more diverse food through what they call "sustainable economic empowerment programme" which targets farmers in empowering them to grow diverse food crops, which in turn, will promote diverse food consumption at household level. **Heifer International** is reported to be active in Mporokoso in the domain of livestock production and restocking with quality and economic feed.

Jesus Cares Ministries is active in parts of Lunte, working together with local clinics. They have a diverse set of (SUN) activities, including cooking demonstrations, village saving groups and mothers' groups. They promote agro-biodiversity by providing households with malnourished children with a variety of nutritious commodities. Their programme includes handing out seeds, gardening and rearing goats. WASH is not so much part of their programmes. **Caritas Zambia** is active in all three districts. It is reported to promote growing sunflower in Mungwi, home gardening in Lunte and to organise activities related to gender in agriculture in Mporokoso.

Schools are also active in the agricultural domain. Students are taught gardening techniques as part of Creative and Technology studies. In Lunte, for example, vegetables and maize were planted with the learners last year. The school also has two fish ponds for the secondary section, who look after it. Both the garden produce and the fish are sold. Learnings are reported to be applied at home. There is also a **production unit** for soya beans and potatoes at a school in urban Mungwi.

Other crops that were mentioned as "being promoted" without specifying how are millet, sweet potatoes, Irish potatoes and tomatoes. Livestock rearing is also reported to be promoted: goats, poultry, sheep (Mporokoso only), cattle, pigs and rabbits (Mporokoso and Mungwi) are mentioned. In Mungwi, there is a programme to increase cattle numbers after a large number of cattle were killed by disease. There is also a Village chicken pass on programme, for which a number of cooperatives were selected. Finally, aquaculture is promoted, with a reported increase in fish production from 1,000 to 3,000 kg per annum in Mporokoso.

Box 1 - Longlist of promoted commodities

- Maize (including orange maize)
- Cassava
- Soya beans
- Mixed beans
- Ground nuts
- Rice
- Sunflower
- Cattle
- Goats
- Millet
- Sweet potatoes
- Irish potatoes
- Tomatoes
- Sorghum
- Poultry (indigenous and exotic species; including chickens)
- Sheep
- Pigs
- Rabbits
- Fish

Successful activities and success factors

It is important to note that none of the activities was unanimously considered successful. This paragraph covers the positive sides of the activities and the factors that are perceived to have contributed to their success.

Various successes of interventions of the stakeholders above have been mentioned. A common success was the **increase of production** for a specific promoted crop (most commonly maize, soya beans, fish, millet and beans). This was usually due to supply of inputs, mostly by the FISP and the Food Security Pack[4] programme. Increased knowledge also played a role, for which various capacity building programmes were credited (by MoA, or with support of World Vision and FAO), with activities like agricultural extension services, training, agriculture shows and field days. A related success is an **increase of farmer income**, for example, by promoting the farming of marketable commodities or

[4] Also referred to as "Family Pack Programme" by an interviewee.

by successfully linking farmers to (bulk) buyers. In Mungwi, after market research, vegetable grower groups were formed that now supply to Kasama and even Shoprite. Improvements in road infrastructure were also cited as key elements to success. Livestock activities were considered successful if **livestock was passed on to other farmers** (like in the Village chicken pass on programme in Mungwi).

Less successful activities and barriers
Many of the mentioned activities faced some barriers to success, even those that were overall successful. This paragraph lists some of the challenges as perceived by the key informants from the various districts. A barrier that was mentioned for Lunte, specifically, was the fact that this is a relatively new district, which means that are activities are still in the implementation phase.

The most common barrier – across districts and contexts – that was mentioned was the lack of connectivity: **bad roads, long distances and lack of transport** to market places. One interviewee called this a gendered barrier, as women are less likely to own a form of transport, such as a bicycle. Other common barriers are **lack of markets** and, related to that, **poor prices** for products. "Briefcase buyers" take advantage of this situation, buying up products for low prices as farmers do not have other options. Both **quality and quantities of crops may lack** to successfully access markets, which is related to the issue of a **lack of storage and bulking centres**.

Three barriers were mentioned to the success of programmes that supply inputs, like FISP. Some respondents noted a tendency to **sell the received inputs**. Beneficiaries are also seen to **sell all the produce they harvest** with support of the Food Security Pack programme, instead of using it to improve their own food security. Finally, some interviewees mention that they think that the successes of these programmes will disappear if the supply of inputs stops – **a lack of sustainability**. Outside these programmes, it is difficult to obtain inputs, such as quality seed and fertiliser.

Barriers to success for livestock activities, specifically, are the **prevalence of animal diseases**, like Virulent Newcastle disease (VND) in poultry, and an unspecified disease in cattle. In Mungwi, this cattle disease has reportedly diminished its cattle population as compared to four or five years ago. **A lack of animal feed** is also mentioned as barriers. Fish farming was mentioned to have a low adoption rate, and to encounter challenges in management - the nature of which was not specified. Beekeeping was reported to be unsuccessful due to **deforestation and a lack of bee hives**.

Cultural factors are also reported to take a role: some of the promoted methods of agriculture are not adopted by everyone. Cattle farming is not successfully picked up because it is "not a customary activity". Millet production is reported to lead to low production due to the local "chitemene" method of cultivation - **slash and burn agriculture**. Keeping to this form of agriculture is also a barrier to achieving cultivation agriculture/FGW.

Some government institutes indicate that they are not always able to give the **support** they would like to, as that would require more staff. Extension officers cannot reach everyone. For groundnuts, specifically, there was mention that there was a **lack of knowledge** among farmers.

The three districts generally have favourable rainfall patterns, but these are not guaranteed. **Unfavourable weather conditions** can still occur, affecting agricultural production. An example is a dry spell that hit Mungwi in 2017-2018.

Gender in Agriculture
Key informants noted that women are more involved in doing agricultural work. On the other hand, men have more decision-making power and more access to land and finance. Women are inhibited to participate in some activities by their lower literacy levels. Furthermore, physical labour is seen as challenging to women, which may hinder them from being involved in activities such as (virgin, rocky) land preparation (which requires digging and cutting trees) or aquaculture (which requires digging a fish pond). Market access is seen by some as more challenging for women compared to men (also due to a lack of means of transportation). One interviewee commented that "Females take time to adopt to new technology on farming". Other activities are gendered out of custom: planting, weeding and

fertiliser application are seen to be women's jobs, as well as chicken rearing. Cattle and goat rearing are promoted for women by some, and for men by others.

There are gender targets in government activities. For example, it is encouraged that a larger share of the inputs is allocated to women (by encouraging the participation of women in cooperatives), and activities and cooperatives should have at least 30% or 50% of women participation. Some activities are channelled through women's cooperatives (Ministry of Commerce and Trade) or clubs.

Youth in Agriculture
Although youth may actively participate in agricultural activities (like cooperatives), **no agricultural activities were mentioned that specifically address youth**. Youth are seen as a diverse and somewhat elusive group: "They don't know their directions". Some may seek tertiary education, where others need short skills training, and others may want to do nothing. Interviewees cited that youth seem to be most interested in quick wins through short-term activities. Laziness and a lack of perspective are also mentioned, next to physical strength (suitable for aquaculture).

Under the District Development Coordinating Committee (DDCC), which is chaired by the District Commissioner (DC) and local authority as board subcommittee, there is a District Youth Development Cooperation Committee (DYDCC) with the goal to realise youth's potential (19-35 years old). People are encouraged to come up with activities, that can be supported by funds from the Ministry of Youth & Sports (MOY&S) or the Constituency Development fund. There was no mention of agricultural activities taking place under this committee.

Baseline findings
Table 4 contains an overview of the agrobiodiversity in the three districts, at household level. This information was collected through a baseline that was recently carried out for Scaling SN4A. The average crop diversity in a household is 6.26, with Mporokoso boasting a higher diversity (8.65) than Lunte (5.39) and Mungwi (4.74) (SNV Zambia; Scaling SN4A Draft Baseline report; 2020).

Table 4 *Agrobiodiversity: agricultural and livestock diversity (by district)*

	Mporokoso		Mungwi		Lunte		ALL	
	Mean	sd	Mean	sd	Mean	sd	Mean	sd
Agricultural diversity, mean sd								
Vegetables	4.76	4.44	1.58	2.04	1.7	2.48	2.68	3.47
Fruits	0.1	0.1	0.06	0.38	0.02	0.22	0.06	0.45
Nuts/Legumes/Seeds	1.2	1.21	0.99	0.99	1.64	0.83	1.28	1.04
Staples	2.48	2.48	2.1	2.1	1.98	1.13	2.19	1.2
Cash crops	0.11	0.11	0.02	0.02	0.04	0.19	0.05	0.23
Crop diversity	**8.65**	**8.23**	**4.74**	**2.96**	**5.39**	**3.41**	**6.26**	**4.85**
Livestock diversity	**0.97**	**0.97**	**1.02**	**1.03**	**1.35**	**1.13**	**1.11**	**1.05**
Farm diversity	**9.62**	**6.76**	**5.76**	**3.33**	**6.74**	**4.06**	**7.37**	**5.19**

2.1.2 Nutrition profile

According to the 2018 Zambian Demographic and Health Survey, rates of stunting for children under 5 in the Northern Province (the lowest level of disaggregation for which data is available), is 46% - the highest for all provinces in Zambia (Zambia Statistics Agency - ZSA, Ministry of Health - MOH, University Teaching Hospital Virology Laboratory - UTH-VL, & ICF, 2020). The Scaling SN4A baseline found lower numbers: the overall stunting rate in the three districts was 36.1% (of which 22.3% and 13.8% of the children were moderately and severely stunted respectively). Table 4 shows the prevalence of stunting, underweight and wasting as found in the baseline (SNV Zambia, 2020).

Table 5 *Prevalence of stunting, underweight and wasting in Mporokoso, Mungwi and Lunte*

	Mporokoso		Mungwi		Lunte		ALL	
	n	%	n	%	n	%	n	%
Stunting								
Overall	74	30.5%	89	35.9%	101	42.1%	264	36.1%
Moderate	50	20.6%	50	20.2%	63	26.3%	163	22.3%
Severe	24	9.9%	39	15.7%	38	15.8%	101	13.8%
Underweight								
Overall	22	8.8%	47	18.8%	42	17.2%	111	14.9%
Moderate	17	6.8%	35	14.0%	34	13.9%	86	11.6%
Severe	5	2.0%	12	4.8%	8	3.3%	25	3.4%
Wasting								
Overall	11	4.5%	26	10.4%	10	4.1%	47	6.4%
Moderate	7	2.9%	17	6.8%	5	2.1%	29	3.9%
Severe	4	1.6%	9	3.6%	5	2.1%	18	2.4%

Nutrition activities

Lunte, Mporokoso and Mungwi are new Scaling Up Nutrition (SUN) districts under the MCDP II, hence government related nutrition activities are limited. One of the government's programmes to address nutrition in the communities is the **Food Security Pack (FSP)** by the Ministry of Community Development, which is described in the section on Agriculture.

Many of the activities on nutrition are channeled through the Ministry of Health (MOH) and its clinics. These include the **Growth Monitoring and Promotion (GMP) programme**, which keeps track of children's growth rates in comparison to a reference population by periodic anthropometric measurements in order to assess growth adequacy and identify growth faltering at early stages. The purpose of the programme is "to capture growth faltering before the child reaches the status of malnutrition. The promotion (P) aspect uses growth monitoring (GM), i.e. measuring and interpreting growth, to facilitate communication and interaction with caregivers to generate adequate action to promote child growth (Republic of Zambia Ministry of Health)." Clinics are also responsible for **educating women on Infant and Young Child Feeding (IYCF) practices** during their antenatal and postnatal visits to the clinic. Other activities that are carried out by clinics are **community sensitisation on the importance of healthy diets and diversification, cooking demonstrations** and **treating (or referring) cases of severe acute malnutrition**. Until recently, services provided by clinics were paid for under the **Results Based Finance (RBF)** programme, funded by the World Bank (implemented in Mporokoso and Lunte). The quantity (and quality) of services delivered determined the amount of finance received per quarter. According to an interviewee, the funder stipulated that 40% of the funds should be divided among staff. 60% is to go to facility and community, for example through cooking demonstrations, buying nappies or buying food.

Schools also play a role in nutrition activities. **Learners acquire knowledge about nutrition as part of their curriculum**. In the subject of "Home economics", learners are taught about nutrition, for example, on sources of carbohydrates, fats and protein. The subject of "Integrated science" also covers some nutrition topics, like what a balanced diet is. A **school feeding programme**, through Ministry of Education (MoE) and UNICEF, is also mentioned in Mungwi and Lunte; however, this programme seems to have stopped after its funding dried up. **School gardens** were mentioned as well, which are described in the section on agriculture.

The main activities being implemented under food consumption and nutrition by **World Vision** is the **Positive Deviance/Hearth (PD/Hearth)** programme which aims to improve the nutrition status of children through rehabilitation of malnourished children within 90 days by use of food supplementation using locally available foods in the community. They also have activities that support households to consume more diverse food through a **sustainable economic empowerment programme** which targets farmers to empower them to grow diverse food crops which will in turn promote diverse food consumption at household level. **Jesus Cares Ministries** also targets nutrition, as described in the section agriculture. **Caritas Zambia** offers a home-based care programme, working through churches.

Successful activities and success factors
Interviewees note a gradual decline in (pre-)malnutrition rates, although they also state that it is hard to back this up with evidence. Cooking demonstrations have proven partly successful, according to the key informants. The **knowledge on healthy food preparation has been useful** to those who can afford the food they need. (Referral and) treatment of malnourished children is also considered successful: they are **treated appropriately** and then discharged. The GMP is considered successful due to high attendance rates, which is credited to the **publicity** that was done a few years ago. People from the communities are trained as liaison officers in the community, and they are very active. The school feeding programme was also called successful in delivering meals to the learners.

Less successful activities and barriers
A barrier to a diverse diet that is mentioned frequently is **seasonality**. People are limited in their choices by what is available in the current season. One interviewee gave the example of people consuming "mango, mango, mango" in one season, and consuming "mushroom, mushroom, mushroom" in the next. A related issue is **a lack of food preservation**. One interviewee noted a small improvement in this area. Another mentioned that food preservation is not a cultural activity and seen as "Western arrangements".

The GMP programme, while also considered as a successful activity, also faces challenges. **A lack of materials** was mentioned: height boards (or fuel to take them to different locations by car – they do not fit on the back of a motorbike), as well growth charts to convert numbers into meaningful information. Distances to the clinic may be far, reducing the attendance rates. Attendance rates also drop as the children are getting older: "We see that after 2,5 years, they stop coming, but they should continue coming monthly until they are 5 years old." Cultural beliefs also form a barrier to the GMP programme. In Mporokoso, the height boards are taken to resemble coffins, leading to negative connotations of witchcraft among parents.

Beliefs and preferences can also be counterproductive in promoting a nutritious diet. The following were mentioned by one or more key informants:
- People think they will need expensive or non-local food to have a balanced diet, even though cheap local foods (like groundnuts) could also contribute
- Vegetables are perceived as food for poor people
- Pregnant women and small children should not eat eggs
- People "do not like avocado peels or pumpkin leaves"
- People think they already know everything there is to know about foods that are familiar, and prefer to be taught about foods that are new to them (like citrus fruits)
- The positive effects of improving nutrition may not be visible to households as the cause-effect relationship is not clear

Clinics are faced with the fact that the **RBF is currently not giving out funds**, on which they rely to carry out some of their sensitisation and education activities.

Gender in Nutrition
One informant noted **unequal distribution of food between men and women** as a key issue within the households of the community. "**Early marriages**" is also mentioned. On the one hand, this is problematic because girls do not have knowledge about good hygiene and eating practices, which is said to affect the children that they may have. On the other hand, young couples may not have farm land.

There are few nutrition activities that specifically target gender. **Village banking** is mentioned as an activity to empower women. Furthermore, World Vision is deliberate in targeting both men and women (50/50) for their activities, even in the PD/Hearth programme that focuses mostly on mothers. For their sustainable economic empowerment programme that targets farmers, they involve women and encourage them to grow diverse crops.

Youth in Nutrition
No specific activities were mentioned for youth (19-35 year olds).

Baseline findings

The baseline showed that minimum dietary diversity was met by 38.7% of the sampled women. Differences between were groups were statistically significant between the three districts (Mporokoso: 54.0%, 33.6% in Mungwi and 28.2% in Lunte), and across the contexts (urban women being more likely to consume five food groups or more).

Table 6 *Women's dietary diversity per district*

		District					
		Mporokoso		Mungwi		Lunte	
		n	%	n	%	n	%
Minimum diet diversity	<5 food groups	115	46.0%	166	66.4%	176	71.8%
for women (MDDW)	5+ food groups	135	54.0%	84	33.6%	69	28.2%
Grain		246	98.4%	244	97.6%	245	100.0%
Pulses, nuts and seeds		100	40.0%	77	30.8%	51	20.8%
Dairy		27	10.8%	23	9.2%	4	1.6%
Meat		126	50.4%	116	46.4%	78	31.8%
Organ Meat		5	2%	2	0.8%	4	1.6%
Eggs		24	9.6%	16	6.4%	20	8.2%
Dark green vegetables		233	93.2%	210	84.0%	202	82.4%
Other vegetables		204	81.6%	195	78.0%	205	83.7%
Other fruits		75	30.0%	17	6.8%	14	5.7%
Vitamin A-Rich Foods		134	53.6%	95	38.0%	96	39.2%

The baseline also assessed children's dietary diversity scores (Table 6). On average, 55.7% of the children consumed an inadequate diet of less than 4 food groups. The numbers are highest in Mungwi (63.0%), followed by Lunte (57.7%) and Mporokoso (46.5%). There were statistically signficant differences across age groups (older children consuming more than the younger ones). No statistically significant differences were found between consumption between boys and girls.

Table 7 *Children's dietary diversity scores*

	Mporokoso		Mungwi		Lunte		Overal	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
IDD, Means (SD)								
Overall	3.4	1.30	2.9	1.38	3.2	1.32	3.2	1.35
Range		0-6		0-6		0-6		0-6
Sex								
Boys	3.4	1.33	2.9	1.33	3.3	1.3	3.2	1.34
Girls	3.3	1.29	2.5	1.4	3.0	1.31	3.1	1.34
Age-Group								
6-8 months	2.3	1.51	2.3	1.43	2.6	1.51	2.3	1.43
9-11 months	3.3	1.24	2.8	1.30	2.8	1.20	2.9	1.29
12-17 months	3.7	1.17	3.1	1.47	3.4	1.26	3.4	1.31
18-23	3.7	1.02	3.2	1.18	3.5	1.14	3.5	1.12
IDDS Inadequacy (<4) n, %								
Overall	87	46.52%	116	63.04%	105	57.69%	308	55.7%
Sex								
Boys	30	34.5%	56	48.3%	46	43.8%	132	54.6%
Girls	57	65.5%	60	51.7%	59	56.2%	176	56.6%
Age-Group								
6-8 months	25	28.7%	29	25.0%	21	20.0%	75	24.4%
9-11 months	22	25.3%	26	22.4%	23	21.9%	71	23.1%
12-17 months	21	24.1%	31	26.7%	38	36.2%	90	29.2%
18-23 months	19	21.8%	30	25.9%	23	21.9%	72	23.4%

Figure 1 shows the 7 different food groups, and the percentage of children that had consumed them in the previous day. Grains (maize, sorghum and millet) were consumed by over 90% of the children. Vitamin A-rich foods, milk and milk products and other fruits and vegetables were also among the most consumed groups. The least consumed group was eggs, which were consumed by less than 10% of the children.

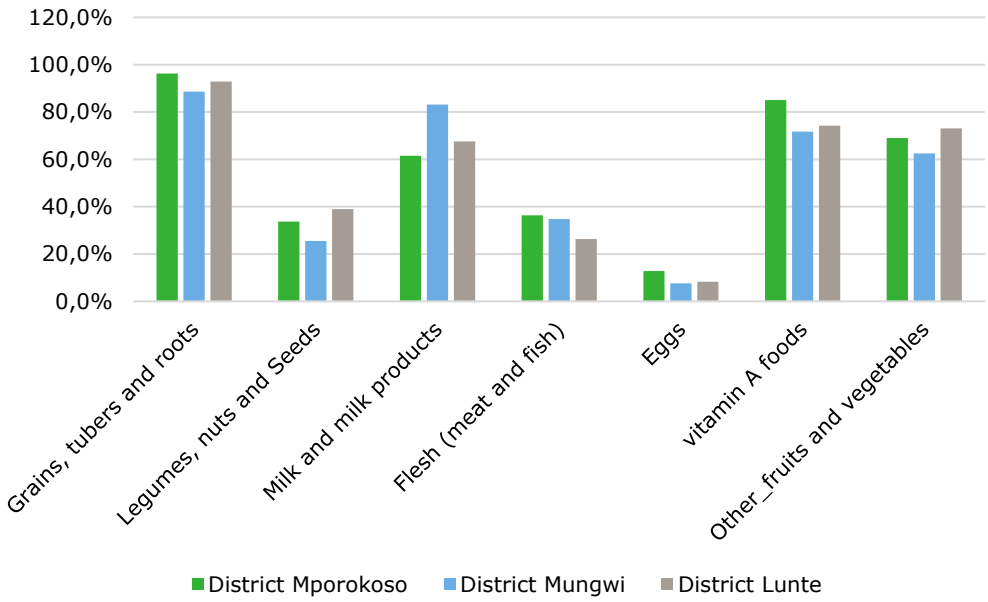

Figure 1 *Food Groups consumed by children (6 - 23 months old)*

2.1.3 Water and Sanitation profile

Access to water and sanitation

The Scaling SN4A baseline found the following figures in Table 5 on household access to water, type and frequency of water treatment, and availability and types of latrines.

Table 8 *Access to water and sanitation in the target districts*

	District n (%)						Total	
	Mporokoso		Mungwi		Lunte			
Main source of drinking water for the household								
Household connection	11	4.4%	21	8.4%	1	0.4%	33	4.4%
Tubewell or Borehole	11	4.4%	78	31.2%	16	6.4%	105	14.0%
Protected dug well	21	8.4%	7	2.8%	12	4.8%	40	5.3%
Unprotected dug well	148	59.2%	107	42.8%	99	39.6%	354	47.2%
Pond, river or stream	59	23.6%	36	14.4%	121	48.4%	216	28.8%
Unimproved rainwater collection	0	0.0%	0	0.0%	1	0.4%	1	0.1%
Tanker truck water	0	0.0%	1	0.4%	0	0.0%	1	0.1%
Treatment of drinking water								
Boil	49	48.5%	41	62.1%	42	59.2%	132	56.6%
Chemical disinfection	3	3.0%	6	9.1%	1	1.4%	10	4.5%
Floculent/disnfectant (e.g. chlorine solution)	73	72.3%	32	48.5%	29	40.8%	134	53.9%
Let it stand and settle	1	1.0%	0	0.0%	9	12.7%	10	4.6%
Pour it through a cloth	0	0.0%	1	1.5%	0	0.0%	1	0.5%
Frequency of treatment								
Always	43	42.6%	28	42.4%	28	39.4%	99	41.5%
Usually	10	9.9%	15	22.7%	7	9.9%	32	14.2%
Sometimes	48	47.5%	22	33.3%	36	50.7%	106	43.8%
Don’t know	0	0.0%	1	1.5%	0	0.0%	1	0.5%

	District n (%)						Total	
	Mporokoso		Mungwi		Lunte			
Availability of latrine								
Latrine available	237	94.8%	207	82.8%	232	92.8%	676	90.1%
Type of latrine								
Flush or poured to septic tank or pit	8	3.4%	13	6.3%	1	0.4%	22	3.4%
Pit latrine with slab	117	49.4%	33	15.9%	72	31.0%	222	32.1%
Public or shared latrine	0	0.0%	3	1.4%	0	0.0%	3	0.5%
Flush or pour flush to elsewhere	1	0.4%	2	1.0%	0	0.0%	3	0.5%
Open pit latrine without slab	115	48.5%	160	77.3%	159	68.5%	434	64.8%

Activities to promote hygiene and sanitation

The main activity that was mentioned by the key informants was the use of **Information, Communication and Education (ICE)** to promote specific behaviours. Promoted behaviours include hand washing with soap or ash, toilet construction, toilet use, water chlorination, water boiling, using dish racks, waste disposal and keeping surroundings clean. Different channels are used to spread the message, such as Neighbourhood Health Committees (NHC), Community Health Workers (CHW; community-based volunteers) and Community Health Assistants (CHA); trained community-based workers, employed by the government). In some places, there are "Sanitation champions". WASH advice is also part of general health activities such as Safe Motherhood groups for pregnant women, the GMP and malaria awareness. **Handwashing is promoted in schools**, and **hand washing stations and chlorine are provided** to schools.

In Lunte, **SNV's project to promote Open Defecation Free (ODF) communities** was mentioned (presumably the Sustainable Sanitation and Hygiene for All (SSH4A) programme).

There are also activities related to WASH hardware. **Borehole projects** are mentioned, including drilling and maintenance. There are also **quality inspections of water sources** of schools and villages. A respondent in Mporokoso mentioned the construction of **Ventilated Improved Pit (VIP) toilets**. Finally, there are respondents that **lobby** for safe water points, spare parts for hand pumps and toilet construction at the local authorities.

Successful activities and success factors

Sensitisation to the need for hygiene and sanitation is generally successful, according to several key informants. An interviewee notes that people are willing to buy water treatment (chlorine), and that people come from all over to get safe water from the clinic for drinking and cooking. Other interviewees see an improvement of hand washing among learners, or a higher number of dishwashing racks, waste pits and pit latrines. A key factor in this is the **collaboration with village headmen**. They can charge households if they do not have a toilet.

Less successful activities and barriers

The most commonly stated barrier is **a lack of proper infrastructure and materials**. There are reports of contaminated boreholes, which means that people either have to travel long distances for clean water, or resort to unimproved water sources. Treating water at home is also reported to be difficult due to a lack of chlorine. Finally, there are too few permanent hand washing stations.

After a pit latrine has been put in place, there are still some challenges: there are reports of **toilets that are placed incorrectly and contaminate water sources**, or **flood** after heavy rainfall. Village inspections are impeded because the clinics experience challenges with transport and resources to cover the long distances.

Despite sensitisation being largely successful, several key informants note that they encounter people who seem to be **unwilling to change their behaviour**. Persistent beliefs in the communities, for example, are that baby faeces is not harmful, or that drinking contaminated water is fine because it has been done for generations. There is also a belief that **constructing a toilet is too expensive**, as they think a toilet has to have brick walls and a corrugated roof.

Gender in WASH
One interviewee noted that having a pit latrine may be problematic to widows, who do not have a man to dig a pit for them.

WASH is part of the standard programme for **antenatal visits** to the clinic. Key informants say that it is encouraged for men and women to come together, but in practice, they see that usually only women show up. Some key informants say that for their WASH activities, they try to have **50/50 participation** from both men and women or at least 30% representation of women as stipulated by the Zambian law on gender equality.

Youth in WASH
Only in Mungwi, there was a WASH activity specifically for youth. There is the Tuukule Entrepreneurship Youth Club (**WhatsApp group**) that has 15 members, 6 of which are girls. It is about social-economic community issues, like financial literacy and substance abuse. The key informant, who works at the health clinic, contributes from health side, which includes sanitation (and HIV). The group is aged below 35 (20-35), but the age range is not really defined or restricted. It is a self-sponsored group. According to the interviewee, it is an active group.

2.1.4 Demographics

Table 5 provides some basic statistics on the three districts. Note that Lunte only became an independent district on 17 March 2017, which means that the district was still part of Mporokoso in 2010, when the last population census was conducted.

Table 9 *Basic demographic data*

	Lunte	**Mporokoso** ***Numbers marked with * include Lunte information***	**Mungwi**
Population	57,839**†**	98,842*****	151,058*****
Number of females (% of total population)*	(part of Mporokoso)	49,681 (50.3%)	76,328 (50.5%)
Population growth rate*	(part of Mporokoso)	2.60%	2.90%
Number of people below the age of 18 (% of total population)*	(part of Mporokoso)	59,575 (60%)	90,217 (60%)
Urban / Rural population*	(part of Mporokoso)	15,556 / 83,286	7,831 / 143,227
Number of wards†	12	10	13
Surface area in km2 †	?	4,015	10,000

* Based on the 2010 population census. At the time, Mporokoso district still contained the current Lunte district. † Based on data from the provincial government (Provincial Administration Northern Province, 2018a, 2018b, 2018c). The number of wards in Mporokoso is obtained by subtracting the number of Lunte wards from the number of wards in Mporokoso before Lunte separated from it.

2.2 Lunte

2.2.1 Focus Group Interviews

Statements made by **women**
Statements made by **men**
Statements made by **adolescent girls**
Statements made by **adolescent boys**
Statements made by **all or multiple groups**

Nchelenje Ward (Rural)

Eating Behaviour
Participants agree that the foods that they consume are grown locally. Crops include maize, groundnuts, beans, cassava, soya beans, vegetables, sweet potatoes, millet and peas. Households purchase food which they do not produce, such as vegetables, fish, beef, chickens, Irish potatoes and orange maize. According to the men, men decide which foods are bought, some after consulting their families. Women say that they are the ones that make these decisions. Seasonality and scarcity play a role in the availability of foods. The price of the food varies depending on the season. Maize is cheaper from June-August and expensive from October or November to March. Millet is cheap in August to October and is expensive December to April. Fresh foods that are grown far away go bad quickly. The women and adolescent girls say that they usually have two meals a day, both of which containing porridge, accompanied by a relish such as beans, vegetables or, less frequently, chicken, fish or beef.

There are different views on who makes day-to-day decisions about what to eat. According to the adolescent boys and the women, it is the mother. Other household members at times influence how food is prepared and in what quantities. Adolescent girls say that both parents decide, or the father. Women are responsible for preparing the food at home, and according to the adolescents of both genders, they are involved too. Women know the quantity of food to prepare or cook and how it is cooked. Women also feed the children in the household.

Opinions differ on whether everyone in the household eats the same food, in the same quantities. According to adolescent boys, everyone gets the same. According to the other groups, reasons to have a family member eat differently are because they are small children, because of allergies and preferences, because they are pregnant or because the father needs more for the work that he does.

Nutrition
Adolescent boys and girls both feel that they have a healthy diet. This is because there is enough money to buy the types of food needed, their households produce a variety of crops and range of livestock, and because they work hard to eat a good diet. The adolescent think it is important to eat nutritious food, as it gives them good health, energy and protection. Actions taken to improve diets are ensuring they prepare a variety of food stuffs and taking feeling less strong or sick as a cue to eat better. Good, nutritious foods are foods that give energy (such as nshima) and vegetables (because of vitamins). Adolescents learn about healthy eating from health centres and schools. The adults have a less positive view of the local nutrition situation, saying that some or even most of the children in the community are malnourished, leading to poor health. They see the importance of a nutritious diet to reduce malnutrition, to protect the body from disease and to grow well. Women note that certain myths are barriers to good nutrition, like pregnant women are not allowed to eat eggs – depriving them of good nutrition. The action taken to improve diets is growing diversified foods.

Livelihood strategies and production
Reasons to grow a crop include how lucrative the crop is (e.g. maize, being a staple food in the country, is grown on larger scale), the nutritional value (e.g. groundnuts), and the amount of fertiliser needed, which is expensive (which makes maize a less favourable crop, and millet more favourable).

Alternative strategies to acquire food include collecting mushrooms during rainy season, caterpillars and wild fruits, as well as hunting birds.

Men and women have different roles in production: in millet production, men cut trees and women peal branches. Adolescents indicate that they are also involved in their families' livelihood and food production, by helping in production or by doing piece work and then purchasing foods. Men usually make the decisions about which foods are sold when, either with or without their wife and the rest of the family. Men also decide what is done with the proceeds, in consultation with their family. School fees can be a reason to sell part of the food commodities, even if that means becoming food insecure.

Water, sanitation and hygiene (WASH)
The adult groups were both unanimous in stating that they had and used pit latrines at home. Access to clean drinking water was considered to be a problem, as people drink water from unprotected sources such as rivers, streams and hand-dug wells. They do not have access to improved water sources. The boreholes in the area do not produce good quality water (the water is turned brown by iron from galvanised pipes), nor do most participants (except one) treat their water before consumption. Reasons why clean water is important that were given were to reduce disease.

When asked what constitutes proper hygiene practices, the following behaviours were mentioned:
- Washing hands with soap after using a toilet
- Cleaning the house and surrounding every day
- Using dish racks
- Having garbage pits
- Treating drinking water with chlorine, boiling water
- Washing clothes
- Taking a shower every day
- Constructing bath shelters
- Covering food
- Covering or cleaning water sources
- Cleaning toilets by using ashes

Barriers to proper hygiene were lacking access to clean water sources, having toilets close to drinking wells, keeping of livestock next to water sources and washing and cleaning in the water sources.

2.2.2 Stakeholder Mapping

Nchelenje Ward (Rural)
In Lunte, the stakeholder ranking was conducted only by the Adult Men. The three stakeholders emerging from this FGD were Caritas Zambia, working on Agriculture, Jesus Cares working on nutrition and child care, and the government. According to the men, the government was operational in the areas of agriculture, nutrition and childcare, WASH and community development.

2.3 Mporokoso

2.3.1 Focus Group Interviews

Statements made by **women**
Statements made by **men**
Statements made by **adolescent girls**
Statements made by **adolescent boys**
Statements made by **all or multiple groups**

Chisha Mwamba Ward (Peri-Urban)

Eating Behaviour
Participants agree that the foods that they consume are produced locally. Foods include maize, millet, groundnuts, beans, sweet potatoes, cassava, munkuyo, soybeans, (dried) vegetables (pumpkins, beans leaves), caterpillars, mushrooms and kapenta. Households purchase food which they do not produce, such as vegetables, relish (at the market), cooking oil, salt and sugar (at the shop), rice, apples, meat and fish. The husband and wife decide together what should be purchased. There can be food scarcity during the rainy season, not enough resources such as money, land or inputs to provide food for a (large) household, parents' failure to work due to laziness or being orphaned. According to women, the same food is consumed year-round. A common meal is nshima with relish, such as vegetables or beans. The different groups report different numbers of meals per day: two to three, two or sometimes one meal of nshima with relish, two to four meals or two meals. Adolescents were asked to name their favourite foods, which were most commonly various types of fruits (pineapples, apples, mangoes, bananas, oranges, guavas, lemons, watermelons, avocados and pawpaw), sweet potatoes, juice and sugar cane, or beans, vegetables, fish and mushrooms.

The adults are unanimous in saying that the women make the day-to-day decisions about what to eat, and also that they are the ones that prepare the food. According to the adolescents, it is the parents (or guardians) that decide, with the boys noting that they get to make decisions sometimes, to learn. The women agree that household members have a say. Adolescent girls say that they have a role in preparing the food.

Parents report that everyone in the household gets the same food. The adolescents nuance this by saying that the father gets a bigger portion of meat and chicken because he gets special parts such as gizzard, or the head of a fish and that stomach problems and personal needs can also lead to variation among household members.

Nutrition
Among the adolescents, the girls say that they have a healthy diet, because they consume different nutritious foods. The diet could be improved if more crops were yielded. The boys disagree and say that most households do not eat a balanced diet, especially due to the lack of fats/oil in the diet. There is not enough money to purchase this. The adolescents think that it is important to eat nutritious foods to have energy, to fight diseases, to grow and to provide fat. They cannot take much personal action, except contributing by doing piece works. Good, nutritious foods are maize, vegetables, sugarcanes, chickens, kapenta (because of proteins), nshima (because of carbohydrates), water (because of lavage). This they have learnt from school, clinic, home and churches. Like the boys, the adults are not positive about the local nutrition situation, saying that most children are malnourished. The importance of a nutritious diet to improve their health and give more energy to the body. They think that different household members have different nutritional needs: pregnant women and small children need different foods. There are different opinions on whether cultural taboos exist: no, not in Chisha Mwamba versus yes, for example: if a pregnant woman eats eggs while pregnant, the child will be born without hair. To improve nutrition, it is suggested that adequate resources are provided (agricultural inputs and livestock) and that trainings and sensitisation on nutrition is done.

Livelihood strategies and production
Crops are usually grown to be eaten or to be (partly) sold (e.g. maize, beans, millet and cassava). The adult groups indicate that they would like to produce more maize and beans, because it is also a source of income and is easily marketed. Barriers include limited farming inputs, the expense of farming inputs, traditional ways of farming (hand hole cultivation methods) and the prevalence of pests. Adolescents contribute to production and household income by collecting food from the source and doing piece works. Alternative strategies to acquire food include picking of wild foods and seasonal collection of caterpillars for sale.

The groups do not agree on who makes the decisions on which crops to sell and what to do with the money that comes in: either the men make the decisions, or the women make the decisions. Reasons given to sell crops are to support domestic needs (including food staples not produced) or to pay school fees or books, to buy clothes and to repair bicycles.

Water, sanitation and hygiene (WASH)
The groups speak of using taps (which are safe and clean), rivers, (shallow or protected) wells and boreholes (which are unsafe because of the presence of rust). The protected wells are also unsafe due to hygiene, which aligns with the women's statement that the wells are not used for drinking. A few have access to improved water sources. Everyone has a latrine and uses them[5]. It is deemed important to drink clean water to prevent diseases.

When asked what constitutes proper hygiene practice, the following behaviours were mentioned:
- Cleaning surroundings
- Using clean water (or treating it using chlorine and boiling)
- Covering food to prevent flies
- Washing hands after using a toilet
- Cutting nails
- Washing clothes
- Bathing
- Washing hands before eating and handling any food
- Washing plates
- Using toilets
- Having clean water
- Using a rubbish pit

Barriers to proper hygiene were lack of access to good wells and boreholes, lack of maintenance of water sources, poverty, high illiteracy levels, a lack of toilets and a lack of compost pits.

Lumangwe Ward (Rural)

Eating Behaviour
Participants agree that the foods that they consume are produced locally. Foods include maize, cassava, millet, beans, groundnuts, sweet potatoes, pumpkin (leaves), mushroom, vegetables, chickens, beans, cowpeas, impwa and Bambara nuts. These crops are grown because they are the ones they are used to growing, their seeds are available and they are suitable for the soil. They would like to grow more maize, cassava and beans, but face a bad road network and a lack of resources and agricultural inputs. Men decide what is to be farmed, women do the farming together with the men. Household purchase food which they do not produce, such as cooking oil, fish, meat, salt, some buy beans, sugar, milk, juice and some families buy groundnuts. Men decide what is to be bought for household consumption, because they are the heads of the households. Barriers to having enough food are a lack of resources to buy food (resulting from not working hard), a lack of farming inputs (seeds and fertiliser), a lack of knowledge on farming practices, bad harvests, mostly due to floods, selling all their products or lack of access to land. Seasonality plays a role: only in terms of food quantity according to the men, but according to the adolescent females, some crops (such as maize and beans) are not available throughout the year, unless they have been preserved.

[5] No answer to this question was recorded in the men's group.

A common meal is nshima (made out of maize or cassava) with beans, kapenta, vegetables (cassava leaves, pumpkin, pumpkin leaves, beans leaves, Chinese cabbage, rape, sweet potatoes) or chicken. A meal like this is eaten once or twice a day. Adolescents[6] were asked to name their favourite foods, which were sweet potatoes, mango, nshima, fresh fish, beans, Chinese cabbage, Bambara nuts, groundnuts, pumpkin, cassava, banana, orange and avocado. The adults are unanimous in saying that the women make the day-to-day decisions about what to eat, and also that they are the ones that prepare the food. According to the adolescents, it is the parents or the mothers that decide what is eaten, although the boys note that they can choose themselves to eat fruit such as mangoes and guavas. The girls are involved in preparing the food: they may decide the quantity, cook, separate food to be cooked and to be preserved, organise and clean cooking tools.

The adults say that everyone eats the same foods, with some differences: a child is fed lighter food, like cassava porridge with salt. The adolescent boys note that the father is given a larger portion of food, because it is believed that he does a lot of hard work. There are myths surrounding food distribution in the household. For example, adolescents cannot be given a gizzard in the chicken, because that part is meant for the father. The girls agree that different portions are given, due to large number of members in the household, and a lack of enough resources to purchase enough for the family.

Nutrition

The adolescents agree that most of them do not eat a balanced diet, most of the time. This is due to hardships in their living conditions, a lack of resources to purchase balanced food, or a lack of balanced food in general (poor farming production, a failure to cultivate main portions of land to diversify food crops due to lack of manpower). Good, nutritious foods are foods that give nutrients and energy to the body, such as beans, vegetables, fresh and dried fish, kapenta, nshima, meat (goat, chicken, pork), oranges, avocados, pineapples, cabbage, sugarcane, mangoes, carrots, bananas, potatoes and munkoyo. Eating nutritious food helps to stay healthy, grow well, have energy and stay productive. Adolescents do not take any actions to improve diet at household level due to the lack of capacity financially. They learn about healthy diets through community health workers/assistants (CITA), church and school. The adults agree with the adolescents that the local nutrition situation is poor: most children are not well-nourished. This is because they are not well fed and because some children are picky with food (preference) which at time is seasonal food. Both groups see the importance of a healthy diet: it leads to healthy bodies, healthy growing up, no sickness and children show signs of intelligence/sharpness. Healthy eating means balanced eating, and healthy foods include beans, cassava leaves, groundnuts and pumpkin (as taught by health personnel). Women say that there are no special food needs for different groups, whereas according to the men, children and pregnant women need different foods (eggs, meats, chicken, cooking oil and milk), so children have healthy bodies and women do not get pregnancy complications. There are no food taboos. To improve nutrition, both groups look at agriculture: they could work hard to extend farm land or diversify crops and learn improved farming practices.

Livelihood strategies and production

The main reason to sell produce is because of poverty, to purchase of clothes, paying of tuitions for children and buying groceries. Opinions differ on who decides what produce should be sold: the man (with their wives helping out in the actual sales) or the man and the woman together. The same difference of opinion is found when looking at who gets to decide what to do with the money that comes in through the sales: the men or the men and women together. The adolescents agree with the latter (men and women deciding together). They mention their involvement in producing and selling food. Adolescent boys may go fishing and bring the fish home, sharing it with the family.

Alternative strategies to acquire food include collection of wild fruits (maskuku).

Water, sanitation and hygiene (WASH)

The groups speak of using hand dug/shallow wells and streams, that do not provide clean water, causing disease. The shallow wells flood. Most protected boreholes have broken down and

[6] No answer to this question was recorded in the boys' group.

communities cannot afford to have them repaired. The men say water is not treated, the women say water is boiled before use, but both groups agree that there is no chlorine supply. All groups indicate that they think clean water is important, because it prevents diseases like cholera, diarrhoea, dysentery and typhoid. Everyone has and uses latrines.

When asked what constitutes proper hygiene practice, the following behaviours were mentioned:

- Bathing
- Having a clean toilet
- Using a waste disposal pit
- Cleaning the surroundings
- Washing clothes
- Washing hands with soap after using the toilet, before eating, after eating, after changing a baby's diaper and after touching dirt
- Cleansing containers or water vessels used to store water
- Covering food

Barriers to proper hygiene were lack of access to good boreholes, lack of hand washing tools and facilities, lack of VIP latrines and lack of water treatment using chlorine or boiling.

2.3.2 Stakeholder Mapping

Chisha Mwamba Ward (Peri-Urban)
Stakeholder mapping in Chisha Mwanda was conducted by the adult women. They reported that service delivery on health is provided by World Vision. They are considered the most reliable source for health, as they provide help for children. World Vision also organises saving groups for women. SNV is perceived as an important stakeholder for WASH. For agricultural issues they turn to the co-operatives, but they reported that agriculture is not improving. Health and hygiene have improved thanks to increased service provision by World Vision. Public announcements are the main channel for information updates from the service providers.

Lumangwe Ward (Rural)
In Lumangwe ward, adult man only listed the service providers active in the area; World Vision, SNV, Local government, Heifer International, and the Ministry of Health. They indicated that World Vision was the most important stakeholder, followed by government bodies.

2.3.3 Asset Mapping

Chisha Mwamba Ward (Peri-Urban)
The asset mapping of peri-urban Mporokoso included multiple villages: Mwamona village, Kabusha village, Chishamwamba village.

Observations
Schools #4
Churches #4
Water points #12
Water wells #3
Clinic #2
Bridges #2 over the stream that passes through the village
Cooperative #1
World vision office #1
Graveyard #1
Stream #1

Access to agricultural inputs: Community members have access to fertile land and water bodies, but lack access to improved agriculture technologies, such as fertilisers, and hammer nulls. Only those who are a member of cooperatives have access to farming inputs, but that is about 1 percent of the people. Only lead farmers are familiar with modern farming technologies.

Road networks: The road network is not available. And the roads that are in place are of bad quality. Adolescent boys report however that, there are a few good roads.
Water, sanitation and hygiene: There is piped water in Chishamwamba but only few have access. The majority of the households uses water wells or streams or boreholes, which are often located at least 200 meter from their homesteads. Water is collected by women and a few men. Everyone has access to clean drinking water but the amount is limited. The only organisation working on water and sanitation in the area is the Ministry of Health. Health workers implement a MoH campaign on WASH behavior. Generally, latrines, bathrooms and composite pits are available, handwashing stations are not.
Electricity: Only a few houses have electricity.
Access to basic services: Access to clinic is 3 km. According to adolescent boys this is 30 km for some villages. To school 15 km. To agricultural inputs 5 km. To social amenities 5 km. Church is readily available. To the closest market at least 2 km (Mwamona) and max 5 km (Chishanwamba).
Land: Land is abundant and women and men have equal access. Some people own fields and others rent. At some point the chief confiscated some land and gave it to "the Chinese", including the produce that was growing on the land. People have access to irrigation for the land. At the same time women report that people lack access to water for irrigation.
Access to food: Meat products such as fish, beef, chicken are expensive. According women rice, sugar, relish, and cooking oil are expensive. Cheap foods are vegetables, millet, maize and cassava for women and sweet potatoes, cassava, maize, pumpkin leaves, bananas, sugar cane, bean leaves for men.
Social structures: People are visiting each other in their homes. There are no restaurants around. There are market places but adult women report that they are not used. Women consider saving groups as social groups but report that membership is low.
The nearby markets are Chisnamwamba, chalel, g'ander, and Boma.
Main professions/income: Farming and serving groups.

Lumangwe Ward (Rural)

Observations
Primary school #1
Secondary school #2
Churches #1
Water points #5
Water points #4
Boreholes #3
Well #1
Clinic #1
Bridges #5
Cooperative #1
Graveyard #1
Stream #2
Shopping center/market #1
Network tower #1
The adolescent boys drew the entire ward, hence their maps include a higher number of churches and schools and boreholes (#5).

Access to agricultural inputs: Most women do not have access to land, and farm on the land owned by their husband. Women have access to new farming inputs but have not been trained on using them (e.g. only 1 out 10 women who participated in the mapping exercise reported to receive training). Household do not have home gardens during rainy season, as the excessive rains affect the produce and makes it tasteless. Agricultural inputs are provided in the district center Boma, which is a one hour walk from the village.
Road networks:
Water, sanitation and hygiene: The majority of the people collect water from unprotected hand dug wells. Most boreholes have broken down, or the water contains high level of iron, therefore people have stopped using them. Families collect water from the streams and some houses have shallow

wells. Most households have latrines, but no hand wash facilities. Due to the rain a number of toilets have collapsed. Educational campaigns on WASH are rarely conducted in the community. NHC is an organisation active in WASH.

Electricity:

Access to basic services: People from Levy, Bondo, Katuna, Mwilwa and Chikwanda travel long distances to access health facilities. Schools and clinics as most important for development and do not want their children to be walking long distances to school. The clinic is a one-hour walk.

Access to food: There is no market in the ward (the nearest market is 90 km away), people shop from small stores called 'rituntembla'. Some people grow vegetables.

Most expensive food items are beef, chicken, fish, eggs, pork, beans, groundnuts, milk. Cheap food items are chisense, vegetable, cassava, sweet potatoes, insects.

Food is purchased at the district center as the village has no market. The diet is mainly based on vegetables, especially in the rainy season.

Social structures: There are restaurants in the wards, no other social structures. People interact during sports, such as football. There are no women clubs.

The main religious groups are Christians.

Main professions/income: Farming.

2.4 Mungwi

2.4.1 Focus Group Interviews

Statements made by **women**
Statements made by **men**
Statements made by **adolescent girls**
Statements made by **adolescent boys**
Statements made by **all or multiple groups**

Chamfubu Ward (Peri-Urban)

Eating Behaviour
Participants agree that the foods that they consume are mostly produced locally. Foods include (green) maize, cassava, millet, sweet potatoes, rice, pumpkins, buns, soybeans, groundnuts, beans, eggplants, sorghum, guava, munkoyo, juice, milk, biscuits, beans, cassava leaves, okra, fish, chicken, kapenta, sausage, caterpillars and soya pieces. Households purchase food that they do not produce, such as fish, kapenta, cooking oil, salt, tomato, meat, mushrooms, vegetables and soya pieces. The decision to buy certain foods (such as vegetables, beans and mushrooms) is made by women. Decisions to purchase chicken, meat and fish are made by both men and women. Seasonality is the main reason to eat different things: mushroom is available from November – April, whereas beans, caterpillars, (preserved) vegetables and pumpkin can be eaten all year round. According to the adolescent girls, caterpillars are seasonal, too. In harvesting season, there is more food: according to the adolescent boys and the adult men, this leads to more food consumption, but according to the adult women, the amounts consumed stay just as low as in growing season. The most common meal is nshima with a relish. This is mostly eaten twice a day, although some households have one or three meals a day. Adolescents were asked to name their favourite foods, which were nshima, chicken, potatoes, rice, bread, vegetables, kapenta, goat milk, okra, pork, beef, fish, vegetables and sausage.

The adults and the adolescent boys are unanimous in saying that the women (mothers) make the day-to-day decisions about what to eat, and also that they are the ones that prepare the food. According to the adolescent girls, the parents decide together. Adolescent girls are involved in preparing foods, adolescent boys contribute by drawing water, washing plates, sweeping the kitchen and only sometimes by cooking.

Some women report that everyone in the household gets the same food. Others nuance: kids are always given less in terms of relish, and fathers eat most of the relish (especially when chicken is prepared). The adolescent girls agree that fathers get more, the adolescent boys agree that the age determines the food quantity given, and that you eat less if you are sick.

Nutrition
Among the adolescents, there are different views on whether they have a healthy diet: some boys and the girls say yes, other boys say no, because the meals are not enough, they do not eat breakfast and do not even have snacks. Both groups see barriers to a healthy diet: healthy foods may not be available, they may be too expensive, or there is a lack of knowledge about nutritious foods. The adolescents think that it is important to eat nutritious foods to be healthy and avoid disease, to grow fast and to have energy. Good, nutritious foods are foods that contain all the food values (to have all required food groups): fruits, nshima, vegetables, rice, bananas, beans, fish and eggs. They have learnt this from school, the health centre/clinics, church, their parents, agriculture and community development. The adults are not as positive about the local nutrition situation, saying that most of the children are malnourished because they do not eat a balanced diet. A healthy diet, according to them, includes beans, groundnuts, bananas, chicken, maize (nshima), eggs, meat, oranges, soya beans, vegetables, kapenta, caterpillars and Bambara nuts. The importance of a nutritious diet is to be healthy and for a child to

develop well (less stunting). Women say that children and adults eat the same, but that some religious groups do not eat foods from animal sources, and pregnant women are not supposed to eat eggs.

Livelihood strategies and production
Crops are grown to be eaten and to be sold (maize, cassava, soybeans, millet, potatoes and mushrooms are sold). Crops that the participants want to produce more of include maize, groundnuts, mixed beans, pumpkins, cassava, sweet potatoes, Bambara nuts and fish. This is not currently done due to limited farming inputs (such as seed and fertiliser received from the government), labour (there is only man power), a lack of employment, laziness and a lack of capital to do fish farming. There is enough rainfall in the region. Alternative strategies to acquire food include drying and selling food like mushrooms, caterpillars, vegetables (such as pumpkin leaves). Other strategies are piece works in exchange for food and selling potatoes. "There is need for us to have gardens" (some of the boys indicate, however, that they do work in gardens).

Generally, all groups agree that the husband and wife decide together which crops are sold (that is, if there is both a husband and wife in the family). Those without husbands they make decisions on their own. In some families, the husbands make the decisions. The money that comes in is used to address households' needs, to pay for school going children and to buy food and groceries. According to the men, men mostly decide what to do with this money. The women agree that this is the case in most cases, but that some women decide together with their husband, or with their grown children. Adolescents of both genders contribute by helping at the farm, by doing piece work and by selling products in the market.

Water, sanitation and hygiene (WASH)
All groups speak of using wells as a main source of water (open, hand-dug, shallow, almost at every house). Other sources that are mentioned are boreholes/taps and streams. They do not have access to improved water sources. It is deemed important to have clean water to avoid diarrhoeal diseases. Not everyone has a latrine at home: they may have collapsed due to too much rain or it may be due to laziness.

When asked what constitutes proper hygiene practice, the following behaviours were mentioned:
- Using a toilet
- Using a rubbish pit
- Treating water with chlorine or by boiling it before consumption
- Washing hands after using the toilet
- Bathing
- Cleaning the surroundings (such as the toilet) to prevent mosquitos
- Have a dish rack
- Cover food stuffs and drinking water
- Washing clothes
- Brushing your teeth

Barriers to proper hygiene were lack of access to clean water (inability to purchase chlorine), boiling water is too time-consuming, heavy rainfall that makes latrines collapse, poverty, a lack of knowledge and laziness. The adults would like to see boreholes/tap water, VIP/improved toilets and new wells.

Kalunga Ward (Rural)

Eating behaviour
Participants agree that the foods that they consume are mostly produced locally. Foods grown include maize, cassava, groundnuts, rice, beans, soya beans and sweet potatoes. Men decide what should be farmed. According to the men, households purchase food that they do not produce. Relish is mostly bought e.g. fish, chicken, beef, vegetables etc. Both men and women decide what to eat; women decide to buy vegetables and men decide on which proteins to buy. The adolescents mention that they consume pumpkins, oranges, fish, vegetables (e.g. cassava leaves, recipe, potato leave), munkoyo, water, soya beans, bananas, sugar canes, mangoes and guavas. Seasonal variation plays a role in what is consumed when: mushroom, mango, caterpillar and fish are seasonal. Availability of food also

varies. When there is more food, more is eaten, and during farming, more is eaten to gain energy. Other reasons to eat less include being sick and poverty. The most common meal is nshima with a relish, which is generally consumed twice a day. Adolescents boys were asked to name their favourite foods, which was nshima.

The adults and adolescent girls are unanimous in saying that the women make the day-to-day decisions about what to eat, and also that they are the ones that prepare the food. The adolescent boys say that it is the father who decides what is eaten. Adolescents are involved in fetching water, washing dishes, collecting firewood and cooking (in case the mother is sick).

The adults do not report any differences in terms of food consumption. The adolescents have two remarks on this issue: fathers side get larger quantity of food and food is left for people who are not around.

Nutrition

Among the adolescents, there are different views on whether they have a healthy diet: yes, according to the boys, and no, according to the girls. According to them, there is a lack of healthy foods and a lack of knowledge on nutritious foods. Both groups see barriers to a healthy diet: healthy foods are (too) expensive, a lack of knowledge about nutritious foods and no participation in decision-making. The adolescents think it is important to eat nutritious foods to look healthier, to be active, to be protected from diseases, to grow health, to have wounds heal faster, to be satisfied and to get proteins to make our skin healthy. Good, nutritious foods are rice, eggs, chicken, meat, fish, pork, vegetables, nshima, beans, soya chunks, bananas and sugar canes (because they give energy). They have learnt this from school, the health centre and at home. The adults agree with the adolescent girls and say that most of the children are malnourished (and not healthy) – they have an unbalanced diet due to low household income. A healthy diet, according to them, includes fish, meat, vegetables, nshima, groundnuts (good for growing children), bananas, oranges, guavas, avocado, mealie-meal, chicken, caterpillars, milk etc. The importance of a nutritious diet is to avoid stunting in children and for them to be healthy and fit. The women see reasons for different people to consume different foods: babies need food full of calcium to help them develop strong bones, pregnant women need food that are full of iron for development of foetus. There are taboos that restrict people from eating certain things.

Livelihood strategies and production

Crops are grown to be eaten and to be sold (maize, for example, is sold). Crops that the participants want to produce more of are maize, rice and cassava. Maize would improve the lives of the children and bring more income. Barriers to grow more of these crops include a lack of inputs (fertiliser and seed), climate change, pests and a lack of knowledge on maize. Alternative strategies to acquire food include keeping and selling caterpillars and rice off-season. This is difficult, because they don't produce much and have more need than what is produced. There is a lack of knowledge on how to preserve things, and a lack of proper planning. Some fail to keep maize to sell later because they feel good buyers won't come when they miss the chance.

Opinions differ on who gets to decide what products are sold. According to the women, the women decide what is sold, according to the adolescents, this is done both parents, or by the father as head of the house (discussing this with his wife). There is more unanimity on who gets to decide what to do with the money that comes in from the sales: the men. Women mention that men misuse household income when entrusted with selling products (using money for beer drinking). Men say that some fail to keep maize to sell later because they feel good buyers will not come when they miss the chance. The money is used for school fees, buying groceries, clothes and drinking beer and other things needed. Adolescents contribute to the households' livelihood by growing crops (cassava and maize), by sometimes carrying the produce to the market.

Water, sanitation and hygiene (WASH)

The participants use unprotected wells as their source of water. They belong to individual houses. There are no clean water access points. It is deemed important to have clean water to prevent diarrhoeal diseases. Everyone has a latrine at home but most toilets in the community are not covered hence they are dirty.

When asked what constitutes proper hygiene practice, the following behaviours were mentioned:

- Having a pit latrine
- Keeping surroundings clean
- Boiling drinking water
- Washing hands after using toilet and before handling food
- Bathing
- Washing clothes
- Cleaning and washing the plates, use plate racks to put plates once washed
- Washing food before eating
- Having a bathroom,
- Having a waste disposal pit

Barriers to proper hygiene were a lack of money to buy chlorine or charcoal, no access to clean water (no boreholes), water issues are not taken seriously and boiling water is too time-consuming. The adults would like to see boreholes, improved wells and new toilets (VIP) in their community.

Central Ward (Urban)

Eating behaviour

Participants agree that the foods that they consume are mostly produced locally. Foods include maize, cassava, sweet potatoes, beans, groundnut, finger millet and sorghum. In male-headed households, the husband and wife decide together what is grown, based on what will give good yields. Foods that are purchased are, among others, vegetables (e.g. cabbage, rape, tomatoes, onion; in cold and hot season – requires less capital and labour to purchase), fish, kapenta, chicken, salt, cooking oil (cannot be produced by households), maize (mealie meal) and cassava (if there is not enough production for home consumption). Men mostly decide what is purchased. In addition to the foods listed by the adults to be either grown or purchased, the adolescents mention that they consume seasonal fruits (mangoes, guavas), pumpkins, eggplants, bananas, oranges, beer, assorted drinks and juice and a traditional beverage. The most common meal is nshima, currently with mushroom and bean leaves or cassava leaves. Opinions vary on how often meals are consumed. Women and adolescent girls say that in most households they eat 1-2 times (no breakfast, no fruits and snacks – only in season). The men say breakfast is often eaten, which includes pumpkins and sweet potatoes. Some families afford to eat bread which makes three times a day. Some families also afford to have fruits such as bananas, oranges, apples, avocados etc. Seasonal variation plays a role in what is consumed when, for example: fish is eaten from March to November, and caterpillars, mushroom and pumpkins are only eaten when they are in season. Scarcity (which is also season-related) may lead to foods being eaten less, as well as poverty. The adolescents were asked to name their favourite foods, which were chicken, juice, fish, bananas, mango, traditional beverage, nshima, vegetables, rice, beans, sausage, rape, fresh fruits, cabbage, potatoes and water.

Women mostly decide what is cooked because they are home more and are the ones that cook. Adolescents contribute either not at all to meal preparation, or by cooking, fetching water and washing up the dishes. The groups do not agree on whether everyone gets the same amount of food: there are no differences among household members according to the women, whereas the other groups do see differences: they eat the same food except when there is not enough relish, which is given to men and in some cases to the children, the father gets larger portions of food than other family members or men get more because they work harder.

Nutrition

Both groups of adolescents feel that they do not have a healthy diet. According to them, there is a lack of resources, most of the foods are seasonal, a lack of food in general and a lack of knowledge on eating habits and balanced meal preparation. The adolescents think it is important to eat nutritious foods to grow healthier, to have energy (for farming and piece work) and for disease prevention. Good, nutritious foods are nshima, vegetables, chicken, fish, fruits, beans, potatoes and pumpkins. They have learnt this from the clinic and school. The adult men agree with the adolescents and say that the children in the community are not well nourished, some are malnourished and there is stunting. A healthy diet, according to them, is a well-balanced diet, and includes fish, vegetables,

groundnuts, beans, soybeans, eggs, meat, chicken, fruits (such as banana, apples, oranges and carrots). The importance of a nutritious diet is to promote growth in children. If the household does not have enough food, especially in rainy season their children may not grow well and will end up having malnutrition. This is also the reason why children need more food. Adult men add that children below the age of 2 years need all types of food group for brain formation, while adults need food that will give energy to them.

Livelihood strategies and production
Fertiliser is considered the limiting factor in what to grow. The women would like to use it to grow more maize as it is their staple food. Apart from fertiliser, crop prices, contributions to cooperatives and soil fertility are considered barriers. Alternative strategies to acquire food include keeping caterpillars and selling them when they are off season, making charcoal to sell, purchasing food with the extra income.

Reasons to sell foods (mostly to FRA or individual buyers) can be to buy other foods (such as relish), to accommodate school going children, to buy soap and to buy clothes. The husband and wife decide together what crops are sold, unless it is female-headed, in which case it is the woman and the children are consulted. The man gets to keep the money and decide what it is used for (in most cases the money is just used for alcohol). Adolescents contribute to the households' livelihood by having gardens, helping in selling the produce (although that is mostly done by the parents), by doing piece works and doing hair plaiting. Many of the adolescents get food from outside of the household if there is literally nothing at home.

Water, sanitation and hygiene (WASH)
The participants use boreholes, taps, shallow wells, streams and rain water. The boreholes are located in the centre of food at the homes of village head women. Wells are dug by members of the community at some households. The streams are 2 km away from the village. It is deemed important to have access to clean drinking water to prevent diarrhoeal diseases. Everyone should have a pit latrine but in the rain season some have been damaged by rain. The households that have one, use them.

When asked what constitutes proper hygiene practice, the following behaviours were mentioned:
- Bathing
- Cleaning plates and cooking utensils after use
- Washing hands before handling food, before eating and after using the toilet
- Having a pit latrine and keeping it covered
- Keeping surroundings clean
- Do not allow children to defecate anywhere
- Brushing teeth
- Pictures of D-WASH at the toilets
- Using soap or ashes
- Cover drinking water

Barriers to proper hygiene were a lack of chlorine to treat water, the collapse of toilets, the feeling that boiling water is a waste of time and borehole malfunction. The adult women would like to see more boreholes, more pit latrines, new wells and taps in their community. The adolescent boys suggest that fear of getting sick, wanting to look smart and regular sensitisation on importance of hygiene would help them to maintain good hygiene practices.

2.4.2 Stakeholder Mapping

Chamfubu Ward (Peri-Urban)
The stakeholder mapping in Peri-Urban was done by all FGD groups (adolescent boys and girls, and adult women and men). In the areas of agriculture MoA (camp officers), MFL, World Vision were reported, cooperatives, women clubs and community development. In the area of WASH men mentioned the Keeping Girls in School initiative (KGS), women refer to MoH (for hygiene), Community development and Savings groups, and adolescent girls report that pump minders are consulted. There is no organization active on WASH education. For health, the Ministry of Health is the most important

service provider. There are no special service providers for nutrition, for nutrition issues, communities members turn to the clinic.
Service providers use churches, schools, the village headman, and community health assistants, drums and the public address system to get their information at community level.

Kalunga Ward (Rural)
The stakeholder mapping in Peri-Urban was done by all FGD groups (adolescent boys and girls, and adult women and men). The organization most relevant to turn to, in case of issues related to livestock, crop farming and fish farming, as well as farming inputs is the MoA. The community cooperatives Tubombeko and Kalungo are also important stakeholders for information and services on agriculture. SNV and MoH are considered the main service providers for WASH. MoH and MoE are considered the main service provider for Nutrition and child care, as the MoH educates community members on young child feeding.

According to the FGDs, the Social Welfare Department is the important stakeholder for community development. It provides a social cash transfer programme, and supports women and girls, with e.g. the Keeping Girls in School programme. In addition, there are community savings club (village banking) and women's clubs.

Service providers use churches, school, CAC members, letters, meetings of saving groups and women clubs, and the village headman to get their information at community level.

Central Ward (Urban)
The stakeholder mapping in Peri-Urban was done by all FGD groups (adolescent boys and girls, and adult women and men). The department of Agriculture and the department of Health seemed to be important stakeholder in the Mungwi Central ward. For agriculture, the MoA is the main service provider, followed by the Ministry of Fisheries and Livestock (MLF), Ministry of Community Development, World Vision and SNV. For issues related to nutrition and childcare, people turn to the MoH. WASH is covered by the Health Council, and the MoE is a key stakeholder for education. The Ministry of Community Development is also active in the ward, with a social welfare unit.
In terms of information about community development more broadly, community members reported to receive information through traditional leaders and the village head.

2.4.3 Asset Mapping

Chamfubu Ward (Peri-Urban)

Observations
This overview compiles information obtained through the 4 maps. Individual maps are presented in Annex 2. The area covered in the maps vary; some groups drew a map of their villages others included the entire ward, hence multiple villages.
The village is located along the Kasama Mbala road.

Observations
Schools #4
Churches #4
Water points # 1
Sports field #1
Boreholes #3
Water wells #
Market #1
Clinic #
Bridges #3
Cooperative #
World vision office
Graveyard #

Stream/river #
Electricity tower #1
Railway line #1
Palace #1
Maize shed #1
Maize field #2
Cassava field #2
China GEO #1
Gardens #2
Bus station #1

During the asset mapping exercise adolescent girls reported that there are no gardens in the village due to a lack of water. For drinking water, wells are used, no boreholes. Not all households however, have access to a hand-dug well. They have access to a river, but it is located far from the village. Girls are tasked with water collection. Not all households have electricity.
Expensive food items are mealie meal, chicken, meat (beef) and kapenta. Vegetables are relatively cheap.

Kalunga Ward (Rural)

Observations
Schools #
Churches #2
Water points #
Water wells #
Boreholes #2
Clinic #1
Health post #1
Bridges #3
Cooperative #
Market #1
Bar #1
Playground #1
Airtel money points #1
Shops #1
River #1
Forest #2
Mountains #2
Palace #1
Maize fields #3
Rice fields #3

Access to agricultural inputs: There are no home gardens due to a lack of water.
Road networks: The roads are in a bad condition.
Water, sanitation and hygiene: People have their own toilets, handwashing facilities, bathroom and compost pit. Water is sourced from the wells. Mothers and daughters (and children) are the ones responsible for fetching water. Department of Health, Education and Community Development are active around WASH, but there are no educational activities. According to the women, no organization is active in WASH, and the last campaign on this topic was by the Ministry of Health four years ago.
Electricity: For most households there is no electricity.
Access to basic services: Services are approximately 1 km away.
Access to food: There is no market in the community. Beverages are expensive. Sugar and cooking oil are expensive, whole vegetables are cheap. There is a mobile market (Umada). Local farmers and villagers are selling goods door to door.
Social structures: Churches and playgrounds and clinics are the social structures located within the community. This is where adolescent girls meet their peers. They meet other communities through zonal games between schools, which frequently take place, except during rainy season. Women meet

their peer on weekends after church and farm work. Different groups living in the community are Bembas, Famwagas and Mamgwes.

Main professions/income: Farmers and business men and women, teachers, community development workers and health staff.

Central Ward (Urban)
Secondary Schools #1
Preschool #1
Churches #3
Water points #2
Water tank #1
Boreholes #1
Bar #1
Playground #1
Village head premises #1
Shops #1
Chipya coorperative society #1
Indo bank #1
Mungwi baptist rural health center #1
River #1
Farm fields
Graveyard #1
Electricity network poles #1
Access to agricultural inputs: There are no irrigation services or technologies available in the village to improve fields. Some household have access to home gardens. The communities have access to land, more so for men than for women. Access to the water course is also considered an asset for the community.

Road networks: The village is well connected to the road network, as it is located alongside the road connecting Mungwi and Kasama.

Water, sanitation and hygiene: Most of the households have access to latrines, however, many of them have collapsed. No access to hand wash basins to be used after the toilets. Women and boys are the ones fetching water for the family.
Compost pits are not common among the households in James Katuna Village. Households source their water from boreholes, wells and rivers.
The village head woman is working on WASH related issues.

Electricity: Only some households are connected to the electricity network.

Access to basic services: Services are approximately 1 km away. Women explain that the distance to the market is 30 minutes, to the health facility 1 hour (3km according to adolescent boys), and in order to obtain agricultural inputs, they travel for 30 minutes Women explain that, for the pre-school, only those parents have money are able to take their children to school. For secondary school, all the households that have children who are in secondary can access the school. Agriculture and government offices are not very far.

Access to food: There is a market, named Boma market, 5 km north from the village, where mainly local products are sold. Expensive foods are mealie meal, cooking oil, sugar, relish. Vegetables are considered relatively cheap.

Social structures: Churches are the social structures. Adolescents girls meet their peers in the churches, at congregations on Saturdays and Sundays. The football grounds are nearby.

Main professions/income: Most people are farmers or maids.

3 Conclusions

3.1 Eating behaviour, nutrition, and access to food at community level

- The baseline data showed that only 38.7% out of all the sampled women were meeting the MDD-W (five or more food groups). Mporokoso had the highest proportion of women meeting the MDDW (54.0%) while it was 33.6% in Mungwi and 28.2% in Lunte. 52.4% of the respondents answered "yes" to the question of whether they thought stunting was a problem in their communities. There were no significant differences in the responses across the districts and between the rural and urban areas within the districts. This aligns with the FGD responses on whether a healthy diet is consumed, which are mixed, even within communities, but mostly negative across the districts.
- The communities seem to be generally aware of the need to consume "a balanced diet" (the adolescents possibly more so), but tend to not get more specific than this. Few groups referred to food groups, but often fail to include fruits in that list. There is a tendency to refer to vegetables as a category, without specifying which ones are consumed.
- Availability and affordability are cited as the two main barriers to consuming a healthier diet. Some activities that aim to increase knowledge, such as cooking demonstrations, have limited success as the aforementioned barriers prevail.
- Seasonality plays a large role in food availability. Preservation of seasonal foods may improve diversity, but there are reports of this not being a "cultural activity" and there being a lack of knowledge to do this properly. Collection of mushrooms, caterpillars and wild fruits, as well as hunting birds are strategies to complement the diet when other foods are not available.
- A few eating behaviours and taboos were mentioned that go against dietary guidelines, including:
  - Pregnant women are prohibited from eating eggs (as the baby would be born without hair), as well as small children
  - There is a cultural practice to give a larger share of (animal-source) foods to men, "because they work hard"
- There is a reported tendency among men to spend household income on alcohol.
- Fruit consumption appears to be rare, possibly more common among adolescents than adults.
- Vegetables are perceived as food for poor people.
- Special dietary needs of young children or pregnant and lactating women are not always acknowledged. Father often receive more food or specific parts of the meat as "they need more food for the work they do".
- Women are said to be responsible for feeding the family and reported to be at home more than men. They are usually the ones who decide what food is prepared and are responsible for cooking the meals. However, her choices depend on what is available in the household Men hold significant decision-making power in what crops are planted, what portion is sold, and what is purchased with the proceeds. A husband joining their wife to antenatal visits or taking their child to the clinic is seen as a rarity, despite clinics inviting both spouses.
- Adolescents learn about nutrition in school, at the church, through health clinics and at home. Especially female adolescents may contribute to preparing meals. Adolescent girls face additional challenges to adequate food intake through early marriages. On the one hand, this is problematic because girls do not have knowledge about good hygiene and eating practices, which is said to affect the children that they may have. On the other hand, young couples may not have farm land.

3.1.1 Implications for SBCC messages

To address eating behaviour, nutrition and access to food at community level, messages should focus on:

- The concept of food groups. This would add more depth to the existing knowledge that a healthy diet is a balanced diet. Especially the food groups that are currently consumed in small amounts

(fruits; eggs; dairy; legumes; pulses; nuts and seeds) need to be covered. Take advantage of the finding that fruits seem to be favoured by adolescents.
- The needs of different groups and intra-household food distribution. The dietary needs of pregnant and lactating women, or those of small children, do not seem to be widely appreciated. The diversity of complementary foods, as presently older children are consuming a more diverse diet than the younger ones.
- Nutritious foods that are locally available. There is a perception that people need expensive or non-local foods to have a balanced diet. It could help if cooking demonstrations mostly locally available and affordable foods.
- Food preservation techniques. These are not widely known and may reduce the barriers to year-round dietary diversity.
- Increasing the appeal. Some local, nutritious foods are not appealing, either because of the taste or because of stigmas attributed to them.
- The responsibilities and decision making power of both men and women. Although women make day-to-day decisions in food preparation, they can only work with what they have available, which is partly or largely determined by their husbands. SBCC sessions could help to reflect on the intra-household decision making processes on income and address tendency to spend money on alcohol.
- The involvement of adolescents in food preparation. Given their roles in the preparation of food for the household they currently live in, and possibly their own household in the future, SBCC can capacitate them to prepare nutritious meals in a hygienic manner.
- The importance of healthy child growth and attendance of Growth Monitoring Programmes. For community members to gain and understanding of the severity of the issue in their own community.
- Specific messages for adolescent girls who are married at young age, and face specific challenges.

3.1.2 Activities and channels in place

- Health centres. They provide counselling on IYCF (through antenatal and organise community sensitisation activities (frequency of the latter depending on availability of the necessary materials). Other activities that are carried out by clinics are community sensitisation to the importance of healthy diets and diversification, GMP programmes, cooking demonstrations and treating (or referring) cases of severe acute malnutrition.
- For the GMP programme, people from the communities have been trained as liaison officers in the community, and they have been reported to be very active.
- Jesus Cares Ministries works with clinics to carry out their programme in Lunte, including village saving groups and mother's groups.
- Schools; The curriculum addresses food and nutrition. The programme could set up youth nutrition clubs, which have been fruitful in SN4A phase II districts.
- Churches; Churches are mentioned as a source of information. Caritas Zambia offers their home-based care programme through churches.
- Other NGOs. The FGDs did not mention any NGO as a source of information. World Vision seems to be one of the main NGO stakeholder when it comes to nutrition. The project implemented by World Vision targets malnourished children in its PD/Hearth programme and promotes diversification of food crops.

3.2 Livelihood strategies, agricultural production and market linkages

- Foods that are consumed are mostly grown locally. They are produced by the households themselves, traded with neighbours or purchased at local markets. Purchased foods are similar across contexts, although urban Mungwi seems to purchase a larger variety of foods.
- Farming is a main livelihood strategy across contexts. The main barrier that was reported to increase production was access to inputs (seeds and fertiliser). Income is often reported to be supplemented by piece work.

- Fruits are not commonly grown by households themselves (as indicated in the baseline; 2.8% had fruit trees). The fruit that is consumed is collected in the wild. Other foods that are collected are mushrooms and caterpillars. Some households earn an income by preserving and selling these.
- Promotion of animal rearing has seen mixed results in the districts. Cattle rearing was referred to as "not a Bemba cultural activity", instead, there is a preference for chickens and goats.
- All contexts had access to small, local markets, but only the peri-urban and urban contexts had access to larger markets. There seems to be a reliance on the FRA to buy up produced commodities. A lack of quantity (bulking centres) and quality (meeting production standards) is reported to hamper access to markets.
- There may be a resistance to learn about growing foods that are familiar. People may prefer to be taught about foods that are new to them (like citrus fruits).
- Some of the characteristics of urban areas that were found in the previous community mapping in Kasama do not seem to apply to urban Mungwi. Land access was found to be an issue in Kasama due to its urban nature, but this seems to not apply to Mungwi[7]. People in urban Mungwi seem to grow more of their foods than their Kasama counterparts.
- Decision making in agriculture is mixed and reported to be done by either the men, or the men and the women together (except for female-headed households).
- Not all households have home gardens. The home gardens reported in this study were only mentioned by the adolescent males, who work in them.
- There are no specific activities tailored to youth. Youth are seen as a diverse and elusive group with different interests that may change rapidly.
- The government programme to prevent malnutrition, the Food Security Pack (FSP) programme, does not include vegetables in its food basket.

3.2.1 Implications for SBCC messages

To address livelihood strategies, agricultural production and market linkages, messages should focus on:

- Inputs are a limiting factor to agricultural production. Behavioural change campaigns should take into account this reality.
- Urban, peri-urban and rural contexts face similar issues. Messages may therefore not need to be very different among the different contexts.
- Promotion of the crop diversity for vegetables, nuts and seeds, and fruit trees. Number of vegetables grown are considerably lower in Mungwi and Lunte, as compared to Mporokoso.
- Sustainable practises when it comes to collection of wild foods and edible insects.
- The importance for farmers to get organized, in order to join forces to face challenges related to transport, market linkages and corruption by middleman.
- The long-term return on investment of spending income on nutritious foods.

3.2.2 Activities and channels in place

- World Vision promotes the practice of conservation farming, or "Farming God's Way".
- Schools teach various agricultural practices, such as tending to a home garden, or maintaining a fish pond.
- The Village chicken pass on programme is implemented through farmers' cooperatives, which could also provide a channel.
- World vision and FAO have worked through extension workers, who could support dissemination of SBCC message. Their outreach however, was reported to be limited.

[7] It was, however, generally reported as a gender-related issue, as land ownership tends to be vested in men. This issue was not mentioned to be specific to urban, peri-urban or rural contexts.

3.3 Water, sanitation and hygiene

- Most households indicate to have access to a latrine. This is confirmed by the baseline, although it shows that across three districts, half or more of the respondents are not using them. Some groups offer an explanation for this and say that their latrines have collapsed due to rainfall.
- It is very common to get drinking water from unsafe drinking water sources (rivers, streams and hand-dug wells), and treating drinking water (mainly boiling or flocculent) is not done by default. Access to piped water is low. Boreholes and taps are reported to be broken down or contaminated.
- Across the three districts there seems to be an understanding that treating drink water helps to protect from disease but this behaviour is not widely practised, confirming the baseline findings. Groups cite a lack of chlorine, a lack of charcoal and a feeling that boiling water is a waste of their time.
- Women and adolescents are reported to be in charge of fetching water for their families.
- It was often flagged that hand washing stations are only limited available (PU, Mporokoso).
- SNV (SSH4A programme) is considered an important stakeholder for WASH (Lunte, Mporokoso), as well as the Ministry of Health.

3.3.1 Implications for SBCC messages on WASH

To address water, sanitation and hygiene, messages should focus on:

- Treatment of unsafe drinking water. Persistent beliefs around safe drinking water could be addressed (such as the belief that it is not harmful to drink untreated water, because it has been done for generations, or the belief that boiling water is not worth the trouble, or the belief that baby faeces is not harmful).
- Constructing or improving a latrine does not have to be expensive. A belief that a latrine has to be a fancy one may hinder its uptake.
- Protecting and maintaining drink water sources. Sources of drinking water may be contaminated by toilets that are constructed too close to them, or by using the water for washing and cleaning, by rust, or by keeping livestock near them.
- Demand creation for WASH related infrastructure and inputs (e.g. chlorine), as this seem to be the main barrier to WASH behaviours.

3.3.2 Messages already in place, and channels used

- The main activity is the use of Information, Communication and Education (ICE) to promote hand washing with soap or ash, toilet construction, toilet use, water chlorination, water boiling, using dish racks, waste disposal and keeping surroundings clean. Participants of the FGDs seemed aware of all of these behaviours.
- Neighbourhood health committees, community health workers and community health assistants and sanitation champions spread WASH messages.
- Health clinics provide WASH advice as part of general health activities such as Safe Motherhood groups for pregnant women, the GMP and malaria awareness.
- Youth work with clinics through WhatsApp to tackle various socio-economic issues, in rural Mungwi. A similar concept may be applied in other districts and for other thematic areas such as nutrition sensitive agriculture, nutrition and caring practises.
- Schools promote handwashing and provide handwashing facilities to learners.
- Village headmen collaborate with other actors to enforce positive hygiene behaviours (having a latrine) and prevent nuisance to others (open defecation).

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Appendix 1 Field team members

- Anthony Singoyi – Water affairs – Lunte
- Charles Kachaka – Planner Health – Lunte
- Chikalipa Whillans – Community development Officer – Kasama
- Chunga Saviour – Planner Education – Mporokoso
- Daka Precious – Aquaculture Technology – Mungwi
- David Mulemba – Water Affairs – Mungwi
- Dieu–Donne Lupasha – District Administration Officer (DAO) – Mungwi
- Dr Hilary Nyirenda – Acting District Administration Officer (DAO) – Mporokoso
- Edward Kasoko Mutafya – Community Development Officer – Mporokoso
- Francis Chunge Kasalwe – Caritas Facilitator – Lunte
- Ian Chali Chilimboyi – Crop Husbandry Officer – Mporokoso
- Jacob Mbevya – WASH coordinator – Mporokoso
- Leonard Kalima – Fisheries Officer – Lunte
- Malama Mwape – Assistent Social Welfare Officer – Mporokoso
- Malama Patricia – Vet Assistent – Mungwi
- Mang'anda McDonald – Livestock Officer – Mporokoso
- Maseka Clementina – Nutritionist MoH – Mungwi
- Mbuzi Alfred – Child Health Nurse – Lunte
- Mercy Musimbi – Agriculture Officer – Lunte
- Mfune Mwendalubi – Assistent Fisheries Technician – Mporokoso
- Mpangaiche Evans – Planner Education – Mungwi
- Mulenga Lilian – Social Welfare Officer – Mungwi
- Musonda Likukela – Chief Affairs Officer – Mporokoso
- Mutinta Himunza – Community Development Officer – Mungwi
- Phiri Judith Kapaza – Zanis CVO – Mporokoso
- Rasford Mpundu – Nutritionist MoH – Mporokoso
- Stephen Kasoma – Mungwi
- Tabalasa Stephen – District Chiefs Affairs Officer – Mungwi
- Zimba Penelope – Nutritionist MoA – Mungwi

Appendix 2 Community Asset Maps

Mporokoso

Chisha Mwamba Ward (Peri-Urban)

Figure 1 *Adolescent boys*

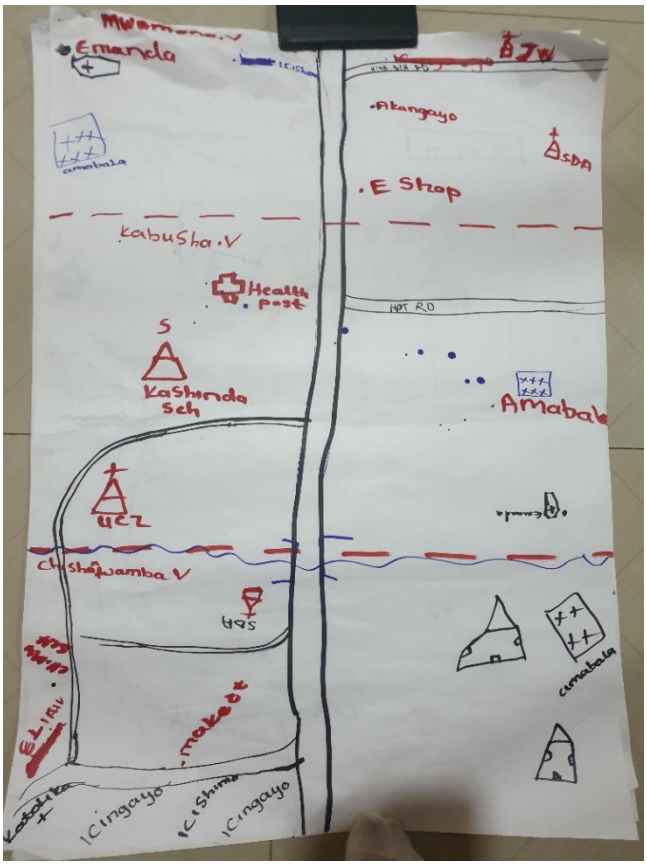

Figure 2 *Adolescent girls*

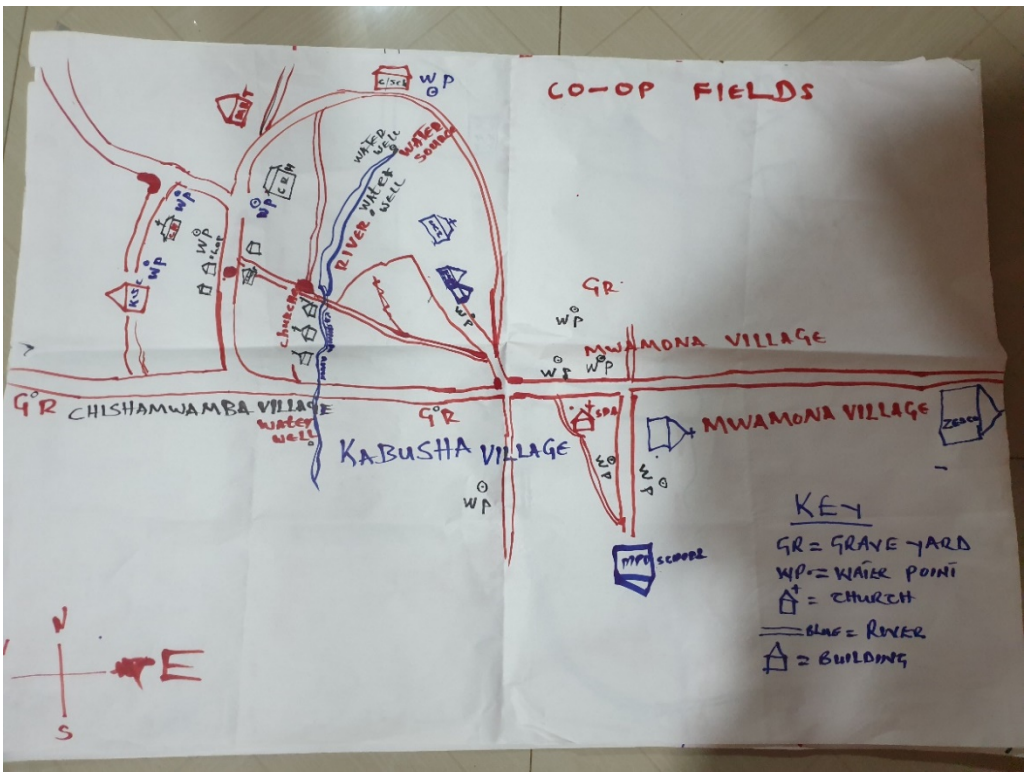

Figure 3 *Adult man*

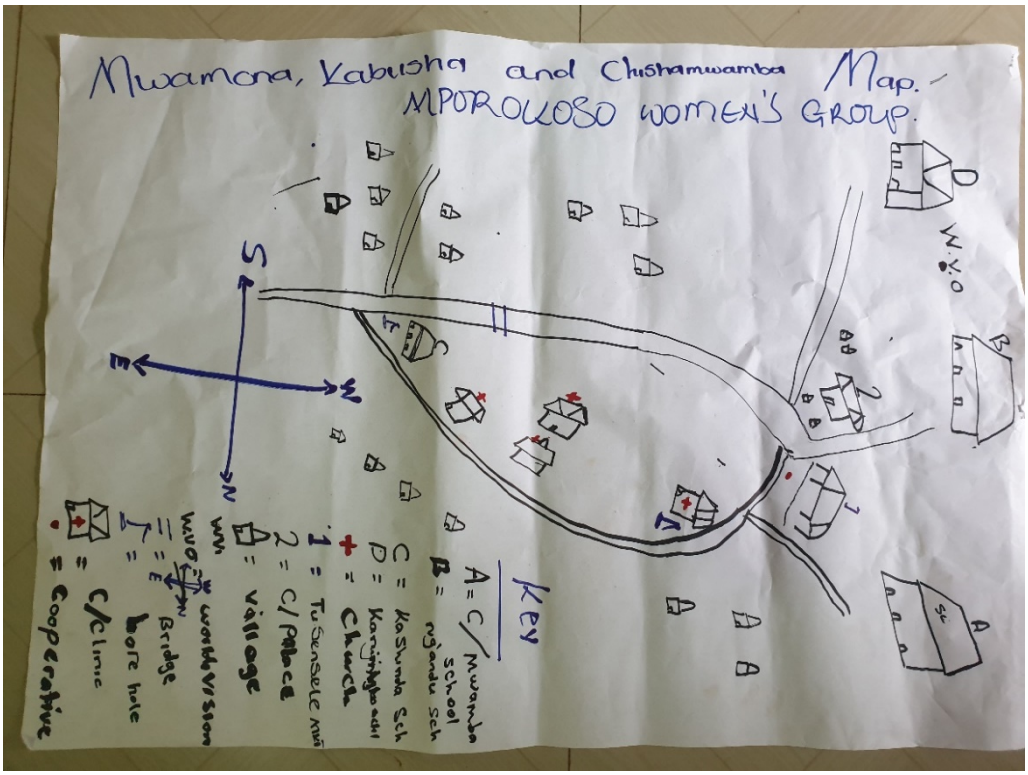

Figure 4 *Adult women*

Mporokoso

Lumangwe Ward (Rural)

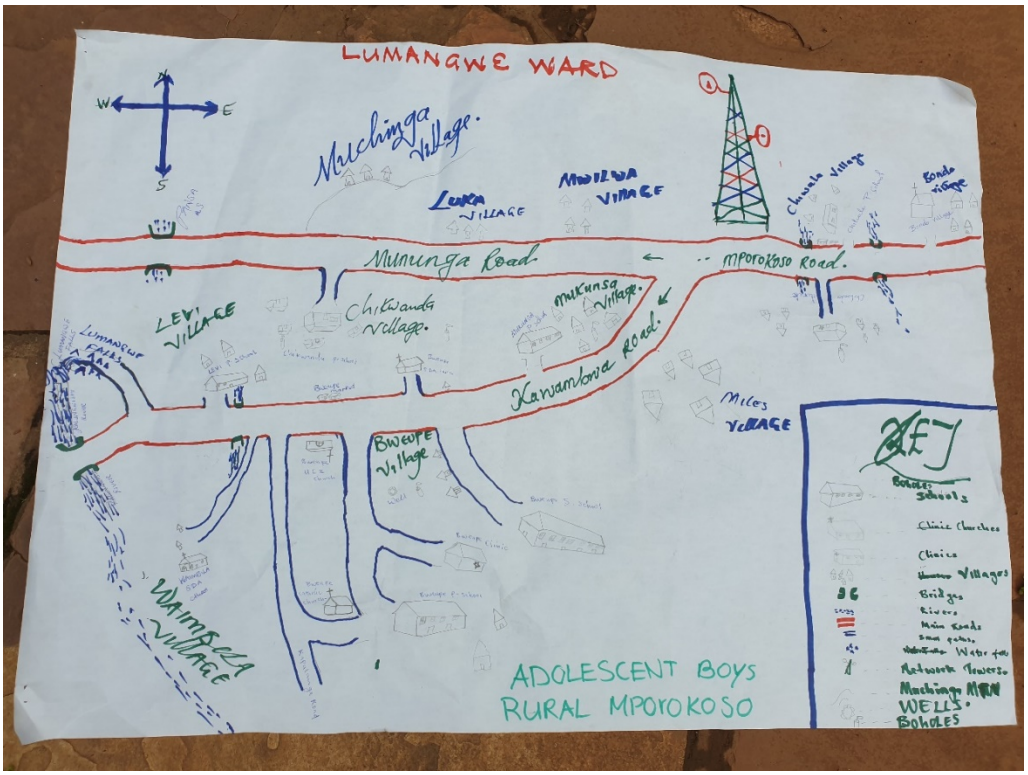

Figure 5 *Adolescent boys*

Figure 6 *Adolescent girls*

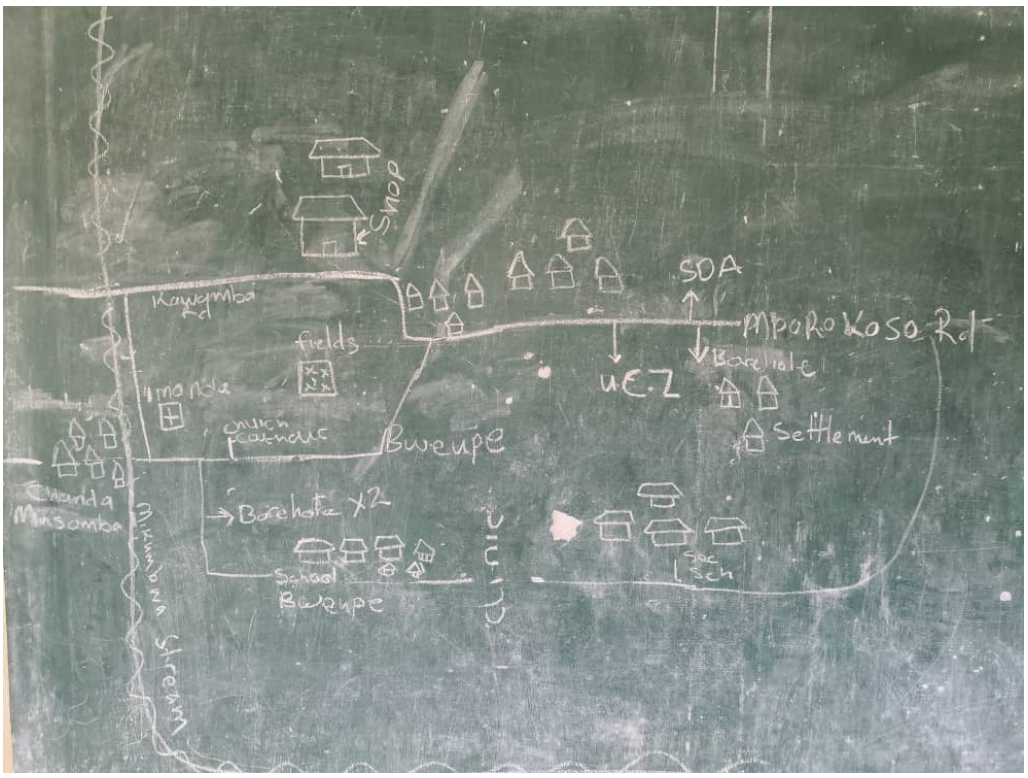

Figure 7 *Adult women*

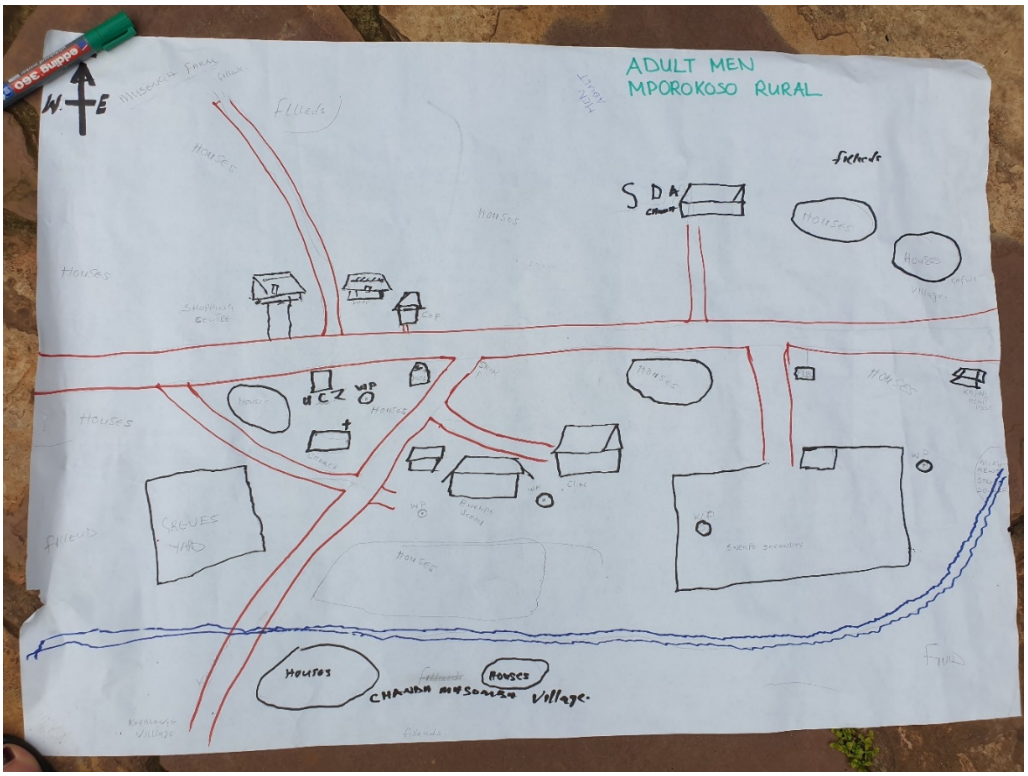

Figure 8 *Adult men*

Mungwi

Chamfubu Ward (Peri-Urban)

Figure 9 *Adolescent boys*

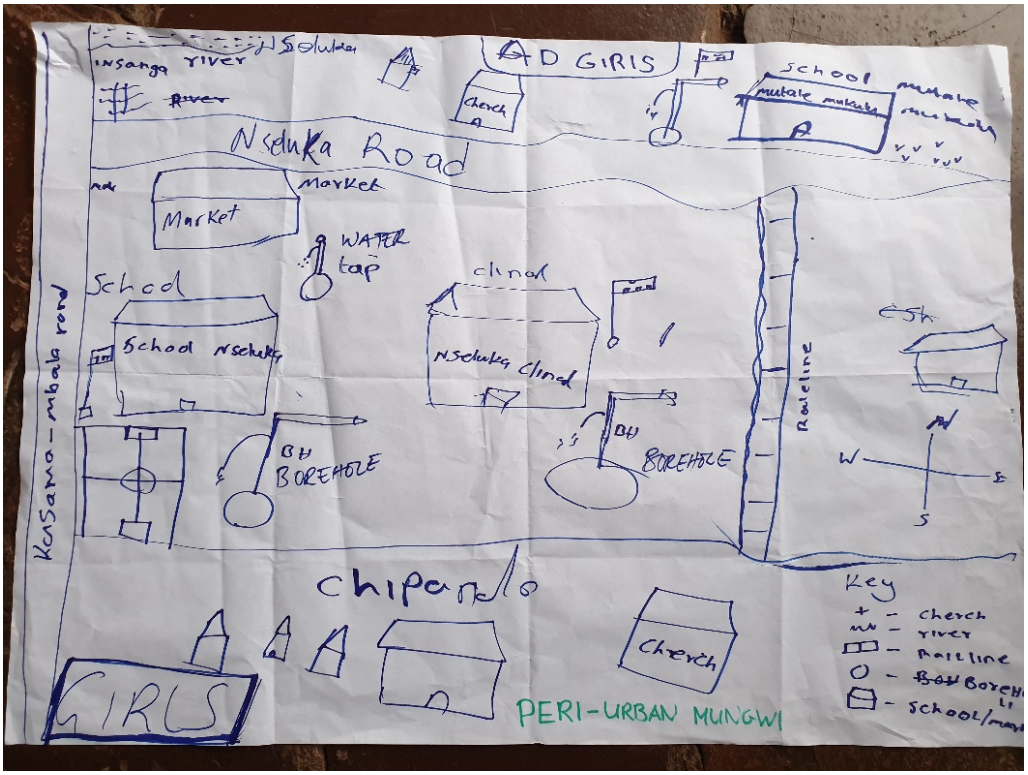

Figure 10 *Adolescent girls*

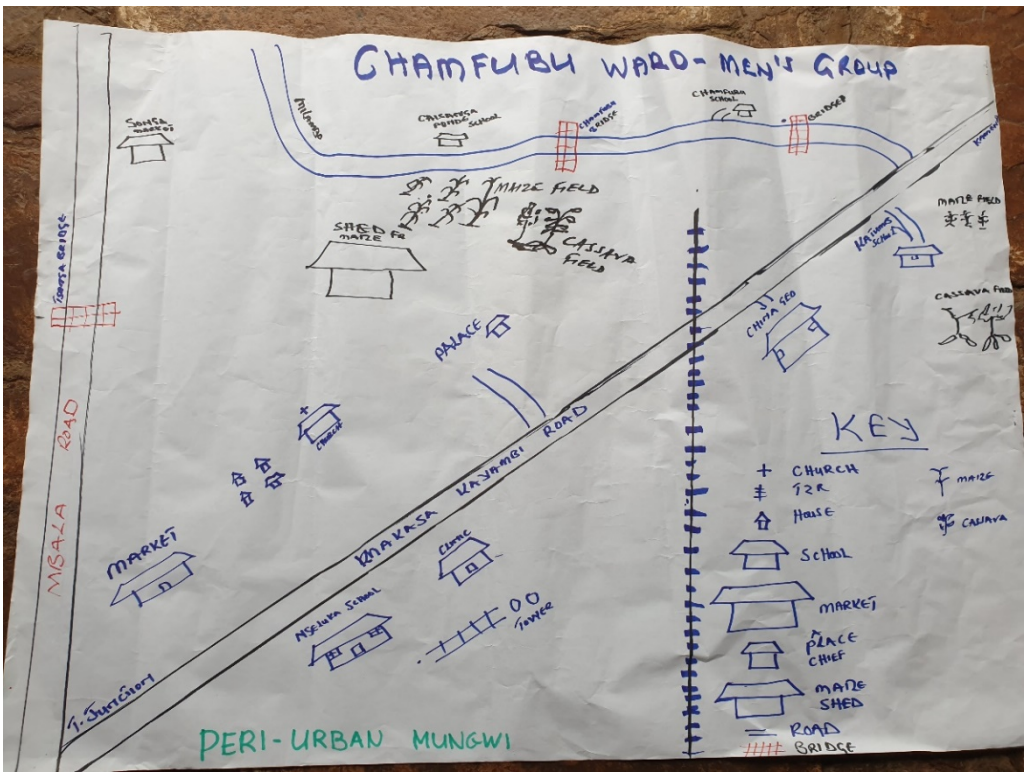

Figure 11 *Adult man*

Figure 12 *Adult women*

Mungwi

Kalunga Ward (Rural)

Figure 13 *Adolescent boys*

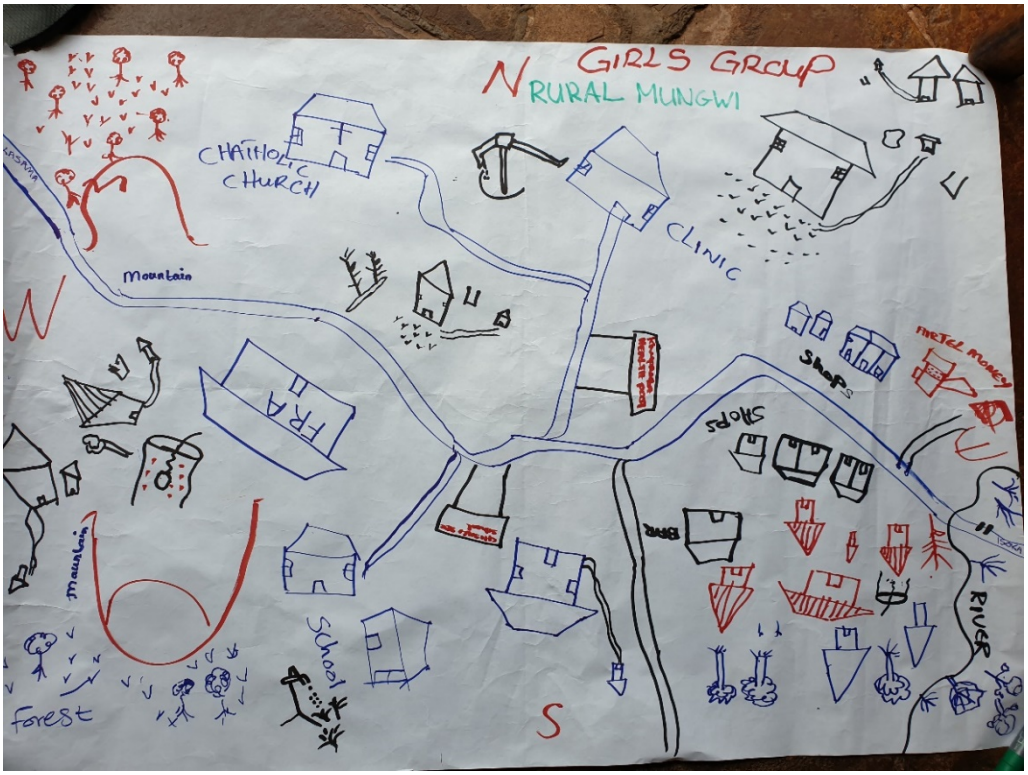

Figure 14 *Adolescent girls*

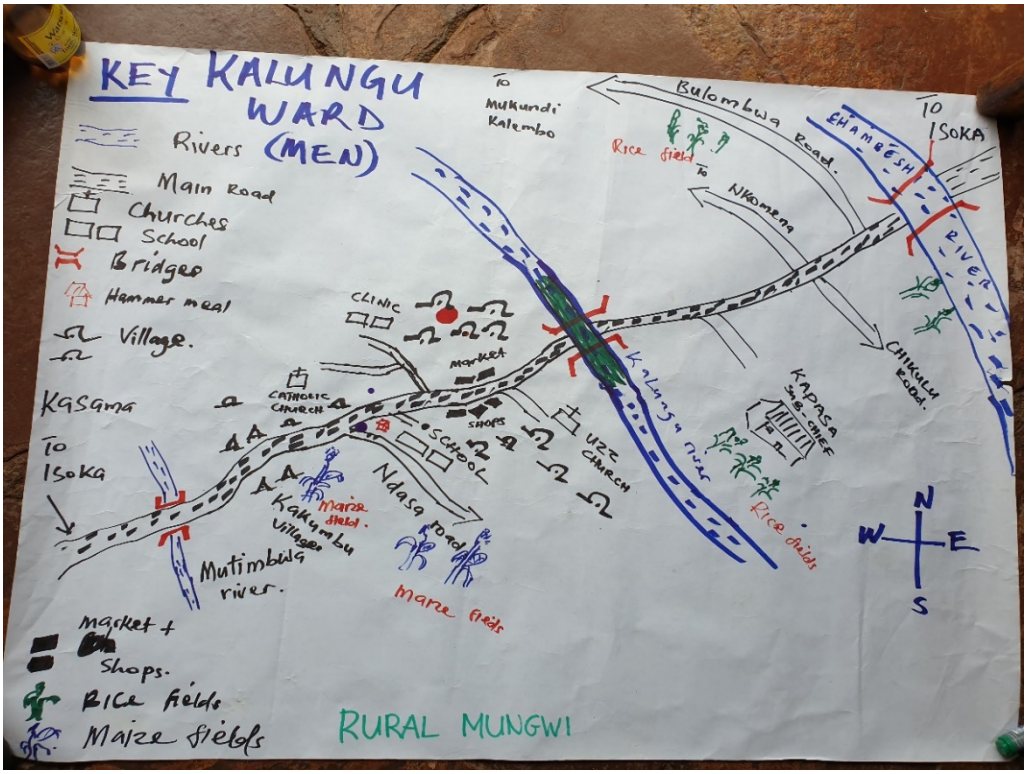

Figure 15 *Adult men asset mapping*

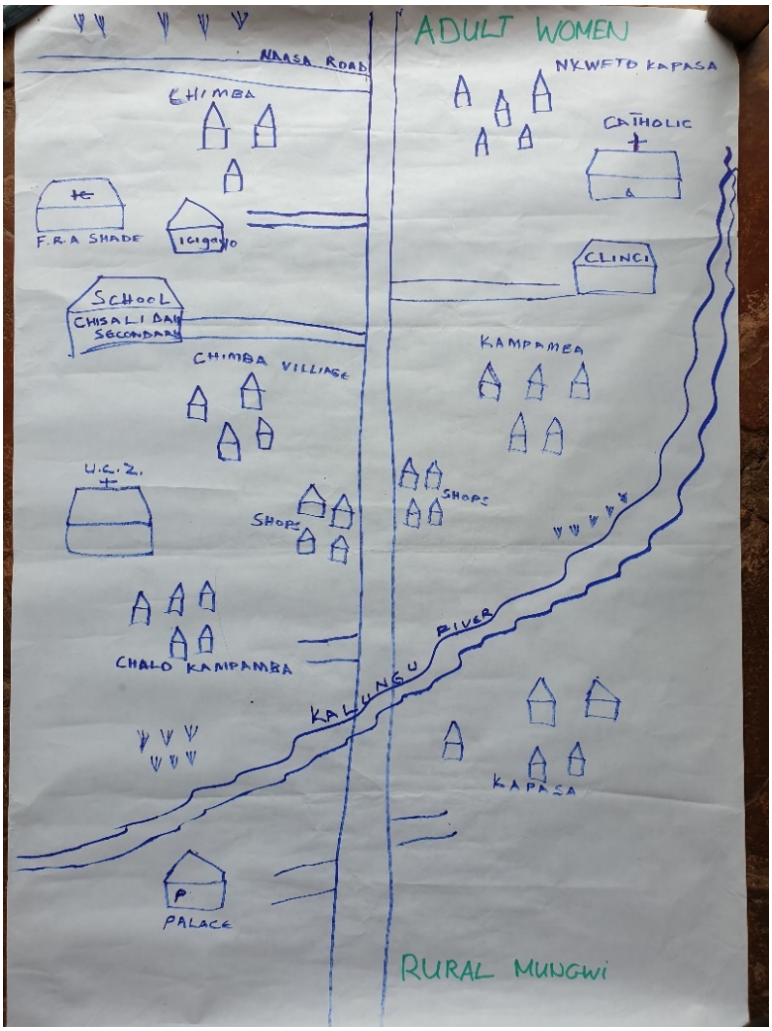

Figure 16 *Adult women*

Central Ward (Urban)

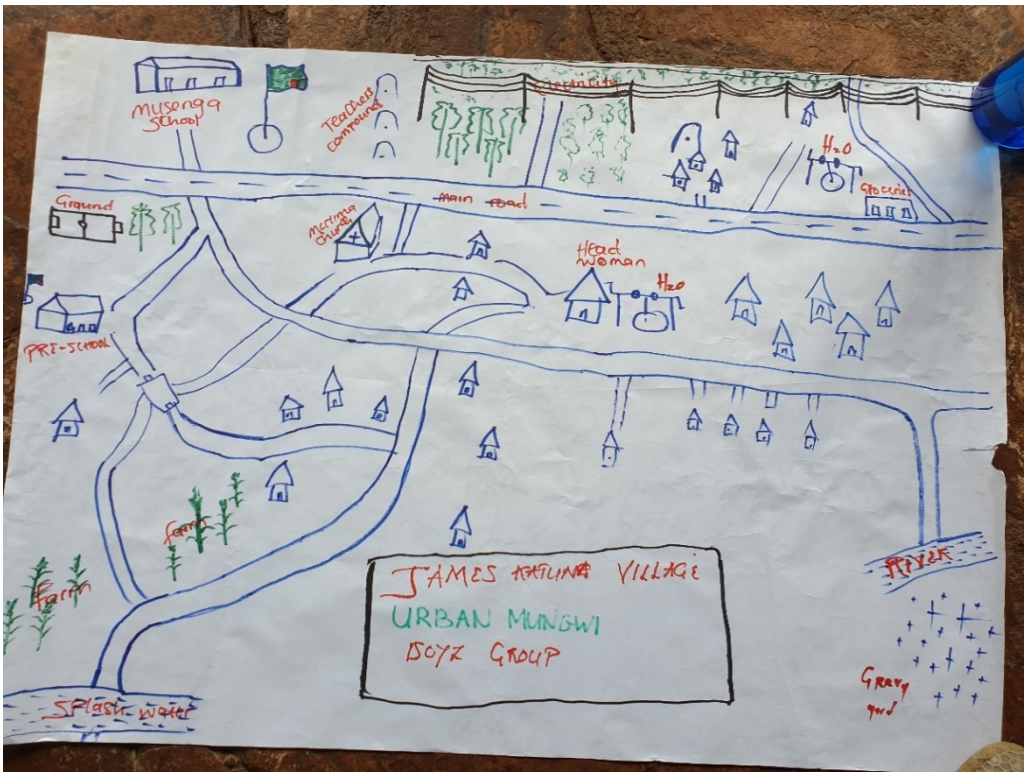

Figure 17 *Adolescent boys*

Figure 18 *Adolescent girls*

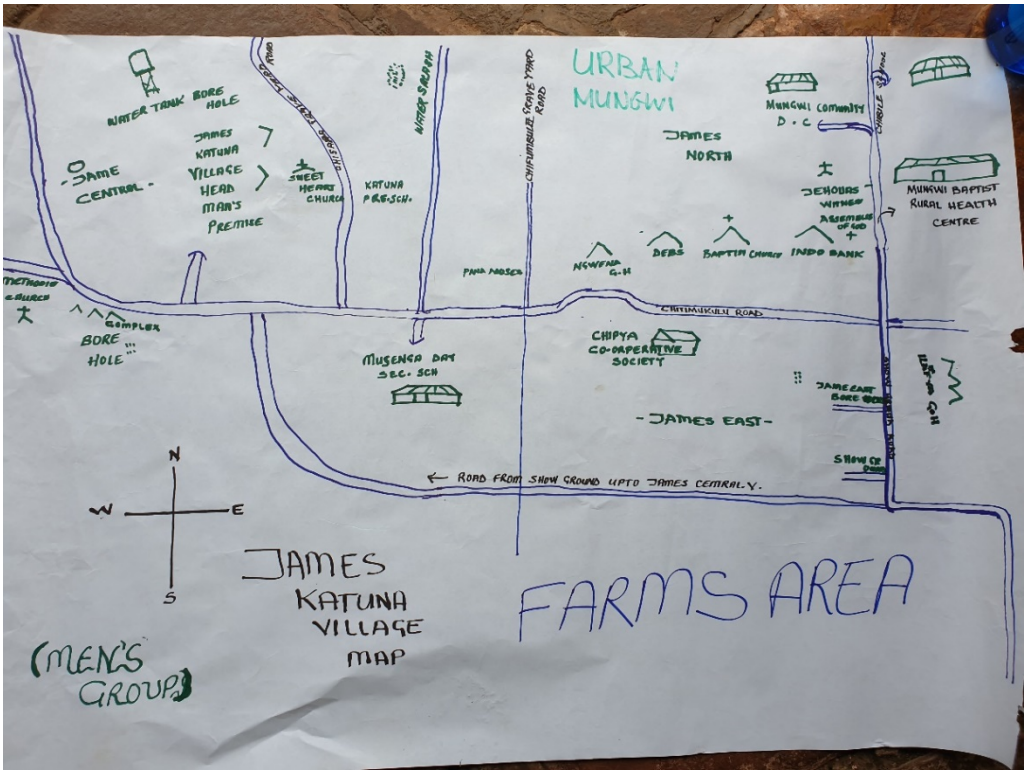

Figure 19 *Adult man*

Figure 20 *Adult women*

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Report WCDI-20-110

Wageningen Centre for Development Innovation supports value creation by strengthening capacities for sustainable development. As the international expertise and capacity building institute of Wageningen University & Research we bring knowledge into action, with the aim to explore the potential of nature to improve the quality of life. With approximately 30 locations, 5,000 members of staff and 12,000 students, Wageningen University & Research is a world leader in its domain. An integral way of working, and cooperation between the exact sciences and the technological and social disciplines are key to its approach.

To explore the potential of nature to improve the quality of life

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