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Evaluation of Zambia's First 1,000 Days Nutrition Programme

Rapid Qualitative Assessment Report

American Institutes for Research & Palm Associates

Terry Roopnaraine (Social Anthropologist, independent) &
Hannah Reeves (Researcher, American Institutes for Research)

November 2014

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Acronyms and Abbreviations

AIR: American Institutes for Research

BF: breastfeeding

CF: complementary feeding

DFID: Department for International Development (UK Aid)

FES: Focused ethnographic study

FGD: Focus group discussion

HH: household

MCDP: First 1,000 Most Critical Days Programme

MIYCN: Mother, infant, and young child nutrition

NFNC: National Food and Nutrition Council

PI: Priority Interventions of MCDP

RQA: Rapid qualitative assessment

SIDA: Swedish International Development Cooperation Agency

SM: Social mapping

UNICEF: United Nations Children's Fund

Acknowledgments

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Terry Roopnaraine & Hannah Reeves for AIR

Executive Summary

Background

Malnutrition is a serious concern in Zambia, where roughly half of all deaths among children under five are attributed to maternal and child undernutrition. Stunting is widespread in Zambia, with the most recent Demographic and Health Survey (2013) revealing that forty percent of the population under the age of five is stunted, while wasting stands at 6%. Large numbers of Zambian children suffer from nutrition-related disorders such as low birth weight, wasting, being underweight, chronic malnutrition, and various nutrient deficiencies. In an effort to address these issues, the National Food and Nutrition Council (NFNC) and several donors—including the United Kingdom's Department for International Development (DFID), Irish Aid, and the Swedish International Development Cooperation Agency (SIDA) —designed a bundled, multisector programme called the First 1,000 Most Critical Days Programme (MCDP). The MCDP will run for three years (from late 2014 through 2016) in 14 districts across Zambia, and it includes targeted interventions such as micronutrient supplementation; promotion of best practices in breastfeeding and complementary feeding; promotion of diverse diets for pregnant and lactating women; zinc treatment for diarrhoea; promotion of safe water, hygiene, and sanitation; growth monitoring; deworming; and management of acute malnutrition.

Study Design

The impact evaluation of the MCDP consists of four components, the first of which is the rapid qualitative assessment (RQA). The RQA is intended to facilitate formative research and is designed to provide tailored, programme-relevant information to MCDP implementers in order to guide refinements to the programme. It was developed around one central research question: "*What is the nature and experience of poverty and undernutrition, including access to food, dietary and feeding practices, and behaviour for households with young children in rural Zambia?"* To answer this question, the RQA employed three primary methods of data collection: focused ethnographic studies (FESs); focus group discussions (FGDs); and social mapping (SM).

Households, Communities, and WASH Information

In describing the wards, communities, and households visited for this study, we aim to provide a clear picture of the current living conditions of future MCDP beneficiaries. We present information on local leadership structures, infrastructure, access to goods and services, and the role of institutions and programmes within the communities. This information is intended to inform how the MCDP enters beneficiary communities, and how it may interact with or complement existing structures and programmes.

All communities visited for this study are located in remote areas in which farming is the prevalent source of income. Poverty is widespread, and access to food and clean water is often limited. While a number of respondents are aware of the benefits of treating water, only half of them reported doing so on a regular basis. This underscores the need for inputs such as chlorine and bleach as part of the MCDP. In terms of sanitation, not all caregivers reported disposing of faeces properly (in the latrine), which suggests that further education is needed on proper waste

disposal. Understanding local water and sanitation practices is essential in order to identify potential parasites and pathogens that may be common in beneficiary communities and may hinder the effectiveness of the MCDP. It is also worth noting that churches (of various denominations) feature prominently in all of the communities visited for this study. Given this fact, we recommend actively recruiting churches and church leaders to support and promote MCDP health, nutrition, and sanitation interventions.

Feeding and Dietary Practices

Both FES and FGD respondents were asked a variety of questions about their knowledge of appropriate diets for mothers and young children, food security, dietary diversity, and any barriers they face in accessing nutritious foods. Responses to these questions varied considerably, however a number of patterns emerged that merit consideration by MCDP implementers. For example, decisions involving finances (such as the purchase of food) are typically made by men; access to nutritious foods varies greatly by season, with far more food shortages reported in the dry season than the rainy season; and, for the most part, women determine for themselves how long they breastfeed their children. These patterns (and others) are explored at length, again with the ultimate aim of informing refinements to MCDP interventions. The role men play as household decision makers will also need to be considered carefully and may impact the extent to which men's involvement is recommended or mandated in MCDP interventions.

Work and Time Allocation

Mothers and caregivers in rural Zambia are responsible for a wide variety of agricultural work and domestic chores in addition to caring for their children. While women often receive support from other family members, husbands in particular are not always helpful (and in some cases, they seem to do more harm than good). Additionally, certain tasks—such as fetching water, collecting firewood, and preparing food—are traditionally female tasks. In rolling out the MCDP, which will require the active participation of mothers and caregivers, the time required for programme activities such as clinic visits will need to be calculated carefully. Moreover, efforts should be made, when possible, to minimise the programme's impact on women's time. For example, if it is possible to disseminate information or supplies at the village level (as opposed to through the health centre), this should be done.

Knowledge and Use of Mother, Infant, and Young Child Nutrition (MIYCN) and Health Services

Services and information for pregnant women, mothers, and caregivers are primarily available at antenatal clinics and clinics for children under the age of five (hereafter referred to as under-five clinics) at local health centres. In all wards visited for this study, women identified these clinics as their main source of nutrition and health information. It is important to note, however, that many respondents reported difficulty following the advice dispensed at local health centres due to financial and time constraints. For example, purchasing recommended foods or preparing fresh foods can often be cost or time prohibitive. This information underscores the need to provide items such as fortified foods and supplements through the MCDP if their consumption is

a critical component of the theory of change.[1] We also observed varying degrees of understanding about existing nutrition programmes (such as Chipolopolo) in the communities visited for this study, which suggests that the MCDP would benefit from a comprehensive communications strategy to ensure local acceptability and understanding of the programme's purpose.[2] Relatedly, we suggest a thorough analysis of the Chipolopolo programme to include an examination of implementation bottlenecks as well as weaknesses in the programme's information dissemination strategy. Lastly, given the role agriculture plays in determining dietary diversity in rural Zambia, the MCDP could potentially benefit from the inclusion of a nutrition-sensitive agricultural component, or from enhanced linkages with such programmes where they already exist.

We suggest exploring additional methods of disseminating MIYCN information. For example, community health and nutrition peer educators could be recruited and trained to make MIYCN information more readily available to young mothers in their respective communities. Secondly, the information collected for this study suggests that after the clinic, the radio is the most common source of nutrition messaging. Therefore, we suggest exploring the possibility of radio programming related to MCDP information and activities. Finally, schools appear to be an underutilized avenue for MIYCN information sharing. We suggest incorporating nutrition information into the curricula and supporting schools to carry out under-5 card checks for matriculating students.

In Conclusion

Overall, our data reveal a complex context. Achieving the desired programme outcomes will require successful engagement with a wide range of potential challenges—from increasing the knowledge base of caregivers to improving the quantity and quality of available and accessible food and addressing water and sanitation limitations—all while working within sociocultural frameworks and in accordance with women's work patterns, which may militate against intervention uptake.

[1] We note that the Theory of Change presented in Annex 1of this report is currently undergoing revision based on feedback from partners and stakeholders; given that one of the objectives of this research has been to provide inputs to the Theory of Change, it is also anticipated that some further revision will be called for based on the results presented here.

[2] The Irish Aid-funded Chipolopolo pilot is implemented by the Ministry of Health with support from UNICEF. The University of British Columbia was contracted to carry out the monitoring and evaluation component. See: http://www.hftag.org/project/home-fortification-programme-with-mnp-for-young-children-in-zambia-chipolopolo/.

1. Introduction and Background

This report presents findings from the rapid qualitative assessment component of American Institutes for Research's (AIR) evaluation of Zambia's First 1,000 Most Critical Days Programme. AIR was contracted by the United Kingdom's Department for International Development (DFID) to carry out a comprehensive, mixed-methods evaluation of the programme. The rapid qualitative assessment (RQA) is the first of four evaluation components. The remaining three components are as follows: a series of stand-alone qualitative studies designed to explore selected programme- and nutrition-related topics in depth; a process evaluation designed to assess programme operations and service delivery; and a full impact evaluation aimed at measuring the programme's impact on selected outcome variables. The rapid qualitative assessment is designed to facilitate formative research, with the purpose of gathering data on a series of programme-relevant research questions and making a range of contributions to the evaluation's knowledge base. In particular, the findings emerging from the RQA should:

- Sharpen our understanding of the theory of change
- Provide inputs to the design of survey instruments
- Collect information about other programmes in the area
- Inform the design of the 1,000 Most Critical Days Programme[3]

The rapid qualitative assessment set out to explore the following fundamental research question: "*What is the nature and experience of poverty and undernutrition, including access to food, dietary and feeding practices, and behaviour for households with young children in rural Zambia?*" This question was broken down into a series of sub-questions, which (following a description of the methodology in Section 2) structure the findings sections of this report as follows:

Section 3 presents descriptions of the study locations and households, together with the results from a series of questions on water, sanitation, and hygiene (WASH). Information on WASH conditions is important because it helps us to understand a key area of vulnerability to pathogens and parasites, which not only have detrimental effects on overall health but which also undermine the effectiveness of nutrition interventions.

Section 4 presents findings on food security and dietary diversity topics that lie at the heart of nutrition-focused and nutrition-sensitive interventions. Specifically, this section addresses the following questions:

- What diets are considered appropriate for infants and young children, pregnant women, and mothers?
- What degree of access do families have to food?
- What are the social and cultural drivers of child-feeding practices and behaviours?

[3] The current (but as noted above, under revision) theory of change for the 1,000 Most Critical Days Programme appears in Annex 1.

- What constraints do families face in obtaining nutritious foods, including economic, environmental, social, cultural, and physical constraints?
- Do people have the means to overcome these barriers?

Section 5 turns to the important issues of work and time allocation, particularly among women. Nutrition programmes frequently target women for a number of reasons, chief among which is women's highly normative (and cross-cultural) status as primary caregivers to household children. However, by focusing on women, nutrition programmes can make extra demands on their time, adding to their already heavy work burdens. In this formative research, it is therefore a priority to understand what kind of daily work burden women currently live with.

Section 6 addresses the question of information sources. What kind of information about nutrition or nutrition services is available to caregivers and pregnant women in our study areas? Where do people get information about nutrition and health issues? Are caregivers and pregnant women able to access these services and put recommendations into practice? These questions speak to fundamental problems in service and information delivery and uptake, particularly in remoter areas. It is important to understand the nature of these challenges when designing programme implementation strategies.

Section 7 summarises and discusses the findings of this formative research, particularly in the context of programme design and implementation. Some recommendations for policy and future research are also presented here.

Background on the Programme

In Zambia, half of all deaths among children under the age of five are attributed to maternal and child undernutrition. According to the most recent Demographic and Health Survey in Zambia (2013), 40 percent of Zambia's population under the age of five is stunted. This statistic amounts to one million children. Specific undernutrition figures include chronic malnutrition (45 percent), being underweight (15 percent), wasting (5 percent), and low birth weight (10 percent). Micronutrient deficiencies include vitamin A deficiency (54 percent) and iron deficiency anaemia (53 percent) (NFNC, 2012).

Malnutrition—including iodine deficiency and inadequate vitamin intake—leads to impaired cognitive development because the development of the brain is vulnerable to inadequate nutrition (Bardham et al., 2013). Evidence from Kenya further shows that malnutrition can result in decreases in school enrolment (Miguel and Kremer, 2004) and subsequent losses in labour productivity (Baird et al., 2011). The economic benefits of a healthier population are large: Over a 10-year period, Zambia could increase its economic productivity by $1.5 billion with just a one percentage point per year decrease in stunting, a one-third reduction in maternal anaemia, and elimination of iodine deficiency (NFNC, 2011). The consequences of malnutrition are particularly severe during children's first 1,000 days of life (Almond and Currie, 2010).

In response to this situation, the National Food and Nutrition Commission (NFNC)—in coordination with several donors, including DFID, Irish Aid, and SIDA, and in accordance with recommendations put forward in the 2008 Lancet Series—developed a bundled, multisector

programme called The First 1,000 Most Critical Days Programme (MCDP) in order to address Zambia's child undernutrition. Care International, in conjunction with the NFNC, coordinates the implementation and delivery of the programme through several ministries, including the Ministry of Health; the Ministry of Community Development, Mother and Child Health; the Ministry of Education; the Ministry of Agriculture; the National Food and Nutrition Council; and the Ministry of Chiefs and Traditional Leaders. The multisector approach draws on the leadership of the NFNC and the promises made by Zambia when it signed the Scaling Up Nutrition (SUN) initiative. The three-year intervention begins at the end of 2014 and runs to the end of 2016, and will be implemented in 14 districts across Zambia.

The programme targets households with pregnant women or children under 24 months and includes a package of activities that focus on the following areas: iron and folic acid supplementation; micronutrient supplementation; promotion of best practices in breastfeeding and complementary feeding; promotion of diverse diets for pregnant and lactating women; zinc treatment for diarrhoea; promotion of safe water, hygiene, and sanitation; growth monitoring; vitamin A supplementation; deworming; management of acute malnutrition; and promotion of increased availability of diverse, locally available and processed foods, with a focus on women's empowerment and nutrition-sensitive messages in cash transfer and other programmes (National Food and Nutrition Commission of Zambia, 2012).

The individual interventions implemented by the MCDP have all been the subject of careful evaluation work in various settings, all of which has contributed to a strong evidence base for their effectiveness in improving nutrition outcomes. However, the evidence base for bundled interventions is much more limited, and the implementation and coordination challenges are considerable. A robust, mixed-methods evaluation, focusing on both impact and process, is therefore especially important in this context.

Ethical Clearance

Ethical clearance was obtained (prior to commencing data collection) from the review boards of AIR and the University of Zambia.

2. Methods

The overall orientation of this evaluation component is qualitative. In qualitative research, questions—and the responses they elicit—tend to be discursive and descriptive, while the analysis privileges explanation and interpretation over quantification. In general, qualitative approaches allow researchers to explore and understand the experiences, opinions, and perspectives of their informants in greater depth than that offered by quantitative approaches. In turn, the use of qualitative approaches entails sacrifices in terms of generalisability and comparability—areas in which quantitative methods excel because of their use of large and probabilistic samples. Samples chosen for qualitative studies are always smaller and often nonrandomised or purposively selected. Anthropologist Russell Bernard (2011) notes, "There is growing evidence that 10–20 knowledgeable people are enough to uncover and understand the core categories in any well-defined cultural domain or study of lived experience" (p. 154).

The rapid qualitative assessment data collection employed three main methods:

- Focused ethnographic studies (FESs): These were carried out with three caregivers in each of the four wards chosen from two districts (pre-intervention), for a total of 12 FESs.
- Focus group discussions (FGDs): Two FGDs (with 8 to 10 purposively selected caregivers in each) were carried out in each of the four study wards (eight FGDs in total).
- Social mapping (SM): Four SMs were conducted in total (one in each of the four wards). These activities were folded into one of the two FGDs planned for each ward.

2.1. Data Collection Approaches

Focused Ethnographic Studies

The FES approach was developed by Gretel Pelto and colleagues as a tool for the World Health Organization to study acute respiratory illness in children. With some contextual adaptation, the model has subsequently been applied in various other research areas.[4] FESs are based on interviews that are shorter and more tightly defined than the wide-ranging and open approaches typical of more traditional ethnographic research. FES packages often incorporate pile sorting or ranking exercises, as we do here.

The FES approach used in this RQA was based upon a five-module protocol, in which each module served to meet the data requirements of a different key research area. The modules are listed in Figure 1. Note that the "Approach" column refers to the procedural orientation of each module listed in the first column, while the "Theme" column refers to the data that meet the needs of each of the key research areas. All five modules were administered to each selected caregiver or pregnant informant.

[4] Such as in formative research and process evaluations of infant and young child feeding (IYCF) interventions in Haiti (Menon et al., 2005).

Figure 1. FES Modules, Themes, and Approaches

Module #	Theme	Approach
1	Demographic, household, Priority Interventions, and WASH information	Complete structured response and observation sheet
2	Appropriate diets for infants, young children, pregnant women, and mothers	24-hour recall to capture what food was provided, followed by food card grouping activity to capture respondents' concept of an ideal diet. It will be important to include caregivers of children of various age groups—breastfeeding (BF) and complementary feeding (CF)—as well as pregnant women
3	Access to food: Constraints and enablers 1. Degree of access to food 2. Constraints on obtaining nutritious foods (including economic, environmental, social, cultural, physical) 3. Means of overcoming these barriers, if available	Guided discussion around issues of constraints and enablers, making explicit reference to foods identified in both parts of #2
4	Social and cultural drivers of child-feeding practices and behaviours; social and cultural drivers of pregnant women's dietary practices and behaviours	Guided discussion around social and cultural drivers, again building on responses to #2–5
5	Time allocation, infant and young child feeding (IYCF), and maternal, infant, and young child nutrition (MIYCN) service uptake	Guided discussion based around different activities related to child feeding: obtaining foods, obtaining water, preparation, obtaining cooking fuel where necessary, hygiene practices, and feeding

Focus Group Discussions

Ideally, FGDs provide a context in which participants feel comfortable and empowered to discuss the research topics with their peers and the carefully trained facilitators. It is important to create a social dynamic that encourages participants to reflect upon their opinions and experiences and then express them verbally. From past experience, we expected to benefit from interactions between respondents, with contributions from some participants inspiring others to think about and discuss their own experiences. We also expected that, in some cases, the neutral space of the FGD might help respondents overcome any hesitance they might have in their own homes. In large part, we feel that these expectations were met. FGDs were designed to capture data on the same key research areas of the study that were covered in the FES work.

Social Mapping

Social mapping (Mikkelsen, 2005, pp. 107–109) is a participatory tool designed to involve community members—the subjects of the research—in the research process, not simply as respondents but as active agents and stakeholders. In the context of the RQA, we included a social mapping exercise in one of the two FGDs carried out in each of the four study wards.[5] We used this approach to collect data on local understandings of poverty, wellbeing, vulnerability, access to resources, and other programmes under implementation.

2.2. Data Handling

We carried out data collection by employing two-person teams in each village. Wherever possible, one field researcher was responsible for interviewing or facilitating, while the second researcher had primary responsibility for recording responses. Researchers noted responses (in local languages where necessary, but generally in English) on response sheets provided with each data collection instrument, and they recorded all FES interviews, together with FGDs, on portable digital recorders. Researchers downloaded these recordings to field laptops each day, renamed them according to an anonymised code system held in an encrypted Excel sheet, and then copied them to external media for backup. At the end of each day, the field researchers transcribed the handwritten field recording sheets to Microsoft Word documents, translating the material where necessary. Researchers used audio recordings to supplement and validate the written transcriptions and translations. All transcriptions were also assigned new names (in accordance with the code system) in order to ensure data and informant confidentiality.

Coding and Analysis

Lead researchers developed a descriptive coding scheme linked to an overall analytical framework, with specific reference to themes of interest and research questions. The researchers then loaded the coding scheme and the transcripts into the qualitative data analysis (QDA) software package (NVivo 10). Coding in NVivo is a manual process based upon careful reading of each piece of data (in this case, interview responses and other notes) and subsequent selection of appropriate code(s) to describe these data. Once properly coded, the data can be analysed in different ways prior to producing written outputs.

2.3. Sampling: Site and Informant Selection

For the RQA, we purposively selected—in close consultation with the NFNC—the districts of Chipata (in the Eastern Province) and Mbala (in the Northern Province), bearing in mind the requirements of the overall evaluation plan, including upcoming and future quantitative data collection. We then randomly selected two wards from each of these districts: Nsingo and Nthope in Chipata, and Chinyika and Intala in Mbala. In Chipata, research participants were from the Nyanja-speaking Ngoni tribe and research was carried out in this language. In Mbala, research participants were mainly Mambwe, but because of the sociolinguistic context in which they lived, they also spoke Bemba. Researchers in the Mbala wards carried out their work principally in Bemba, with some Mambwe when necessary. The Chipata district, which is close

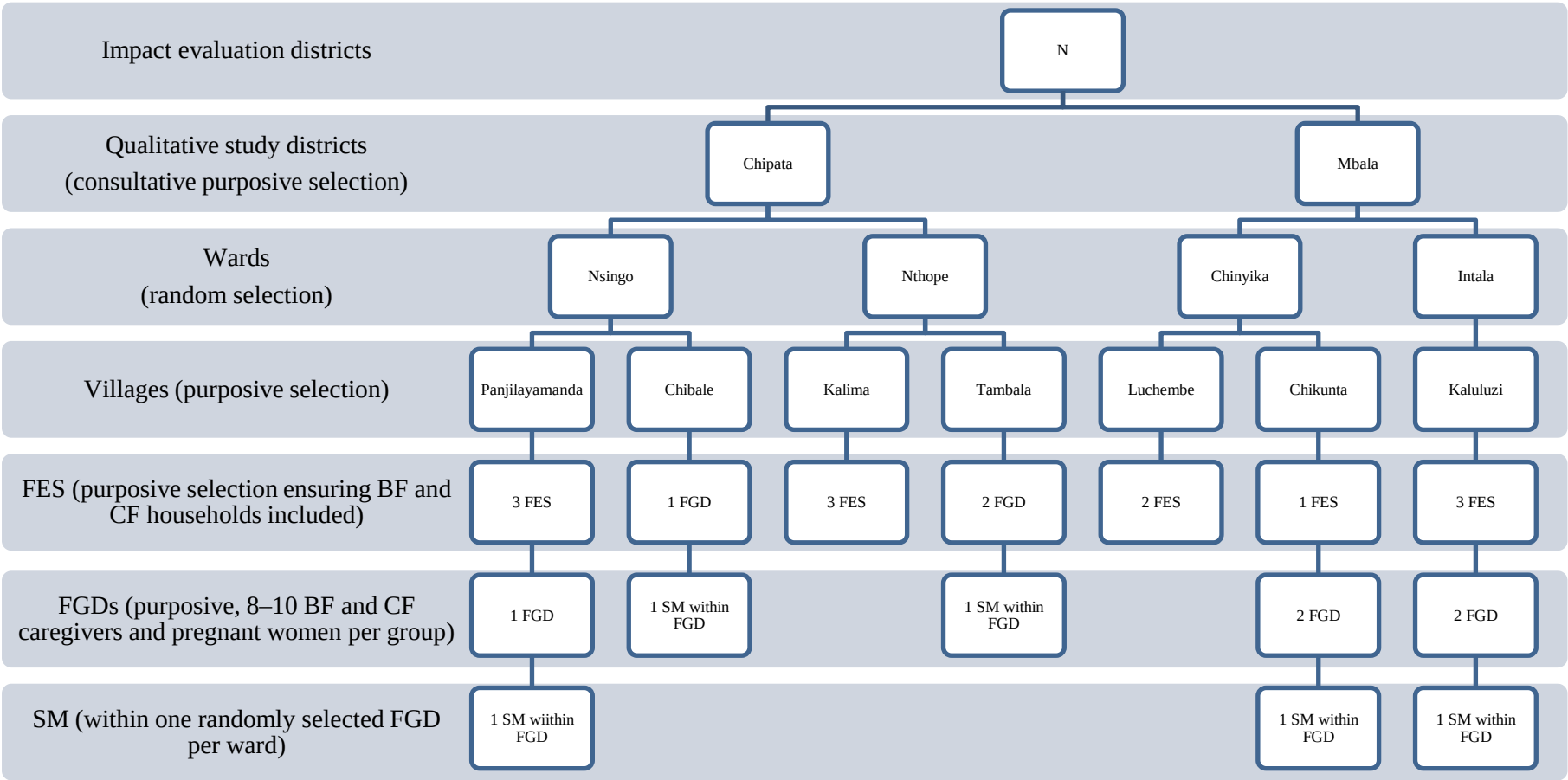
[5] In fact, the SM exercise was carried out once in three of the study wards and twice in the fourth ward.

to the Malawian border, lies along the Great East Road. The administrative district capital is Chipata town proper, which contains a busy market, shops, residential areas, and the local government offices. The Mbala district is Zambia's most northerly district and it lies on the border with Tanzania. The district capital, Mbala town, lies on the Great North Road, approximately 1,030 kilometres from Lusaka. It contains a market, shops, residential areas, and local government offices.

In each of the four wards, we purposively selected a number of villages. Initially, the plan was to select one village per ward and to carry out all the ward's research there. However, this approach proved impossible in the field because the villages were too small to meet sample recruitment guidelines, which called for reasonably balanced representation of caretakers of infants and young children, as well as pregnant women. We therefore took the decision to work in more than one village in most of the wards (only Mbala's Intala ward contained a village large enough to carry out a full recruitment), without changing the planned number of FES interviews and FGDs in each ward. Thus, in each ward, we carried out two FGDs with 8 to 10 purposively selected caregivers of young children, for a total of eight FGDs. This number of FGDs is consistent with expert recommendations: Krueger (1994) suggests that an optimal number of FGDs lies between 4 and 12, while Millward (1995) contends that data saturation (redundancy) sets in after 10 FGDs. We carried out FES interviews with three caregivers of young children in each ward, for a total of 12 FESs. Finally, we carried out a participatory social mapping in one of the two FGDs conducted in each ward. This scheme is illustrated in Figure 2.

In this report, we do not always disaggregate findings by ward or village. In cases where there were clear differences between response and discussion patterns by location, we indicate these differences. We typically do not disaggregate findings that were similar or identical across the wards.

Figure 2. Sites, Informants, and Methods



3. Introduction to Households, Communities, and WASH Conditions

This section presents the findings from the social mapping exercises and includes brief introductions to the communities and households visited during the RQA. Collectively, this information illustrates the living conditions of future MCDP beneficiary communities, shedding light on local understandings of poverty, wellbeing, access to resources, and the role of programmes and institutions within the respective communities. Understanding the circumstances and infrastructure typical of future beneficiary communities is critical to ensuring effective implementation and uptake of MCDP interventions. The findings from the social mapping exercises are presented by ward, followed by detailed descriptions of the villages and individual households located in each ward. Lastly, local water and sanitation conditions are discussed in the context of how the respective systems are accessed and used in the communities visited.

The villages visited for this study were similar in a number of ways, in that all were located in fairly remote areas and all were governed by traditional structures (chiefs, headmen, and so on). In all of the communities visited, farming was the prevalent mode of livelihood, although a number of households had other side businesses (such as beer brewing or selling cooked pieces of chicken in the village), and some members of study households engaged in piece-work as a way of generating a cash income. It is relevant to nutrition programme design to flag the fact that 'farming' includes greater and lesser proportions of subsistence agriculture (production for use) and cash-cropping (production for sale, or processing followed by sale). The factors which determine how the relative proportions of use vs. exchange production in agriculture are difficult to determine from the current data, and we recommend that this issue be explored in future rounds of data collection because such findings would be relevant to the design and implementation of the nutrition-sensitive agriculture interventions contemplated by the MCDP.

The twelve households visited for FES interviews in the Chipata and Mbala districts ranged in size from three to nine members, and only one of the homesteads had electricity.

3.1. Nsingo Ward, Chipata

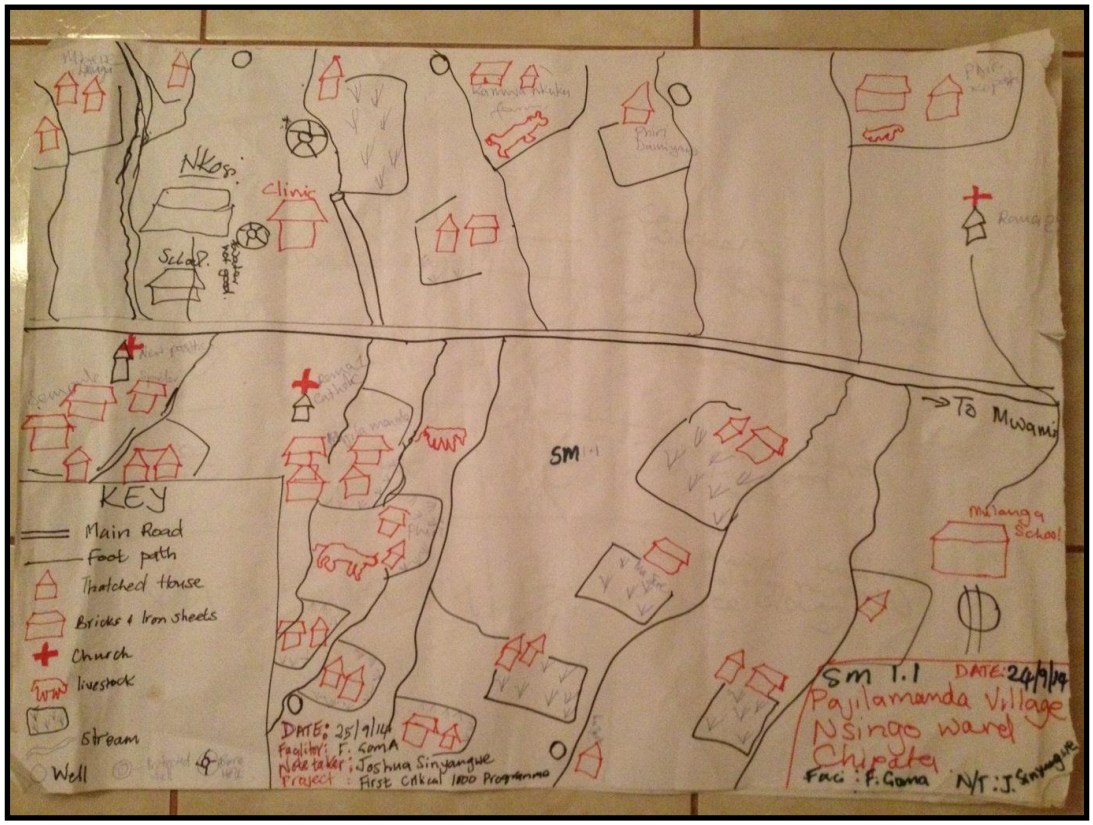
Nsingo ward residents, who are largely agriculturalists, universally underscored the importance of land and water to their livelihoods. Most of them considered their relative wealth to be "somewhere in the middle"—i.e., they considered themselves neither the richest nor the poorest. Of the two villages visited in Nsingo, Panjilayamanda is larger and has access to more resources (for example, schools and health centres) than Chibale.

In Nsingo ward, perceptions of wealth are largely tied to the amount of land and livestock one owns. Additionally, if a person owns a business of any sort, he or she is considered wealthy. Conversely, if a person cultivates only a small plot of land and has few or no livestock, they are typically perceived to be poor. Money is viewed as a sensitive topic, and one of the two social mapping exercises conducted in Nsingo

ward ended this portion of the discussion prematurely as a result of the FGD participants' discomfort: "We cannot continue talking about money because some people here would not like it. Even if we don't mention names, they will still know we are talking about them. Money issues are very sensitive. We have the poor, the poorest, but the matter is very difficult, it's better we don't continue with it" (FGD respondent, Chibale village, Nsingo ward). Participants in the other social mapping exercise conducted in Nsingo ward were more willing to discuss perceptions of wealth and came up with four categories: "very rich," "rich," "the ones who do better," and "those who are really poor [*Bo vutikilatu*]." When asked to assign proportions of the local population to each category, respondents indicated that there were no "very rich" community members and that the majority fell into "the ones who do better" category. This category was described as including those who have iron sheets on their homes, food to eat (mostly maize), and might have a few cattle or goats. Additionally, "the ones who do better" eat three meals per day (morning, midday, and evening) and harvest enough maize to last from one year to the next.

Critical resources identified by Nsingo residents were land and water: "Land is the main resource here, without land you can't go anywhere or do anything" (FDG respondent, Chibale village, Nsingo ward). Chiefs and headmen are typically responsible for land allocation. Water was also identified as an important (but scarce) resource: "Water, we don't have abundant water, streams are dry" (FDG respondent, Chibale village, Nsingo ward). Community-based organisations and nongovernmental organisation (NGO) interventions do not seem very common (although one programme, Profit Plus, used to visit Panjilayamanda village), and the local institutions garnering the most attention and respect seem to be the churches and the local leadership (chiefs and headmen).

Figure 3. Social Map of Panjilayamanda Village, Drawn by 12 Women



Nsingo Communities and Households

Panjilayamanda village is located in Nsingo ward, Chipata. There are a number of dirt roads within and leading to Panjilayamanda, including some that are suitable for vehicles and one that leads to the local clinic. Bicycles are a far more common mode of transportation than cars, however. Most of the homes in Panjilayamanda are made of mud bricks or mud blocks and have grass thatched roofs. The leadership structure includes a chief (responsible for allocating land), headman (*nduna*), and messenger (*memeza*). There are two churches, two schools, a few small shops, and one clinic with a borehole nearby. Residents of Panjilayamanda obtain water either from the borehole by the clinic or from uncovered wells in the gardens. The water from the borehole is not suitable for drinking, however, and FGD participants described it as red and having rust. The well water, which is used for drinking, also has problems: It has germs and smells bad. Farming is the predominant income-generating activity, and the most common crops according to FGD participants are maize, beans, soya beans, and cotton. Planting typically takes place when the rainy season begins (November). There are no NGOs or other programmes operating in Panjilayamanda at present.

> The Tembo[6] household is an eight-member household in Panjilayamanda village, in Nsingo ward, consisting of Harmony, her husband, and their six children. Harmony[7] is 31 years old, her husband is 29 years old, and their

[6] All households have been given fictitious names to preserve their anonymity.
[7] All FES interviewees (female caregivers) have been given fictitious names to preserve their anonymity.

youngest (index) child is nine months old. Their home is made of mud bricks and plaster with a grass thatched roof. Their primary source of income is farming and they have eight acres of farmland located very close to their homestead (less than a five-minute walk away). Harmony and her husband primarily grow maize, cotton, and beans, and they cultivate their land using animal draught power and hand hoes.

The Moyos live in a household that consists of six people, including Loveness, her husband, and their four children. Their home is located in Panjilayamanda village and is made entirely of mud, with the exception of a grass thatched roof. Loveness is 31 years old and her youngest child is one month old. She and her husband have two primary sources of income: farming and brewing beer (Loveness is responsible for the beer business). They own two acres of farmland (which Loveness describes as being "quite far" from their homestead) where they grow maize, soya beans, and sunflowers.

The Bandas are an eight-person household located in Panjilayamanda village. The caregiver, Agness, is 34 years old and lives with her husband and their six children, who range from 1 to 13 years of age. They live in a home with brick walls and a grass roof. Agness brews and sells local beer, and her husband earns his income by selling vegetables from their garden (which at the time of the interview only had potatoes) and selling chairs and tables he builds with wood. The family owns two and a half hectares of land surrounding their home, which Agness's husband inherited from his father with the chief's permission. Agness's husband is the sole owner of the land. The family grows crops including sunflowers, cotton, beans, soybean, cassava, sweet potatoes, pumpkin leaves, groundnuts, and maize, but they maintain that the amount of land they own is insufficient for farming because cultivation is done using a hoe.

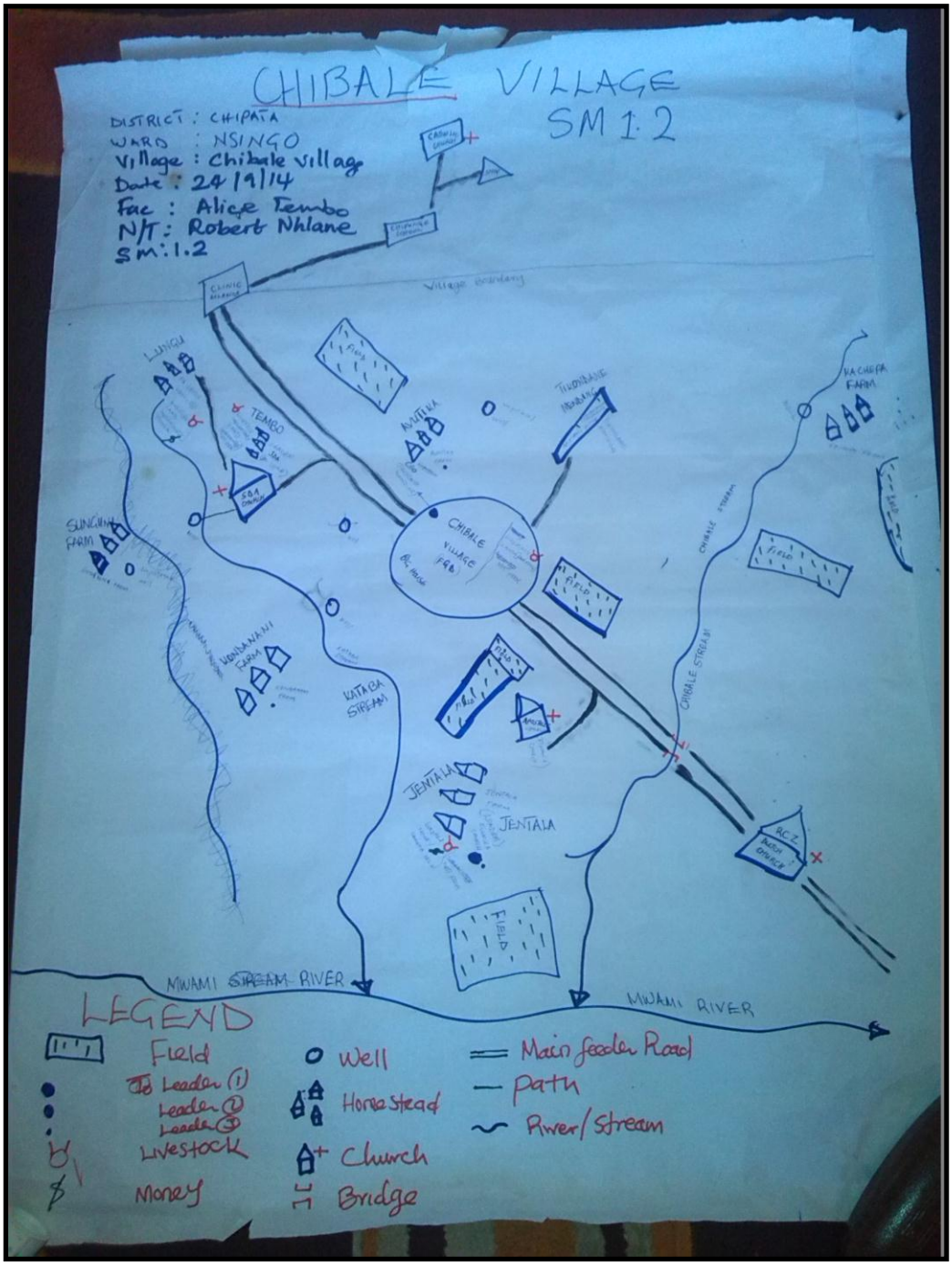
Chibale village[8] is also located in Nsingo ward, Chipata. It does not have definitive boundaries (with the exception of the Mwami River to the south), but residents say they know which farms fall within the village and which fall beyond it. There is one main road accessing Chibale and numerous pathways leading to homesteads, water points, fields, and churches. Chibale does not have any shops, schools, or clinics of its own (the nearest are located in Panjilayamanda). Local leaders include the village headman and a couple of church leaders. There are no NGOs operating in Chibale at the moment, but there is one community-based organisation called Tikondane Mending, which has just started and is aimed at promoting small businesses among women.

The primary resource in Chibale, according to FGD participants, is land. There are restrictions on how much land each household can have, and fields are mostly located around their respective homesteads. Some residents have livestock (mostly cattle, pigs, and goats) but many do not. There are two streams in Chibale (both tributaries of the Mwami River) and three of the four wells in Chibale were dug in the stream beds. The wells in the stream beds often dry out during the dry season, however, and households that depend on the stream for water are forced to dig additional shallow wells. During the rainy season, water is drawn directly from the streams. The three

[8] No FES interviews were conducted in Chibale. Only an FGD was conducted here.

stream wells and the one upland well are all unprotected and remain the only sources of drinking and washing water in Chibale.

Figure 4. Social Map of Chibale Village



3.2. Nthope Ward, Chipata

Wealth in Nthope ward is closely associated not only with livestock ownership, but also with children's appearance and performance in school. Of the three categories identified ("rich," "the ones who do better," and "poor"), the rich were described as those with cattle, an oxcart, and children who "are smart when going to school" and have food and drink during and after school. The middle category ("the ones who do

better") was described as owning goats, pigs, or chickens; having maize that lasts until next season; eating breakfast, lunch, and dinner; and dressing their children properly and keeping them in school. The "poor" category (which was considered the largest) consists of those who do not eat well; eat only once per day; have no bedding; whose children have no clothes and are not in school; who have no livestock; and who lack fertiliser for a proper harvest. When asked how the "poor" manage to get by, respondents indicated that they cultivate for other people and are paid in maize, or are loaned a bag of maize to be paid back the following season (with interest). As in other wards visited, harvesting is the primary income source for residents of Nthope ward. Water wells and streams are shared resources, but gardens and fields and their outputs belong to specific men.

Figure 5. Nthope Ward village in Chipata

Nthope Communities and Households

Tambala village[9] is located in Nthope ward, Chipata. There is a large road that passes through Tambala, which is accessible to vehicles and does not become impassable even during the rainy season. Tambala does not have a headman (the previous incumbent recently died and villagers are in the process of selecting a new one) so the *Nduna* is the current leader and under him there is the *Amunawa*. There is also a group of men (*Madoda*) who assist the *Nduna* in making decisions. The headman was responsible for allocating farmland, most of which is located outside the village (sometimes quite far away). Primary crops grown in the fields are maize, cotton, and groundnuts. Men are the landowners in Tambala, and female FGD participants

[9] No FES interviews were conducted in Tambala. Only an FGD was conducted here.

reported that women do not manage the land. There are also gardens in the village (accessible by road) where crops such as guava, sugarcane, banana, rape, mango, tomato, cabbage, maize, onion, and pumpkin leaves are grown. Not all villagers have gardens, however, and as a result some villagers have access to vegetables that others do not.

The closest clinic to Tambala is about an hour's walk away, but it does offer feeding advice for children under the age of two. Nutrition advice is not offered anywhere else, including at local schools. Water sources for Tambala include streams, uncovered wells, and one borehole. FGD participants seemed to prefer the water from the borehole, describing it as "nice," while indicating that there is a lot of dirt in the water from the stream. Water from the streams is used for drinking, washing, and other purposes, but water from the borehole is the preferred drinking water.

Figure 6. Social Map of Tambala Village (Road Section), Drawn by 11 Women

Kalima village is also located in Nthope ward, Chipata, less than three kilometres from Tambala. It looks quite similar to Tambala, with a similar leadership structure including a headman and local church leaders. The constituency MP is from Kalima, according to village residents we spoke with. Kalima relies on a borehole within the village for water, as well as nearby streams. The health and school infrastructure is the same as in Tambala, with the exception that Kalima is slightly nearer to both facilities. Settlement patterns, field conditions, and crops grown are virtually identical to those in neighbouring Tambala.

The Njovus are a seven-member household consisting of Musonda, her husband, and their five children. Their home is located in Kalima village and is made entirely of mud, with the exception of a grass thatched roof. Musonda is 30 years old and her youngest child is five months old. Musonda used to run a small business (buying chickens, cutting them into small pieces, and then frying and selling them in the village) but she recently stopped. Musonda's husband earns an income doing piecework building, thatching houses, and cultivating their farmland. They own three acres of land approximately one hour's walk from their homestead, which they inherited from Musonda's husband's parents when they died. They grow groundnuts, cotton, maize, sunflower, sorghum, and pumpkins in their field and do not have a garden.

The Phiris are a nine-person polygamous household in Kalima village. Matongo, her husband, and her husband's second wife live with their children and stepchildren, as well as Matongo's child from before she got married. Matongo's youngest child is one year old. Their dwelling is made of brick walls, a cement floor, and iron sheet roofing. The primary income source is farming and selling beer. Matongo used to sell meat as a side business but has not done so in the past two months. It takes approximately one hour to get to their farmland, which Matongo's husband inherited from his father. Matongo, her husband, and her husband's second wife work to cultivate maize, groundnuts, and tobacco.

The Zulus are a three-person household in Kalima village, consisting of Navinga, her husband, and their one child, who is one year old. Navinga is 18 years old and her spouse is 22. They lived in a mud home with a grass thatched roof. Navinga has a small business selling cooked and roasted chicken pieces in the village. Navinga's husband primarily does piecework on other peoples' farms and cultivates their own farmland, which is not far from their homestead. They have two acres of land (which they were given recently by Navinga's father in-law) that is primarily used to grow maize. The last farming season was not very successful—they finished all the maize while it was still in the field and were not able to harvest anything for consumption during the dry season.

3.3. Chinyika Ward, Mbala

In Chikunta (the village in Chinyika ward where the social mapping exercise was conducted), wealth is largely associated with material possessions: "We consider a family to be wealthy when they have money, bicycle, hammer mill and/or motor bike, livestock, land, and businesses" (FGD respondent, Chikunta village, Chinyika ward). The majority of Chikunta residents are "medium class," according to respondents. A common medium class, income-generating activity is cutting down trees, burning them, and growing millet on the burnt areas. Poor households and individuals include the elderly and the labour constrained, and one respondent commented quite simply: "Farming here is the main activity and main source of livelihood and income. We grow many crops such as beans, maize, millet, and cassava. So if a household cannot do these things then they become poor" (FGD respondent, Chikunta village, Chinyika ward). Similar to Nsingo and Nthope wards, land and water are viewed as the two essential resources in Chinyika: "The most important resource in this village is land.

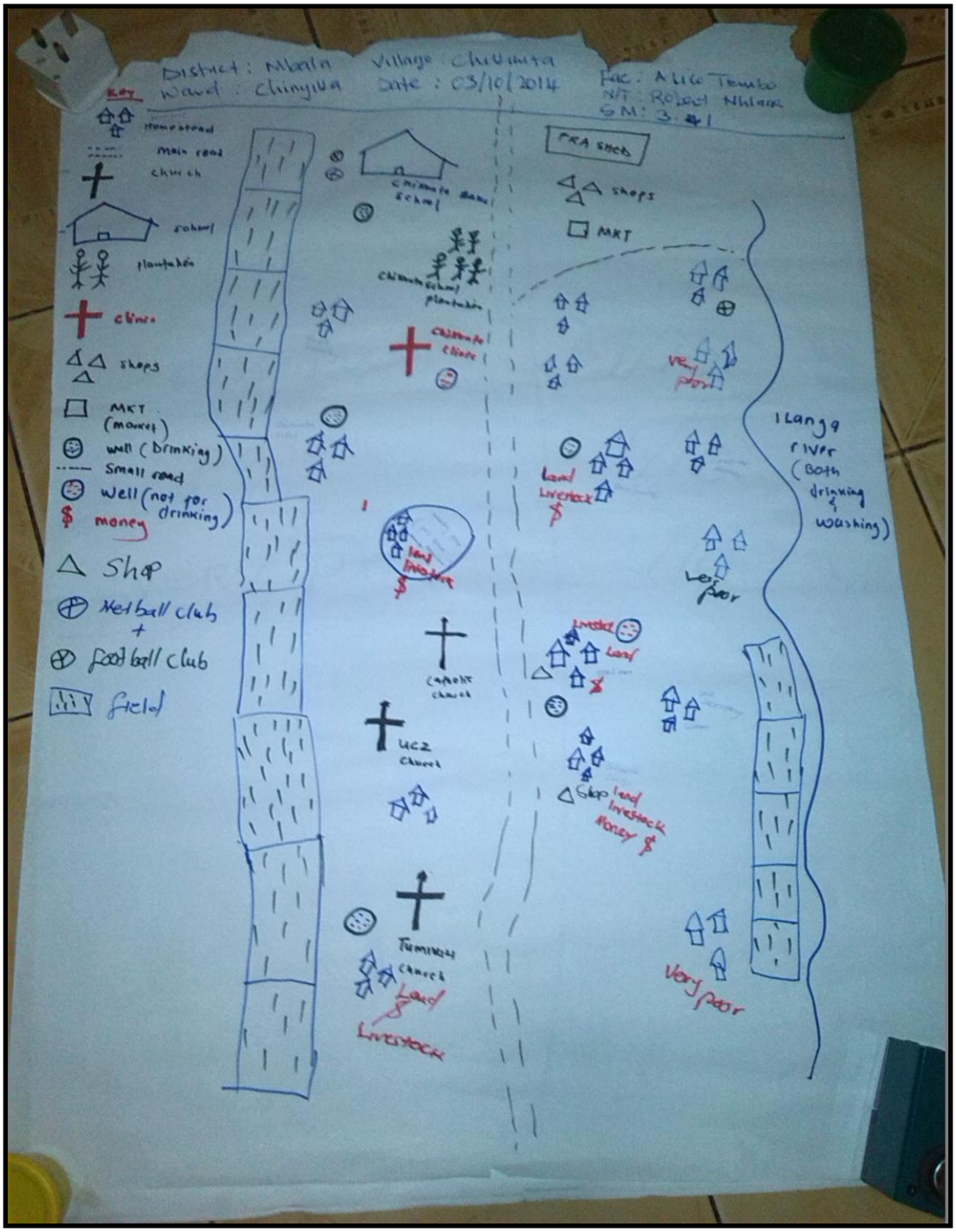
We also have water for those with gardens, watering animals, and for domestic usage" (FGD respondent, Chikunta village, Chinyika ward).

Chikunta has a fairly typical leadership structure, with a headman supported by a village committee consisting of a chairman, vice chairman, secretary, treasurer, and committee members. In terms of local institutions, Chikunta village has three churches, men's and women's sports clubs, a basic school, and a clinic currently under construction. Additionally, two programmes are active: the Food Reserve Agency's (FRA) maize purchasing programme and the Chipolopolo children's nutrition programme (both of which are described in the following section on Chikunta village).

Chinyika Communities and Households

Chikunta village is located in Chinyika ward, Mbala district, and is bordered by the Ilanga River to the east and Luchembe village to the south. To the west are fields belonging to Chikunta villagers and there is a neighbouring village to the north. There is one main road (passable by vehicles) that passes through the middle of Chikunta and another that passes behind the market heading east. There are also paths and small roads that lead to various homesteads, water points, churches, and fields. The only clinic nearby is Chikunta Clinic and it is currently under construction. FGD participants were not sure when it is scheduled to be finished. Currently, Chikunta residents have to go to the clinic in another village far to the south. Water sources include the Ilanga River and seven wells, five of which are suitable for drinking.

Figure 7. Social Map of Chikunta Village



Chikunta is led by a headman and his village committee. The only community organisations that exist are a women's netball club and a football club called *Atanda*. FGD participants identified land, water, and livestock as the most important resources in Chikunta. Programmes currently serving Chikunta include the FRA and Chipolopolo. The FRA buys maize from local farmers to encourage production, and Chipolopolo is a micronutrient supplement pilot programme based at the clinic that targets children. Chipolopolo provides demonstrations on how to prepare foods for children, including meat, fish, chicken, groundnuts, and cooking oil. However, most

villagers do not have the ingredients necessary to prepare the meals so most people are not able to put what they have learned to use.

> The Sinyangwe are a nine-person household located in Chikunta village, Chinyika ward. Gladys (36) lives with her husband, their six children, and one niece. Gladys's youngest child is a one-year-old girl. Their home has brick and cement walls, a cement floor, and a roof made of iron sheets. Gladys's household has access to solar energy, which they use for lighting, watching television, and listening to the radio. They cultivate maize and beans from their multiple plots of farmland, which belong to Gladys's husband. This is their primary income source and Gladys's husband travels to Lusaka to sell maize and beans, the profits from which go into a joint bank account in Mbala. Gladys's husband also sells fish and linen (*Vitenge*) as a side business, and the couple grows smaller amounts of soybeans, groundnuts, cucumbers, cowpeas, and pumpkins for consumption.

Luchembe village is located very close to Chikunta village (less than three kilometres away) and is similar to Chikunta in many ways. Settlement and farming practices, for example, are virtually identical in the two neighbouring villages. The water source for Luchembe village is a nearby stream and a few protected wells within the village, and local health facilities include the clinic under construction in Chikunta village or the fully operational health post, which is roughly five to seven kilometres further down the road.

> The Sikombe live in a six-member household that consists of Mwila (22), her husband (32), their three children, and Mwila's brother in-law. Their youngest child is a two-month-old boy. Their home is in Luchembe village, Chinyika ward, and has brick walls, a mud floor, and a thatched roof. The household's primary income source is farming, which is done by Mwila and her husband. They grow groundnuts, cassava, maize, beans, and millet on their farmland, which is approximately one hour away from the homestead. The household consumes the majority of these crops and only the surplus (mostly beans) is sold. Mwila's husband owns the farmland (four acres, of which they use only one), which was given to him by his father. Mwila also buys and sells millet and uses the profits to buy soap and salt.
>
> The Simwinga live in a five-member household, also in Luchembe village. Precious (32) lives with her husband and their three children in a brick-walled home with mud floors and a thatched roof. Their oldest child is 13 and their youngest is one year old. Precious and her husband rely on farming for income, and Precious indicated that there are no other opportunities for income in the area. They cultivate a couple of small fields that belong to her husband, where they grow maize, beans, cassava, pumpkin, and millet.

3.4. Intala Ward, Mbala

Social mapping participants in Intala ward identified three classes of local residents: "the rich," "the ones who eat well," and "the poor." The "rich" are those who own cattle, shops, a car or motorcycle, or an oxcart. The "ones who eat well" are described as dressing well, having goats or chickens, and eating three meals per day, including foods such as rice, meat, fresh fish, buns, and tea and sugar. Lastly, the "poor" are those who work for others, eat vegetables without cooking oil, eat twice per day, and

only have meat once per year. According to respondents, the “ones who eat well” category is the most common. The leadership structure is fairly typical, with headmen committee and a chief. According to FGD participants, neither community leaders nor church leaders talk about child feeding. Nutritional advice is provided at school and the clinic, however. Respondents indicated that they were often unable to follow the advice given by the school or clinic due to a lack of money.

Figure 8. Social Map of a Section of Kaluluzi Village

Intala Communities and Households

Kaluluzi village is located in Intala ward, Mbala, not far from the Tanzanian border. The village leadership structure includes a headman, community leaders, and church leaders. Water sources include streams and wells, and several of the wells (including the one by Kaluluzi Basic School) are treated with chemicals. Farmland is located around the outskirts of Kaluluzi, with smaller plots located within the village. The most common crops are groundnuts, maize, and beans. There is a clinic approximately two kilometres from Kaluluzi. Information on child feeding and nutrition is offered at both the clinic and the school, but a number of FGD participants said they were unable to follow the nutrition advice they were given because they do not have the funds to purchase the recommended ingredients.

> The Simotuwe are a five-member household in Kaluluzi village, Intala ward. Elizabeth (29) resides with her husband (32) and their three children in a brick-walled house with mud floors and a thatched roof. Their youngest child is one year old. Elizabeth and her husband have two plots of land (two acres each) that they cultivate, although technically only one plot belongs to them

(the other plot belongs to Elizabeth's father). They primarily cultivate and sell beans. Elizabeth and her husband both have side businesses as well: Elizabeth runs a small restaurant where she sells bread and tea, and her husband makes and sells charcoal (with assistance from others, as he is disabled).

The Sinkala are a seven-person household in Kaluluzi village, consisting of Ruth (37), her husband (37), and their five children. The youngest child is a three-month-old girl. Their home has brick walls, a mud floor, and a thatched roof. Ruth grows tomatoes and sells them within the village, and her husband has primary responsibility for farming their two-acre plot, which is about a one-hour walk from their homestead. The plot was given to Ruth's husband by his father, and they use it to grow beans, maize, groundnuts, and millet.

The Simfukwe live in a three-member household located in Kaluluzi village. The caregiver, Grace, lives with her husband and their one-year-old daughter. Grace is 17 years old and her husband is 22. Their home has brick walls plastered with mud, mud floors, and a grass thatched roof. Grace's husband participates in his father's business, which involves transporting cattle from Tanzania to Mbala. Grace buys and sells sugarcane and vegetables, and both she and her husband also farm. Their two-acre field is about a one-hour walk from the homestead and was inherited from Grace's father in-law when he died. They plant maize and beans (primarily for consumption) and have limited harvests owing to their lack of fertiliser.

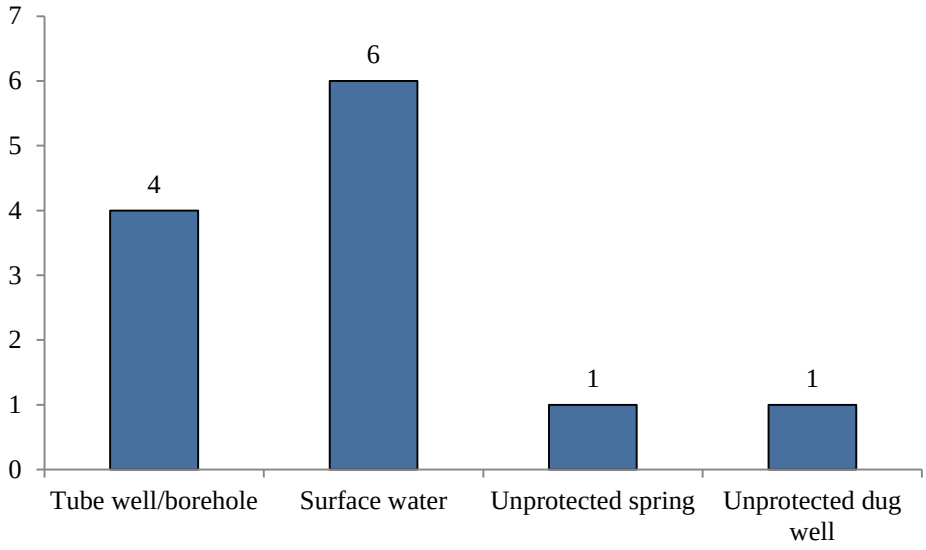
3.5. Water and Sanitation Practices

Access to clean water and proper sanitation practices are directly correlated with improved child health (Fink et al., 2011). In particular, improved sanitation reduces child mortality, lowers the risk of childhood diarrhoea, and lowers the risk of mild or severe stunting. Access to clean water has been found to reduce the risk of childhood diarrhoea and mild or severe stunting (Fink et al., 2011). In an effort to learn more about the water and sanitation practices in the communities visited for this study, FES interviewees were asked specific questions about their water and sanitation practices, the findings from which are discussed (and presented graphically, where appropriate) below.

Water

The most common source of drinking water among FES interviewees was surface water (from a river, dam, lake, pond, stream, canal, or irrigation channel), followed by a tube well or borehole (see Figure 9). One half (six) of the interviewees indicated that they treat their water while the remaining six said they do not. The two most common treatment methods reported were boiling the water and adding bleach or chlorine.

Figure 9. Source of Drinking Water

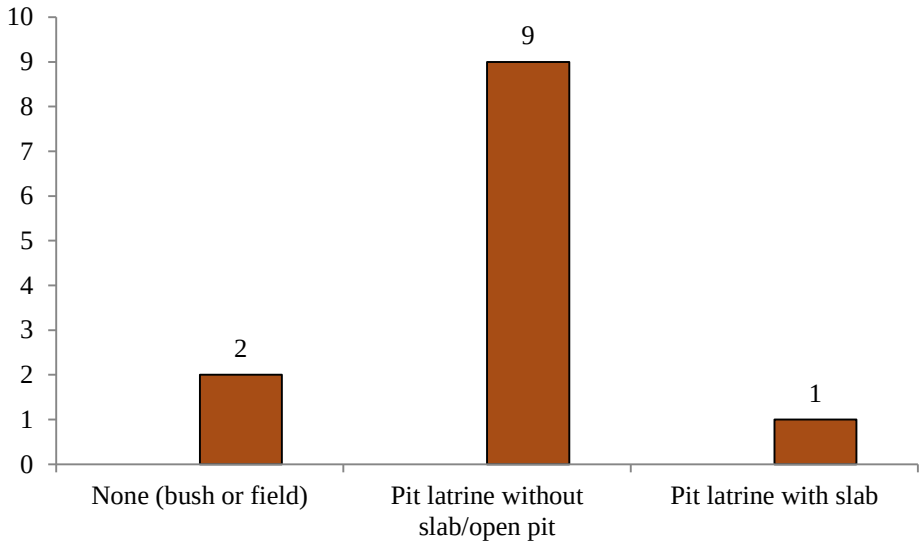


It is important to note, however, that surface water was a significantly less common source of water for respondents in Chipata, with only one respondent indicating that surface water was her household's primary source of drinking water. This is in contrast to Mbala, where all but one of the FES respondents indicated that surface water was their primary source of drinking water. Fetching water appears to be a predominantly female task, with all FES respondents (female caregivers) indicating that either they themselves fetch water or that they assign a female child to do so. When asked how long it takes to fetch water, responses ranged from 2 minutes to 60 minutes, with an average of approximately 21 minutes.

Sanitation

The most common type of toilet facility was an open pit latrine without a slab (nine households), followed by no toilet (bush or field) (two households), and a pit latrine with a slab (one household). The types of toilets used by FES households are presented in Figure 10.

Figure 10. Type of Toilet Facility



Of the 10 households using some type of toilet facility, three reported sharing it with other households or the public, while the other seven indicated that their toilet facility was not shared with anyone outside of their household. When asked how they disposed of their youngest child's most recent stool, half (six) said they rinsed it into a toilet or latrine; one quarter (three) said they rinsed it on to an open area in the nearby bush; and one sixth (two) said they rinsed it into a nearby stream. One respondent said she left it in the open.

4. Feeding and Dietary Practices

This section explores feeding and dietary practices in the local communities visited in Chipata and Mbala, specifically in relation to the core research questions driving the RQA:

- What diets are considered appropriate for infants and young children, pregnant women, and mothers?
- What degree of access do families have to food?
- What are the social and cultural drivers of child-feeding practices and behaviours?
- What constraints do families face in obtaining nutritious foods, including economic, environmental, social, cultural, and physical constraints?
- Do people have the means to overcome these barriers?

4.1. Appropriate Diets for Young Children and Pregnant Women

Both FGD participants and FES respondents were asked specific questions about what they believed to be appropriate diets for young children and pregnant women. This included an exercise using food cards (index cards with pictures of common local vegetables, meats, and starches), in which respondents were asked to use three food cards to "build" two "most nutritious" meals for a child older than six months, as well as one nutritious meal for a pregnant woman.

Figure 11. FES Interviewee in Chipata Using Food Cards to Construct Nutritious Meals

The food cards generated discussions around the reasons for selecting certain foods and shed light on local perceptions of nutritious foods and meals. Key results from this exercise (done in FGDs and FES interviews) and the 24-hour recall exercise (which was carried out with FES respondents; see below), included the following:

- Caregivers had some knowledge about the nutritional value of common foods.
- Caregivers reported receiving advice from clinics that suggested feeding young children between two and five meals per day.
- The most commonly mentioned vegetable for children's meals was rape. The most commonly cited protein source was fish in Mbala and beans in Chipata. Interestingly, rice was a popular choice, perhaps because it is said to make children happy and is seen as a treat.
- Only one vitamin (vitamin A) was mentioned specifically (as occurring in pumpkin).
- Most respondents included a protein source in both children's meals. Much lower numbers included a vegetable in both meals, and varying numbers of FGD and FES respondents included starches in both meals.
- A number of food-related beliefs exist in both study wards, concerning both children's and pregnant women's diets.
- There is a good understanding of the relationship between pregnant women's diets and proper foetal development.
- Knowledge of dietary diversity for pregnant women was similar to the results obtained from caregivers of complementary feeders.
- Caregivers of complementary feeding children reported feeding their children two to three meals in the recall period, usually beginning with porridge, and then moving to nshima and vegetable relish combinations. Smaller numbers of caregivers reported adding eggs, meat, or fish to a meal.[10]
- Breastfeeding was reported to be responsive, though not always exclusive.

Young Children

Overall, caregivers were fairly knowledgeable about the nutritional value of different types of food. Opinions on the number of meals children should eat per day varied, but all responses were between two and five meals per day (some informants mentioned being given this guidance at the local clinic). A wide range of foods were suggested to be nutritious for young children during FES interviews and FGDs, but the food card exercise did reveal certain patterns. For example, the most commonly mentioned vegetable source for children was rape. The most commonly mentioned protein source for children was fish in Mbala and beans in Chipata. The most common starch included in children's meals was rice, followed closely by nshima. A number of FES and FGD informants in Chipata and Mbala commented that both rice and nshima are important foods for young children because they provide energy. Foods that were thought to contain vitamins included: rape, pumpkin and pumpkin leaves, cabbage, cassava leaves, groundnuts, bambara nuts, milk, beans, meat, fish,

[10] *Nshima* is the Nyanja word for the mealie meal preparation found all over Zambia.

and bread. Only one vitamin was mentioned specifically, however: “Pumpkins are a source of vitamin A” (FGD respondent, Chibale village, Nsingo ward).

In terms of dietary diversity, the majority of FES interviewees (10 of 12) and focus groups (seven of eight) included a protein in both children’s meals. Significantly fewer (6 of 12 FES interviewees and three of eight focus groups) included a vegetable in both children’s meals. Finally, less than half (5 of 12) FES interviewees included a starch in both children’s meals, while seven of eight focus groups included a starch in both meals. Half of all respondents included two food groups; 45 percent included three food groups; and only five percent included one food group. As such, there seems to be some understanding of the importance of dietary diversity, although it was not raised specifically in any FES interviews or FGDs.

A number of conceptions related to specific foods and their health benefits or detriments to young children were raised during FES interviews and FGDs. For example, it was suggested that fish causes diarrhoea in very young children and milk increases blood levels in the body, and that only rice with relish (as opposed to plain rice) has nutritional value for young children. Multiple respondents (from both Chipata and Mbala) indicated that eating rice, specifically, makes children happy. A mother from Kalima village, for example, commented: “I would give children rice because I want them to be happy. They become very happy when they are eating rice” (caregiver, Kalima village, Nthope ward). This sentiment was echoed by a number of other mothers as well.

Pregnant Women

The majority of respondents demonstrated knowledge of the importance of pregnant women’s diets to the health of their unborn children. Many informants suggested that pregnant women should eat more (both in terms of frequency and volume) than other adults: “The pregnant woman has to eat in between short periods of time so that the baby inside her also eats and benefits from the same food…she used to eat about five times a day and hunger used to drive her to eat a lot” (FES respondent, Panjilayamanda village, Nsingo ward). Others, however, indicated that two to three meals per day were sufficient for pregnant women. The food group exercise also revealed patterns in the perceptions of nutritious foods for pregnant women. In Mbala, meat or chicken was the most commonly mentioned protein for pregnant women. In Chipata, fish and groundnuts were mentioned equally as the most common protein for pregnant women. Rape was the most common vegetable mentioned for pregnant women in both Mbala and Chipata, and nshima was the most common starch mentioned for pregnant women in both districts.

In terms of dietary diversity for pregnant women, 9 of the 12 FES interviewees and all eight focus groups included a protein in the pregnant woman’s meal they constructed during the food card exercise. All respondents included a vegetable in the pregnant woman’s meal, confirming what was commonly mentioned about vegetables being important for pregnant women. Thirteen (6 of 12 individual interviews; seven of eight focus groups) included a starch in the pregnant woman’s meal. Fifty-five percent of all respondents included two food groups; 40 percent included three food groups; and only five percent included one food group.

Similar to perceptions about appropriate foods for young children, a number of women suggested that certain foods were beneficial or detrimental to pregnant women. Pumpkin leaves, for example, were thought to be good for blood production and preventing nausea. Cabbage was considered good for breastfeeding women because it is believed to help breast milk production. A number of women suggested the numerous benefits of fish for pregnant women. To this end, one focus group participant stated: "Fish provides vitamins. The unborn baby grows well when the mother is eating fish. It also contributes to strong bones. It gives appetite to pregnant women" (caregiver, Kaluluzi village, Intala ward). On the other hand, women from Kaluluzi village commented that pork and eggs should be avoided by pregnant women: "Pork must not be eaten by pregnant women because the pig has a lot of diseases and may lead to the child also getting sick of the same diseases. Most of us do follow these instructions. The eggs make one to have a baby without hair" (FGD respondent, Kaluluzi village, Intala ward).

4.2. Current Practices: 24-Hour Recall Exercise

This section explores current practices related to foods eaten and breastfeeding. As part of the FES interviews, women were asked to recall the last 24-hour period and describe their feeding activities (including breastfeeding).

Breastfeeding

All twelve women that we spoke with indicated that they were still breastfeeding, and eight women reported breastfeeding their youngest child upon waking. The average number of times women breastfed during the 24-hour recall period was approximately nine, with a range from 5 to 20. Only one of the four mothers of children aged between zero and six months (the mother who reported breastfeeding 20 times during the recall period) recalled exclusively breastfeeding her child over the 24-hour period. The other women all combined breastfeeding with solid foods.

Child Feeding

Most of the women recalled feeding the youngest child two to three meals over the course of the 24-hour recall period. The most common first meal was porridge prepared with maize meal and some combination of sugar, salt, and pounded groundnuts. Water was the most frequently reported drink accompanying the first meal. For the second meal, nshima and vegetables (cabbage, pumpkin leaves, beans, and/or rape) was reported most frequently. Women mostly recalled preparing the nshima and vegetables with cooking oil, tomatoes, and salt, but a few women also reported adding eggs. Again, water was the most common drink reported to accompany the index child's second meal of the day. The third meal did not differ very much from the second meal, according to most women, with the exception of two women who added either meat or *kapenta* (fish) to the nshima and vegetables. The third child meal was also served most frequently with water.

4.3. Access to Food

Access to food was examined in three dimensions: where it comes from, the quantities available, and how easy or difficult it is to obtain. These three elements are key determinants of what foods are fed to young children and pregnant women and

are thus a critical area of focus in our study. Important results in this section include the following:

- Many food items are available locally, in gardens, or are available for purchase from nearby shops.
- Items typically bought in shops include bread, rice, and cooking oil, although obviously there are financial constraints on these purchases.
- In both districts, meat is available when local animal owners slaughter, or when sellers pass through the community. Bush meat is also sometimes available.
- Garden produce is subject to seasonal availability (produce is more available in the rainy season and less so in the dry period).

Where Food Comes From

In general, foods that are grown locally are readily available within the village, whereas all others have to be purchased in local towns or district capitals. Crops that are cultivated locally were typically referred to as being available right in the village, including vegetables such as rape, bondwe, pumpkins, and cabbage (which are frequently grown in gardens). Maize is mostly cultivated in local fields and then taken to local mills to be processed into mealie meal.[11] Crops that are grown locally are also often available for purchase at the local shops: "Beans and groundnuts are cultivated, hence was easy to get but bought when they run out" (FES respondent, Panjilayamanda village). Milk is either sourced locally or purchased from shops nearby (factory-packaged milk). One woman from Tambala village indicated that if you do not have money, you might go several months without drinking any milk. Cooking oil and rice also have to be sourced locally or purchased in town, although almost all respondents reporting buying rice, with the exception of one respondent (whose mother cultivated it). Bread, too, comes solely from shops in town. However, bread appears to be less available in Mbala than it is in Chipata—a number of respondents in Chinyika and Intala wards reported having to travel all the way to Mbala town (as opposed to their local shops) to purchase bread. In terms of meat, respondents from both districts reported that chickens, goats, pigs, and cattle were typically available for slaughter and purchase within the village. Aside from purchasing meat directly from another household or at the local shops, mobile meat sellers exist in some villages: "When we eat meat, we have to buy from people who come to sell on bicycles. Mostly they sell pork and goat meat." Bush meat is also sold in villages by those who hunt."

Availability: Quantities and Ease of Obtaining Food

Maize and its by-products are typically available in large quantities year round. Greater quantities of vegetables are available during the rainy reason than the dry season (and thus vegetable consumption is higher during the rainy season), according to many respondents. Meat and fish are not typically available in large quantities, unless one has a lot of money. Maize and its by-products seem to be widely available in the areas visited for this study. While many respondents maintained that vegetables such as rape, cabbage, and pumpkin were readily available, others indicated that

[11] Mealie meal is course flour made from maize.

vegetables were sometimes difficult to obtain, especially during the dry season or for households without access to a garden. To this end, one FGD respondent stated: "Bondwe is not hard to get during the rainy season because it is a seasonal vegetable. We eat it every day during the rainy season. During the dry season, only those with gardens have bondwe" (caregiver, Chikunta village, Chinyika ward). General sentiments were that food is more readily available during the rainy season. In Chikunta, for example, one respondent said that food is easy to find from June to November but is quite scarce from November to January. Women from Panjilayamanda alluded to the same concept, albeit with a different timeframe for the dry season.

4.4. Constraints and Barriers

This section explores the environmental, financial, social, and cultural constraints households face when attempting to secure food, as well as households' ability to overcome these barriers. These issues are important to understand in the context of a nutrition-related programme, such as the MCDP, because they may either facilitate or inhibit the successful uptake of programme interventions that specifically recommend dietary diversification and/or increasing meal frequency, both of which are desired outcomes in the MCDP theory of change. Key findings include the following:

- Respondents identified two main environmental constraints in both districts: water scarcity and poor soil. Insect pests and animals were also mentioned.
- Finances placed serious constraints on access to foods, particularly items that must be purchased at stores, such as meat, fish, and milk. Money is also required to pay for maize milling.
- Social challenges mentioned by women included the inability to own land themselves, and the fact that men's irresponsible behaviour—especially in relation to alcohol—compromised their access to nutritious foods for their families. Women pointed out that they ended up doing the bulk of the farm work. It was also noted that polygamy could lead to nutrition problems because men tended to favour their youngest wives.
- A range of cultural constraints, focusing on permitted activities during menstruation and food taboos, were mentioned in all study wards.
- Financial coping strategies mentioned included piecework, distress sales of assets, and increase in crop diversity and yield with the aim of selling produce.

Environmental

The key environmental challenges identified by respondents in both Chipata and Mbala were water scarcity and soil infertility. In particular, respondents in Chipata said that vegetable growth could be compromised by a lack of water, and that there was no irrigation system in place to prevent vegetables from drying up. In Mbala, several respondents mentioned that the soil was not fertile enough for crops to thrive. Several other environmental concerns were raised, such as the need for pesticides to grow certain crops (such as rape) and trouble with animals eating vegetables from the garden, but these were not mentioned with the same frequency as water scarcity and soil infertility.

Financial

Respondents in this study regularly reported that they lacked the funds necessary to purchase food: “When we don’t have money (as is usually the case), consumption of some foods is greatly limited” (FES respondent, Panjilayamanda village). A number of respondents indicated that foods that have to be purchased (such as meat, fish, or milk) are often difficult to obtain due to a lack of funds. In Chipata, for example, one respondent said that it can take up to two months to “find” meat because they do not have enough money to buy meat when the meat sellers come to the village. A woman in Chipata also reported that most households have neither a cow nor enough money to purchase milk. Some households exchange maize for meat, but this can put them at risk of running out of maize. In Mbala, the financial difficulty associated with obtaining fish was mentioned repeatedly: “Money is the hindrance to consumption of some foods like fresh fish. Given the money, we could travel to Mbala or Mpulungu to buy fresh fish” (caregiver, Chikunta village, Chinyika ward). A second financial obstacle that was mentioned frequently (particularly in Chipata) was the need to find money to pay for maize milling.

Social

In both Chipata and Mbala, a number of women indicated that the inability to own their own land and their husbands’ irresponsible behaviour directly compromised their access to nutritious foods for their families. Male alcohol consumption, in particular, was an obstacle mentioned by many women. During an FGD in Tambala village, for example, one woman stated: “Most men in this village, including those with families, are irresponsible and bad hearted. They tend to leave the women to do most of the farm work while they walk about in the villages. They are so selfish, even when they have money and are asked to buy relish for the family they refuse. They don’t even care about their own children. We do most of the farm work but when money comes from the sales of the crops, they grab and keep it to themselves” (caregiver, Tambala village, Nthope ward). A similar statement was made by a woman in an FGD in Kaluluzi village: “Most men in this village only think of drinking alcohol and tend to leave the farm work to their wives and children. It is therefore up to a wife to find ways and means of having a meal on the table. As a result, not enough food (maize) is obtained” (caregiver, Kaluluzi village, Intala ward). Women also pointed out that polygamy adversely affected their children’s nutrition because men typically give preferential treatment to their youngest wives, even if it means using money or harvest from an older wife: “Polygamy does affect child feeding and nutrition. The man is usually biased towards the second (younger) wife. If you try to oppose the actions of your husband, they can even beat you and even threaten to divorce you. When he (husband) sells the produce we cultivated together, he takes all the money to the second wife and will be eating by the younger wife” (caregiver, Kaluluzi village, Intala ward).

Cultural

There are certain cultural constraints related to women’s participation in farming. In Mbala, for example, women who are menstruating are not allowed to plant or even walk through farm fields. Menstruating women are believed to cause low yields if they participate in planting, and they put themselves in danger if they pass through fields while menstruating. In Panjilayamanda, women and children are restricted from

passing through certain areas belonging to the Paramount Chief Mpezeni, which inhibits their ability to fetch water. In both Chipata and Mbala, a number of taboos also exist around certain foods for young children. Pumpkin, specifically, is discouraged for young children. Older women seem to be the biggest perpetuators of the pumpkin taboo, and several of the younger women in Chibale indicated that they follow what they have been taught at the clinic (which includes feeding their babies pumpkin) as opposed to what older women in the village advise. Other food taboos include fish and certain meats, which are discouraged for young children.

Overcoming Constraints and Barriers

A lack of money was the primary constraint mentioned by informants. A number of coping strategies were suggested by respondents to deal with the lack of money, including selling livestock (if they had it), taking up piecework, and working on other farms in the community. Crop diversification was also mentioned as a means of overcoming a lack of funds: "If we can start growing more crops such as beans, cotton, and other crops so as to increase revenues from crop sales" (caregiver, Panjilayamanda village, Nsingo ward). In Kalima village, one woman mentioned that growing vegetables during the dry season was another way to supplement an income shortfall: "Gardening during dry season, where a variety of vegetables can be grown, can help overcome the financial challenge. The water problem can be solved by drawing water from boreholes and using it to water the gardens" (caregiver, Kalima village, Nthope ward). Other women made similar comments, and growing additional or diversified crops was the most commonly referenced solution to financial difficulties.

Several women in FES interviews and FGDs suggested that certain foods are substituted for others when they are unavailable. For example, in Chikunta village, women reported that when they run out of rape or another fresh vegetable, they resort to dried vegetables such as bean leaves, bambara nut leaves, or *nyangu* (a type of mushroom). Similarly, several women reported that pounded groundnuts could be substituted for cooking oil. A few women mentioned the existence of cooperatives in nearby villages, but opinions were mixed on whether they actually benefitted women or not. On the one hand, women from Kaluluzi village reported that women's cooperatives were difficult to join because they were always full, and one woman reported that the cooperative squandered her money. However, another woman from Kaluluzi commented: "In other villages, women have formed cooperatives and were given goats, cattle, ploughs, and other implements in order to empower them" (caregiver, Kaluluzi village, Intala ward).

4.5. Social and Cultural Drivers

This section explores the social and cultural drivers of feeding practices in the communities visited for our study, including how decisions are made generally, how food and breastfeeding-related decisions are made specifically, and what (if any) rules exist regarding the foods pregnant women should or should not eat. These findings (for example, the decision-making power men hold) will influence the uptake of and responses to the MCDP.

Key findings include the following:

- Men are the principal decision makers in communities and households participating in this study, especially when the decisions are important (such as the sale of livestock). While some consensus decision making was reported, as well as some independent decision making by women, these were minority cases.
- Men exert some control over what is eaten by virtue of controlling what crops are grown. In some cases, women are given money by their husbands in order to buy food. Men are especially involved in food-related decision making when this involves buying meat.
- Clinics influence both breastfeeding and child-feeding decisions. While women make many of the decisions around breastfeeding, men may try to decide when children are weaned because of their desire to have more children.
- Pregnant women tend to make their own decisions about what to eat.
- Local leaders do not generally offer any kind of nutrition or child-feeding advice, although church leaders may indeed do so.

Household Decisions

Overwhelmingly, men are perceived as the decision makers in the communities and households we visited for this study. Big decisions, such as the sale of livestock, are almost always made by men, suggesting that male buy-in will be critical to the success of the MCDP. In some cases, women are involved in the decision making process: "In some homes, decisions are made by consensus between the wife and the husband" (caregiver, Kaluluzi village, Intala ward). A few women suggested that smaller decisions (for example, when to sell a chicken or take maize to the mill for grinding) were sometimes made independently by women, but the majority responded that men were the ultimate decision makers. Typically, relatives living in other homesteads do not weigh in on internal household decisions. As one woman from Luchembe stated: "No, our relatives do not come and make decisions in our home. My mother in-law does not interfere" (caregiver, Luchembe village, Chinyika ward).

One woman from Kaluluzi village commented on the evolution of decision making over time, indicating that at no stage of life are women empowered to make their own decisions: "If you are married, the husband makes most of the decisions in a home. If not married, parents (mother or father) make the decisions. It is funny how men change after marriage. Before marriage, men would be so nice and sweet and as a couple rules and decisions are made together. But after having a first child, men tend to change, they break promises made and start doing things that they said they would not do" (caregiver, Kaluluzi village, Intala ward). Thus, according to this respondent, even if women share in decision making early on in a marriage, this typically does not endure.

Decisions on Family Foods

As the primary decision maker in most homes, men often control the foods that are eaten by the family and the crops that are grown in the garden or field. As one woman from Luchembe village indicated: "[My husband] makes decisions on foods to be

eaten by the whole family. I follow what he has already decided to do, since he is the man of the house" (caregiver, Luchembe village, Chinyika ward). Women are, however, frequently consulted on farming-related matters (such as which seeds to grow) or on how to find specific foods, if not on what foods to purchase or prepare. In other cases, women were given money by their husband and allowed to decide what foods to buy and cook. Several women even referred to food and cooking as their "domain," such as the FES respondent in Chipata who said: "On what to eat in the home, it is us women who decide. Women make decisions of what to eat in the home, especially if they are vegetables to be eaten. The husband gets involved, and even takes part in the buying, if it is meat that is to be eaten in the home as he may have the money to buy" (caregiver, Tambala village, Nthope ward). Thus, while women seem to be given some latitude with regards to what they cook, the men are still somewhat involved, and they are certainly involved if money is to be spent on something like meat. One respondent also referenced the local clinic: "The clinic also decides as they tell us what to eat and we tell our husbands to buy" (caregiver, Kalima village, Nthope ward).

Decisions on Breastfeeding

Most respondents from both Mbala and Chipata indicated that decisions related to breastfeeding were made by the mothers themselves. Some women, such as this one from Luchembe village, reported that their husbands are also involved in breastfeeding decisions: "I make decisions about breastfeeding my baby. But my husband also decides on the matter, but I am the main decision maker" (caregiver, Luchembe village, Chinyika ward). Women from the FGD held in Tambala also said that men weigh in on when to wean a child from breastfeeding, and that this decision is sometimes influenced by the man's desire to have more children (because breastfeeding is perceived to impact a woman's ability to become pregnant again). A number of women referenced clinics and clinic personnel, saying that the decision to breastfeed, the duration of breastfeeding, and the incorporation of solid foods into young children's diets were influenced heavily by what women are told at the clinic.

Decisions on Foods Eaten by Young Children

Similar to breastfeeding, most women from Mbala and Chipata reported that mothers were primarily responsible for decisions about what their children eat. Women often do get input, however, from their husbands, the local clinic, relatives, or occasionally village elders. For example, women's mothers or mothers-in-law may offer advice, but the actual decision making power rests with the child's mother. With regard to the local clinic, a woman from Panjilayamanda said: "I make most decisions on foods given to the baby. But this is in close consultation with the health personnel at the clinic" (caregiver, Panjilayamanda village, Nsingo ward). This type of response was quite common among the female participants in our study. One woman from Kalima village also referenced village elders, reporting: "Decisions regarding foods to give the child come from village elders, especially during early days, after birth. As time goes by, I decide what to feed the child myself" (caregiver, Kalima village, Nthope ward). This was not the norm, however, and most women indicated that local leaders did not partake in or challenge decisions made by women on what to feed their young children.

Decisions on Pregnant Women's Diets

Women in Chipata and Mbala mostly reported deciding for themselves what to eat when pregnant, although several recalled getting advice from relatives or the local clinic as well. Notably, quite a number of superstitions exist related to specific foods and their alleged impact on pregnant women. For example, eating day-old nshima is believed to make a woman defecate while giving birth; eating eggs is believed to cause a child to be born without hair; and eating a pumpkin grown facing downward is believed to cause a baby to be born breech. Women also perceive certain rules about foods to avoid as prescribed by the local clinic. In Kaluluzi village, for example, an FGD respondent stated: "At the clinic, they teach us that pregnant women and children must not be eating cassava nshima because it makes the belly to get swollen. Pork must not be eaten by pregnant women because the pig has a lot of diseases and may lead to the child also getting sick of the same diseases. Most of us do follow these instructions" (caregiver, Kaluluzi village, Intala ward). Husbands were not referenced often in discussions surrounding pregnant women's diets, although in one case an FGD participant from Chikunta village indicated that sometimes husbands forbid their pregnant wives from consuming a particular food.

Respondents referenced many different foods that were thought to be healthy for pregnant women to eat, with few patterns as to the types of foods suggested. Many women (particularly in Mbala) referenced getting guidance from local clinics on what foods to eat while pregnant. Some women reported having trouble following the guidance from the clinics, however. In Chikunta village, for example, one woman commented: "At the clinic, they teach about what the pregnant woman should be eating but the situation changes at home" (caregiver, Chikunta village, Chinyika ward). Other women recalled being given advice by their families, such as eating more vegetables, and some women were given no advice at all on foods to eat while pregnant. Only one woman (from Kaluluzi) mentioned getting advice or instruction from local leaders but maintained that this was not the norm: "Decisions on foods to be eaten by pregnant women are sometimes made by the elders. But we normally make these decisions ourselves" (caregiver, Kaluluzi village, Intala ward).

Local Leaders

Understanding what influence (if any) local leadership structures have on health and nutrition practices provides important background information for any nutrition-related programme. Local leadership structures in the areas visited typically consisted of chiefs, headmen, village committees, elders, and church leaders (see Section 3 for village-level leadership details). Local leaders do not typically offer advice on child feeding or nutrition. A chief may encourage hard work and cultivation to produce more food but will not issue directives related to specific foods for specific individuals. Dietary information is provided at the clinic, as opposed to within the village, according to a respondent from Panjilayamanda: "Lessons on child nutrition and health are mostly made at the clinic, not here in the village. Leaders have never done that to anyone" (caregiver, Panjilayamanda village, Nsingo ward). However, local leaders do weigh in on sanitation-related issues. For example, a respondent from Kaluluzi indicated: "The leaders instruct us to dig a rubbish pit and construct the toilet" (caregiver, Kaluluzi village, Intala ward).

Churches, on the other hand, seem to offer more guidance on what foods should be consumed and by whom. For example, an FES respondent from Panjilayamanda indicated that the Seventh Day Adventist church prohibits consumption of rabbits, dove meat, pork, and *Mulamba* (bubble fish) and that these rules are adhered to. Several other women recalled that their churches or church groups had offered guidance on what to eat while pregnant and what to feed their young children. In Chikunta village, an FGD respondent reported: "Religious leaders sometimes teach us about child feeding when we meet in meetings. They tell us to always feed our children with a balanced diet. They also tell us to feed the children before going to church. When they notice that the child is not growing very well, these leaders advise us to feed the child in accordance with the teachings at the clinic" (caregiver, Chikunta village, Chinyika ward).

These are encouraging findings as the MCDP moves toward rollout because they indicate that the programme will not be starting with a blank slate in terms of nutrition knowledge. Perhaps from exposure to previous interventions, women already have a base of knowledge (however imperfect) about good nutrition practices, which can be built upon and strengthened as part of MCDP activities. However, access issues remain serious, because while a fairly diverse range of foodstuffs is available, it is not always accessible (as a result of both seasonal and financial constraints). This raises the issue of nutrition-sensitive agriculture initiatives, which could be a particularly valuable part of the MCDP, or at least a useful linkage. Finally, we note that it will be important to increase male buy-in on nutrition issues. Men should be playing a more positive role in increasing food security and dietary diversity within their households by supporting women in their work and responsibilities, shouldering a greater workload themselves, and reducing antisocial behaviour (such as excessive alcohol consumption).

5. Work and Time Allocation

The amount of time and work allocated to key domestic tasks related to child feeding is an important issue for nutrition- and nutrition-sensitive interventions aimed at improving maternal, infant, and young child feeding practices, particularly because the promotion of nutrition behaviour change (which hinges on embracing a range of best practices in child feeding) often makes demands on caregivers of young children. These demands may be new, unfamiliar, and challenging in a context where the burden of domestic work borne by women is already very high.[12] In this section, we address the issue of caregiver time and work allocation across five domains that are critical to maternal, infant, and young child feeding: procuring food, water, and fuel; preparing food; and feeding children. These topics were addressed in both focus group discussions and individual caregiver interviews by asking caregivers to discuss and explain the time they spent on each activity—an approach known as activity-specific recall. Caregivers were also asked a series of questions about workload, with a focus on the different roles they assume and whether they regularly receive help carrying out these tasks.

Success with activity-specific recall depends on field researchers being carefully trained to elicit discussion around the topic in question, and to compare and triangulate among informants and responses. Focus group discussions—in which multiple participants have the opportunity to discuss and respond to questions about how much time they allocate to various activities—are an ideal context for this method. Recall approaches can be contrasted with direct observation methods of time allocation. While the latter approach may produce more robust quantitative results, it requires researchers to spend sufficient time in the research context to a) ensure that multiple observations are taken at different times, and b) achieve a degree of "invisibility," so that research subjects do not adjust their normal time allocation patterns for strategic or other reasons. Direct observation is also a notoriously intrusive data collection approach that can make informants uncomfortable. For these reasons, we opted for a simpler recall approach in this rapid assessment, combined with discussion of the topics and reasons for time allocations.

Overall, results across the five domains suggest that women bear a very heavy burden of work, from procuring food, water, and fuel to cooking and feeding tasks. Note that we do not imply here that men's livelihood burdens are necessarily less onerous, particularly as tasks involving heavier work or greater distances tend to be done by men. What we do suggest, however, is that in key areas where women must perform tasks broadly related to household consumption of food and water, the workload is substantial and relentless. This certainly has implications for the rollout of interventions and recommendations that may make additional demands on women's time and energy, such as attending clinics more frequently, cooking fresh food more often, or increasing the range of available foods in order to enhance dietary diversity.

[12] Ellen Messer (1989) notes: "The appeal to health and nutrition planners to pay more attention to the value of women's time in planning their programs and evaluating the reasons for low participation rates is customary in the anthropological literature." In fact, Zambia is the site of some of the earliest work in nutritional anthropology—Audrey Richards' pioneering 1939 study of diet, land, and work in Bemba society.

5.1. Procuring Food

> *I am the one who looks for relish. A lot of time is spent, especially when obtaining relish that is either not produced by the household or that is seasonal. I spend approximately two hours looking for such relish. It is my responsible to obtain relish for my household. I don't get any help when it comes to obtaining relish (caregiver, Nsingo ward, Chipata).*

The communities included in this study are all highly dependent on small-scale agriculture—the principal livelihoods strategy throughout rural Zambia—to meet their food needs. Agricultural work (which is done by men, women, and children) thus constitutes a significant portion of the overall daily work burden, in both the Chipata and Mbala district communities. With some seasonal variation, the agricultural day begins at dawn. Women and men travel to their farms (the distance to which is highly variable) and work until mid-morning. Typically, they then return home, where women prepare a midday meal. After lunch, the women and men return to the fields for a second session, which lasts until late afternoon. During harvest season, families (including children) will spend whole days on their farms, harvesting maize for storage and, in some cases, sale.

Key findings from this line of enquiry relate to maize and its transformation, via processing, into mealie meal (and, to a lesser degree, cassava processing in Mbala), as well as the acquisition of ingredients for the accompanying relish:

- Producing mealie meal involves the cultivation of maize (done by men and women); harvesting (done by families); hulling (done by women); and finally milling. In Chipata, men are responsible for milling because the sacks of hulled maize must be transported to hammer mills, which are far from both the study wards. In contrast, milling is largely women's work in the Mbala wards because the mills are close to the communities. An interesting inference from these data is that women's workload increases in communities where hammer mills are close at hand, while men shoulder more of this burden in communities that are further from the mill.
- Ingredients for relish are either acquired from home gardens or purchased from itinerant vendors or markets.
- In general, gardens are not far away from any of the study communities, and respondents contrasted the relative ease of obtaining garden-grown relish ingredients with the more demanding maize processing regime.
- When finances permit, some vegetable and protein items can be purchased. If they are bought from itinerant vendors passing through the community, women can perform this transaction. However, purchasing from more remote markets is likely to be men's work because it involves travel.
- Some storage of food items occurs in both districts. Vegetables can be dried, and groundnuts and maize can be stockpiled. In Mbala, beans are a cash crop and are sometimes stored at home prior to marketing.

Maize

Maize is of paramount importance in the dietary repertoire, both in Chipata and in Mbala, although it is supplemented with cassava in the latter district. Once harvested,

it must be hulled, and women reported that hulling a 50-kilogram bag of maize takes approximately one and a half hours. Once hulled, the maize must be transported to the hammer mill, where it is ground into mealie meal. The time burden of this task varied by ward. In both of the Chipata wards (Nsingo and Nthope), respondents reported that the mill was far away. Nsingo's hammer mills are located at Mwami and Feni. Mwami is four hours away on foot or on a bicycle, and transportation by oxcart is slower and can require an overnight stay at the mill. Feni is even further away—a two-day return journey on foot or a day by car. On occasion, families come together to hire a vehicle from the chief's palace; at other times, families with access to oxcarts may agree to carry sacks of maize to the mill for friends. Children are also sometimes sent to accompany the maize to the mill. Nthope's hammer mill (at kwa Undi) is four hours away on foot or an hour away by bicycle. Residents of this ward also reported paying other people (in cash or kind) to transport their maize to the mill by bicycle or oxcart. Informants reported that queues for milling services can be long. In contrast, hammer mills are very accessible in both of the Mbala wards (Chinyika and Intala) and are just a few minutes away from the villages where we carried out research. (Indeed, Intala has three hammer mills and residents can choose which to use.) In these wards, the main factor that affects how long it takes to have a supply of maize milled is the length of the queue at the hammer mill.

It is worth noting an interesting difference in household labour allocation here. In Chipata, all respondents stated that transporting maize to and from the hammer mill was the work of men. In Mbala, however, female caregivers noted that maize was transported to the mill by women, sometimes with help from their husbands and children but sometimes without: "We, the women, are the ones who take the maize to the hammer mill for milling and are helped by our children, if you have some old enough. Our husbands do not help us in taking the maize to the hammer mill, neither do they help in buying of vegetables" (caregiver FGD, Chinyika ward, Mbala).[13]

In Mbala, cassava is also an important staple, though it is not as dominant as maize. The cassava that is cultivated is the "bitter" variety (*Manihot esculenta* spp.), characterised by its higher hydrocyanic acid content, which must be removed by processing. In Mbala, this detoxification is achieved by soaking the peeled cassava in water for five days, thus leeching out the toxin. The cassava is then dried in the sun, typically for a further two days, before being pounded into a meal. Cassava processing (including detoxification) is done by women.

Relish

Relish is, in effect, food that accompanies staples such as cassava or nshima. It usually refers to vegetable and protein items that complement the staple starch. In situations where relish includes purchased meat or fish, it is more expensive than the starch foods. Whether vegetables or protein, relish is eaten in smaller quantities than nshima or cassava.

[13] It is probable that this contrast in the sexual division of labour between Chipata and Mbala owes less to cultural differences between the Ngoni and Mambwe peoples, and more to the difference in the accessibility of hammer mills, coupled with a conception of "far" and "near" spaces as male and female domains, respectively. This produces a situation where visits to the hammer mill are men's work if it is far away and women's work if it is nearby.

In the wards where this study was carried out, the ingredients for relish are obtained either by purchasing them at the market or—in the case of cultivation—growing them in gardens. (The time allocation suggested below for gardening activities includes cultivation of "relish ingredients," such as vegetables). Residents of the Mbala communities also have some access to fish, which can be caught in the nearby lake.

In both study districts, vegetables grown in domestic gardens are obtained relatively quickly and easily (although one needs to factor in time spent on the processes required for cultivation). Caregivers made reference to spending between one and three hours per day obtaining vegetable foods from their gardens, although it should be noted that respondents may not systematically disaggregate harvesting vegetables from the garden from other agricultural activities (such as maize cultivation). Nonetheless, the point was made that obtaining vegetables for relish was less time-consuming than obtaining maize for mealie meal—an observation that presumably references the processing time needed for mealie meal production. In the study households, vegetables were also preserved by drying, and respondents noted that preparing vegetables dried in this way was particularly quick and easy.

Some vegetables (i.e., those not cultivated at home), legumes, meat, and fish are bought at markets outside the study villages or from itinerant vendors who travel from community to community selling food (although it should be noted that, for financial reasons, meat is rarely purchased). If purchasing from vendors, women buy the food and the process is reportedly quick. However, if a trip must be made to the market, this can be more time consuming (responses generally ranged from one to three hours, although it should be noted that respondents from Intala ward in Mbala reported that their market was only a few minutes away by foot).[14] Husbands and sometimes children make trips to the market, as noted by this respondent from Nthope ward in Chipata: "[We] buy beans at a place called 'Munukwa' [and] it is one-hour cycle. My husband goes to buy whatever we need, I remain home to do light chores. No one else helps us to obtain food" (caregiver, Nthope ward, Chipata). There was some variation across our study communities in distances to respondents' gardens: In Mbala, one respondent from Chinyika ward stated that her vegetable garden was very far away, but the majority of informants in both study districts reported having gardens that were not far away.

Mbala is renowned for its bean production and informants from that district noted that, for them, beans were accessible quickly because they are a cash crop and are kept in people's houses, ready for sale. Groundnuts are also stored at home, as is maize (prior to hulling). In cases where a family does not have a supply of cultivated beans stored at home, things can be much more difficult and one cannot always count on help from others, as this caregiver observed: "Obtaining beans takes a long time. It sometimes takes the whole day when we don't have it in the house. One has to go and buy from those that have [and] the process of finding someone who has is what takes long. Getting rape from the garden takes on average two hours. We don't help each other with such activities" (caregiver, Chinyika ward, Mbala). However, other caregivers reported receiving help, such as this woman from the same ward, who

[14] "We buy relish from the shops and market nearby, just there about two minutes. Only my husband helps me with obtaining relish" (caregiver, Intala, Mbala). "Getting relish at the market takes about 10 minutes" (FGD, Intala, Mbala).

observed that, in general, obtaining relish ingredients was not an onerous task for her: "I do these (cassava processing) activities alone most of the time but I do get help from other people from time to time, especially when pounding. Obtaining relish is quite easy, we grow most of the vegetables and getting them does not take much time, only for vegetables like cabbages do we take a bit of time, say an hour, to buy from the market" (caregiver, Chinyika ward, Mbala).

It is worth noting that no mention was made of hunting or fishing, which reflects the fact that these are male activities and our interviewees and focus group participants were female. As a result, discussion focused on the food acquisition activities in which women participated.

5.2. Obtaining Water

Fetching water appears to be a predominantly female task, with all FES respondents (female caregivers) indicating that either they themselves fetch water or that they assign a female child to do so. When asked how long it takes to fetch water, responses ranged from 2 minutes to 60 minutes, with an average of approximately 21 minutes.[15] Fetching times are illustrated in Figure 14. It is, however, very important to note that fetching water often includes a social dimension. It is not necessarily an act of walking to the source, filling a container, and returning; rather, it may include a period of social interaction at the water source. Focus group discussants in Chinyika ward, Mbala, also highlighted that women preferred to go to a more distant stream in order to combine the activity with clothes washing, and to avoid the more crowded borehole: "Fetching water takes us about three hours together with other things like washing, since we do it from the stream because at the borehole there are a lot of people in most cases" (FGD, Chinyika ward, Mbala).

As with fuel collection (which is discussed below), fetching water is a constant burden for women, both in terms of the time and energy expended, as well as the physical strain.

[15] Time estimates are for the return journey.

Figure 14: Time Taken to Obtain Water and Return Home

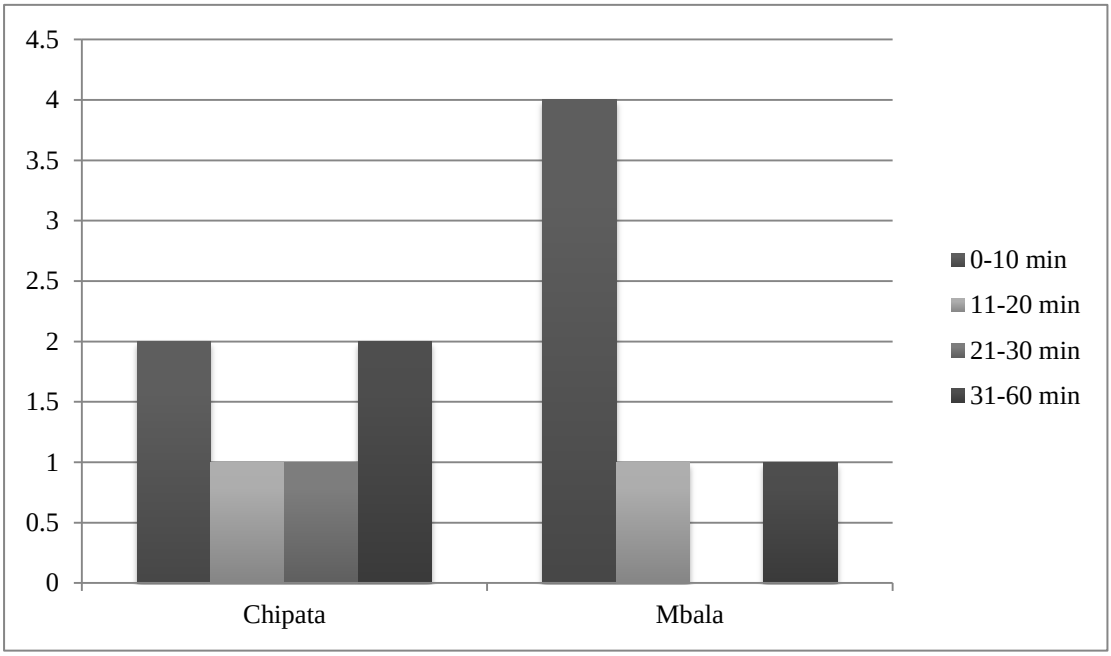
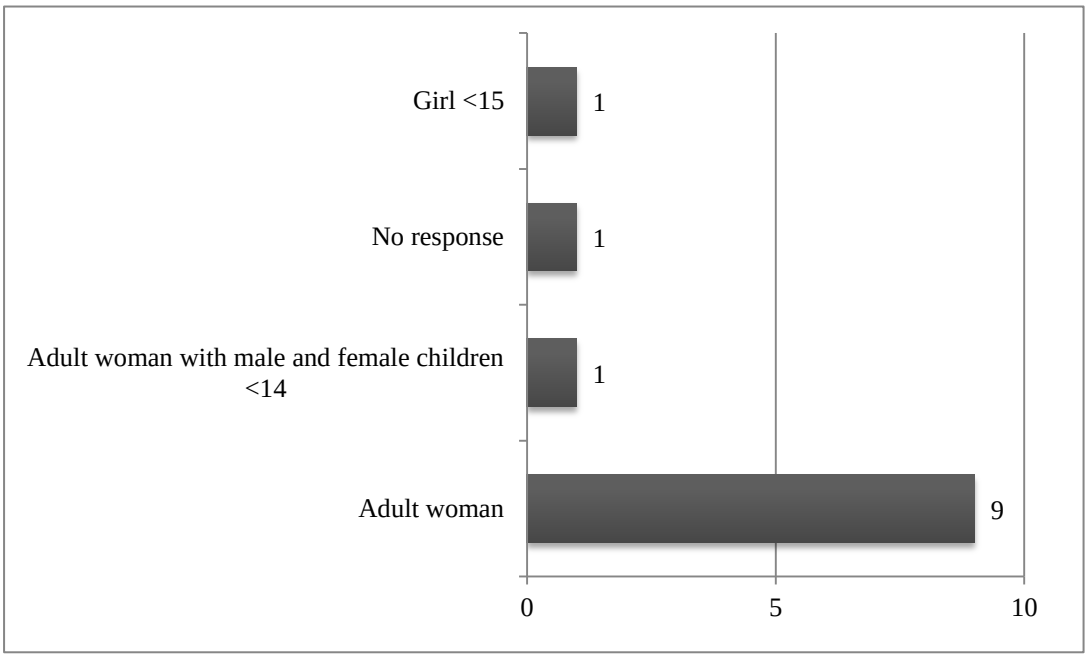


Figure 15. Who Fetches Water?



5.3. Collecting Fuel

The furthest forests can take two hours to collect firewood but usually we go the nearby forests. The frequency of collecting firewood [varies from] between two to three times per week. In this community, firewood collection is a woman's responsibility. And so we do most of the firewood collection. Only under special circumstances, like when a woman is sick, do men help with this activity (FGD, Nsingo ward, Chipata).

Fuel for cooking is a critical component of the daily household processes associated with feeding families, and obtaining it is an ongoing and recurrent task across all wards of our study sample. Two sources of fuel are used in the wards where research was carried out: wood and charcoal. Kerosene is not used, and no alternative technologies (such as solar power) have arrived in these communities. The burden of obtaining cooking fuel has particular implications for the health and wellbeing of women and children in the context of nutrition and health programming. It is costly—both in terms of time and energy—and potentially dangerous for children, who must either be carried or possibly left unsupervised. Carrying heavy loads of wood on the back also risks strain injuries.

Key findings in this section are as follows:

- In Chipata's Nsingo ward, no charcoal is used because of an edict imposed by the Paramount Chief. In this ward, firewood must be obtained from dead boughs and wood from farm clearing.
- The other Chipata study ward, Nthope, does not fall under this Chief's jurisdiction, and residents are therefore free to obtain fuel as they wish. This area is more deforested than Nsingo, and families either buy charcoal from vendors or women collect firewood (although this takes longer because they must go further afield).
- In the Mbala wards, respondents reported journeys of varying lengths to collect firewood. As in Nthope ward, people do have the option of buying charcoal from vendors, but the financial cost must be evaluated against the savings in time.
- In both Chipata and Mbala, firewood collection is, above all, women's work.

There is a current critical discourse focused on the widespread use of charcoal in Zambia, which is said to lead to environmental degradation on a variety of fronts, including indiscriminate deforestation in the country's already depleted woodlands and air pollution (see, for example, Kutsch et al., 2011). Perhaps responding to similar critiques, Ngoni Paramount Chief Mpezeni has issued a decree forbidding the felling of trees, particularly for charcoal production, anywhere in his domain. An exception is made for trees felled in the process of clearing land for farming; in such cases, the wood can be used for fuel but cannot be made into charcoal because Paramount Chief Mpezeni has also forbidden the burning of wood for charcoal. Persons found to be in violation of these decrees can be made to cultivate the Paramount Chief's lands, or may even be expelled from the area. The area covered by these bylaws extends to Nsingo ward in Chipata (but not Nthope). The research suggests that as a result of these policies, Nsingo households exclusively use collected firewood (dead boughs) and wood from farm clearing, unlike households in other wards.[16] Residents of Nsingo said that the firewood is "*nkuni zili pakono*" or "at one's door step" and noted that "this [the Paramount Chief's policy] is what makes the area have a lot of trees" (FGD, Nsingo ward, Chipata). The relative density and proximity of tree cover in Nsingo also helps to reduce the time and physical effort burden upon women, who do

[16] This information was communicated in interviews and focus groups in this ward. It is possible that some households were in violation of the rules and concealing their use of charcoal, but we did not observe this and no-one spoke of it. Certainly, the land around the Nsingo villages was much more densely wooded than any other area in which we conducted research.

most of the firewood collection. As one Nsingo caregiver noted: “Firewood collection does not consume much of time because the village is surrounded by big trees and bushes. On average, I take less than one hour to collect firewood that would normally last for two days. This firewood collection activity is my responsible and I do it myself. No one helps me with its collection” (caregiver, Nsingo ward, Chipata).

This last interview quotation flags another important point: Firewood collection in Nsingo is women’s work, with occasional assistance from children. Men, on the whole, do not perform this task. One Nsingo caregiver observed that her husband was unwilling to help with firewood collection because “he considered collecting firewood light work as the wood was near the homestead” (caregiver, Nsingo ward, Chipata). Similar observations were made in focus group discussions, where women reported that men helped with firewood collection only if the size of the boughs or the amounts of wood were large enough to require an oxcart (FGD, Nsingo ward, Chipata).

The lands of Nthope ward do not fall under the Paramount Chief’s decree, so respondents in this ward reported mixed fuel use. While most people used firewood, some households were using charcoal. Charcoal is purchased from sellers in the village and is therefore less time consuming to obtain (the trade-off being that it must be paid for). Most, though not all, respondents from this ward reported travelling greater distances to find firewood than was the case in Nsingo: “Collecting firewood takes a bit of time, approximately two hours to go the bush and come back. This is so because firewood is somehow scarce in this area. We get help mostly from our children and other people we keep in homes. Some time when you are not feeling well, a friend can help. This activity is mostly done by women and children. Charcoal is mostly bought from those that make but people here rarely use it” (FGD, Nthope ward, Chipata). Other respondents from this ward reported spending the whole morning gathering firewood. As in other study wards, collecting firewood is done primarily by women, with occasional assistance from children and little help from men, except when the load is particularly large.

In both of the Mbala wards where the study was conducted, respondents reported using a combination of firewood and charcoal. As in Nthope ward, Chipata, buying charcoal locally is a timesaver and for this reason is the preferred method for obtaining charcoal, although it costs money (prices cited included 10 kwacha for a 25 kilogram bag of charcoal, or 25 kwacha for a 50 kilogram bag).[17] Just one respondent reported that her husband made his own charcoal so she did not need to buy it. Caregivers reported a wide range of time and distance figures for firewood collection, ranging from very close (in the environs of the house) to a four-hour round trip. This excerpt from a focus group discussion in Intala ward exemplifies some of the key facts about fuel acquisition in Mbala: “Firewood and charcoal are the main sources of fuel for cooking here. Collecting firewood from the forests up in the hills takes about two to three hours. If bought within the village [charcoal], it takes only five minutes. We help each other with collecting firewood, especially when someone is sick. For charcoal, it is only money. When there is money, you can buy from the market within the village, though others prefer buying right at the source in the forests (from charcoal burners). Buying charcoal within the village is just five minutes, whereas

[17] “Charcoal is not difficult to find, the most important thing is money. Once you have money then nothing is impossible” (FGD, Chinyika ward, Mbala).

buying from the source may take a longer time because you may not find it there and then" (FGD, Intala ward, Mbala).

As in the Chipata wards, women undertake the bulk of firewood collection, with some help from children. Again, as in Chipata, women noted that when felling of trees was needed, men performed this task. Participants in a focus group discussion in Intala ward also reflected that husbands did not help with firewood collection because of the stigma attached to the task: "Sometimes our husbands do help us to fetch firewood. In most cases, husbands do not help for fear of being spotted as being under their wives' spell. Some husbands are just not helpful" (FGD, Intala ward, Mbala). In Mbala, caregivers also emphasised that although their husbands were not helpful in collecting firewood, they could count on assistance from friends and neighbours.

5.4. Preparing Food

> *We start cooking just when we get back from the fields around 10hrs. Cooking nshima takes us less than one hour. Cooking vegetables takes us a few minutes. When we put beans on the fire at six hours when going to the fields, it goes up to 12 hours for it to be ready to eat […] Our husbands do not help us in preparing meals, you find he may be sleeping waiting for you to cook. Once you call him to eat, he eats and leaves to go and visit with his friends. (FGD, Chinyika ward, Mbala).*

Preparing food for the family is considered to be women's work in all the wards in our study sample, although female caregivers did report receiving some help from children and, very occasionally, from their husbands, particularly when unwell or pregnant. While cooking is not in itself a physically demanding activity, it is a time-consuming chore that is carried out several times each day. As with the other chores and tasks undertaken as part of women's daily workload, cooking responsibilities and priorities reduce the amount of time women have to do other things. In the context of programme design, this means that recommendations that women attend clinic sessions, or spend extra time preparing fresh meals or obtaining a more diverse range of ingredients, must compete with the structure of women's social biography (in both Ngoni and Mambwe cultures), which dictates that adult women have primary responsibility for food preparation within the home.

Key findings in this section are as follows:

- In general, women perform the bulk of cooking work, although girls and preadolescent boys do provide some assistance, particularly with cleaning.
- A small number of instances of interhousehold cooperation emerged in focus group discussions.
- Cooking is usually done three times per day: in the early morning, at midday, and in the evening.
- The time commitment for cooking approximately doubles in the rainy season because of the difficulty of cooking with damp wood. This problem can be reduced by using charcoal, but this costs money.
- Acquiring vegetables takes longer in the rainy season because the vegetables must be collected from farms. In the dry season, households are more likely to purchase vegetables from local sellers.

While both boys and girls may help their mothers with kitchen activities, girls tend to do so more, and as the children grow older and themselves become gendered persons, this division becomes stronger: "It [helping in the kitchen] also depends on the age of the boy, the older they grow the less you can send them" (FGD, Intala ward, Mbala).[18] Children are most frequently said to help with washing plates and cooking wares. One focus group discussant stated that her mother-in-law lived nearby and sometimes helped her with cooking. While reports of interhousehold cooperation were not common, anecdotal cases emerged over the course of discussions. One focus group discussant from Chinyika ward offered an example of cooperation and solidarity among women from neighbouring households: "Doing these things (preparing food) alone would normally take two hours. If helped by other people, it takes one hour. We share the activities and do the cooking simultaneously on two fireplaces. This is during the dry season. During rainy season, the situation is different. For instance, if the cooking place (kitchen) is leaking, it takes a lot more time, approximately three hours. We help each other. When I find my friend preparing nshima and see that she is overwhelmed, I can easily help out with cutting vegetables" (FGD, Chinyika ward, Mbala). However, this example of interhousehold cooperation was contradicted by another informant from Nsingo ward in Chipata, who reported: "We do not move from one household to the other to render help with preparing food. Usually help comes from within the household or from close relatives" (FGD, Nsingo Ward, Chipata).

Most respondents reported cooking three times a day: once in the early morning, once at midday, and once in the evening. For morning meals, porridge (made of maize) was mentioned frequently (and is prepared for babies). At midday and in the evening, the most commonly reported combination was nshima and different variants of relish. Cooking takes much longer in the rainy season (when it takes approximately six hours per day) than in the dry season (when it takes approximately three hours per day).

Respondents noted that different components of meals took different times to cook, but that most ingredients did not take a long time (the exceptions being nshima and beans). Porridge prepared for breakfast or for babies takes between 45 minutes and one hour, while nshima is cooked in a little less than an hour, as is most vegetable relish, with the exception of cassava leaves. Cassava leaves take longer to prepare because they are pounded before cooking, and is the second ingredient in the dish (groundnuts). Cassava also requires a time commitment of several days because of the detoxification, drying, and pounding processes (although most of the time taken for detoxification is "passive" soaking time, rather than "active" time). Cassava also represents the only real reported difference in dietary repertoire between the Chipata and Mbala wards as it is far more common in the latter district. Respondents across the study wards unanimously reported that beans took a long time to cook, with figures between four and six hours cited (suggesting that the beans are not first soaked in water overnight, although this question was not asked): "When you put beans on fire early in the morning, it becomes ready at about 11 to 12 o'clock. If you take off the fire too early, that is the one that has a funny taste and not nice to eat" (FGD, Nthope ward, Chipata). Dried fish and meat, though rarely eaten, are said to take up to an hour to prepare.

[18] In one focus group discussion in Nthope ward in Chipata, a participant said that her parents did not allow her to teach her male children to cook, on the grounds that this would be victimising them and not treating them with gender equality (FGD, Nthope ward, Chipata).

One of the most important factors that determines the amount of time expended by women on preparing food is seasonality. In the rainy season, meal preparation takes significantly longer because firewood is damp: “Preparing food takes less time during dry season and more time during rainy season. The reason for this difference in time taken to prepare food is in relation to the state of firewood. In wet season, firewood tends to be moist and wet as compared to dry season” (FGD, Nsingo ward, Chipata). The difference in dry season and rainy season cooking times is significant, with some respondents reporting that instead of spending one hour preparing a meal in the dry season, they may spend twice this amount of time in the rainy season (e.g., taking as long as one hour and twenty minutes to cook nshima). Some women manage to ameliorate the problem of damp firewood by using charcoal: “If one is using charcoal, there are no variations in the amount of time that one spends in preparing meals” (FGD, Intala ward, Mbala), but this costs money and is not an option in Nsingo ward because of the prohibition on charcoal. Cooking in the rainy season is more challenging than in the dry season for other reasons as well. Respondents flagged the problem of leaking roofs in kitchen areas, which can delay cooking because women must wait for the rain to stop before resuming the cooking. Furthermore, the agricultural schedule is busier during the rains: “Wet season is mostly associated with a lot of farming activities that eat up more time than dry season” (FGD, Nsingo ward, Chipata). A final point on the difference between wet and dry meal preparation was made by a caregiver from Intala ward in Mbala: “It takes longer to cook in the rainy season as we have to go [to] the fields to get vegetables, unlike now, when we just buy the vegetables.” The logic behind this statement relates to the seasonal nature of food production in rural Zambia. During the dry season, home garden production is low, and families with the means to do so may buy vegetables in a market. In the rainy season, however, home production is high and vegetables must be harvested from the farming areas.

Another factor that can extend the time expended by mothers on meal preparation is the care of smaller babies, which must be done simultaneously. A caregiver from Nsingo noted that her older children helped her by looking after the baby while she prepared the meal: “Preparing food for my household takes more time because I have to look after the baby as well, I can cook even for one hour. We eat three times a day. It is easier for me to cook in the morning and evening because my school-going children would help me with the baby, but when they are not around I take longer to cook” (caregiver, Nsingo ward, Mbala).

Finally, we note that clay brick, double-burner stoves were only in use in a small number of households. These not only use heat more efficiently, but also allow simultaneous cooking of two dishes. Researchers were surprised to see so few of these in use, particularly as one focus group discussant in Nthope ward of Chipata stated: “We have been taught how to make traditional double-plate stoves.” This suggests that this was a lost and subsequently reclaimed technology or skill.

5.5. Feeding Children

As explained in Chapter 2, a purposive sampling strategy was employed for this study in order to ensure recruitment of a sample of caregivers looking after both infants aged between zero and six months and young children aged between 7 and 24 months. Although this is not a study on breastfeeding or complementary feeding practices, we

also wanted to ensure that the sample included infants who were predominantly breastfed, as well as young children who ate complementary foods. (Note that in this section, we are principally discussing feeding itself. Preparation of food fed to complementary feeding children—either mashed family foods or porridge—is discussed in Section 5.4).

Child feeding (whether breastfeeding or complementary feeding) is an important focal point for MICYN programming in general, and the 1,000 MCDP is no exception. Indeed, one of the listed priority interventions is promoting best practices in breastfeeding and complementary feeding. For breastfeeding, best practices include early initiation of breastfeeding, exclusive breastfeeding for the first six months, and responsive feeding. For complementary feeding, recommendations relate to dietary diversity, feeding quantity and feeding frequency, and safe and appropriate food preparation. The World Health Organization identifies the complementary feeding period (ideally between 6 and 24 months) as a particularly vulnerable phase that may mark the beginning of malnutrition for many infants.[19]

Key findings in this section are as follows:

- Child feeding—as a point on a larger continuum of food preparation and household activities—is women's work. Only a very small number of caregivers reported receiving help from their husbands.
- Apart from the fixity of gender roles (or perhaps because of it), some female caregivers felt that their husbands should not be entrusted with child feeding.
- Feeding is not spoken of as being particularly difficult or onerous. Caregivers in one FGD suggested that a total of one and a half hours might be spent each day on child feeding, though this figure inevitably varies by season and number of children.
- Breastfeeding is responsive, and children who have moved to complementary feeding regimes continue to receive breast milk on demand.
- Breastfeeding mothers did not report receiving help to mitigate their burden of domestic chores and allow more time for breastfeeding.

With very few exceptions, child feeding is women's work, whatever the age of the child. A small number of caregivers reported receiving occasional assistance from husbands, and a larger number noted that their older children helped to feed and care for their younger siblings, or that they were helped by other female relatives (such as sisters and grandmothers) or friends. Overall, however, the strong pattern is for women to feed their children themselves. This pattern was observed in all the wards in our study. Focus group discussants in Chipata's Nsingo ward reported: "Even if they [the men] are at home, they don't feed the child. They will say 'That is not my job to feed the baby.' When they [fathers] notice a child is hungry, they would just get the child and give it to you [the mother] to feed him or her" (FGD, Nsingo, Chipata). While this dominant explanation reflects fixed gender roles in the household, a smaller number of responses reflected other concerns and help to explain why women might not try to change the status quo. In a focus group carried out in Mbala's Chinyika ward, for example, a discussant argued that if other people (specifically her

[19] See http://www.who.int/nutrition/topics/complementary_feeding/en/

husband and mother-in-law) were entrusted with helping to feed the child, they may become preoccupied with feeding themselves, may fail to pay proper attention to feeding the child, and may even end up eating the child's meal themselves.

Generally, child feeding is not spoken of as a difficult or especially time-consuming task, however. Caregivers noted that as long as children were not ill or "difficult feeders," they tended to eat within a few minutes and the task certainly required less than an hour. In a focus group carried out in Nthope ward in Chipata, a discussant suggested: "It takes about 30 minutes to feed a child in the morning and at lunch time. In a given day, the average time spent feeding the child is about one hour 30 minutes" (FGD, Nthope ward, Chipata). Breastfeeding is done on demand (as reported by all mothers of breastfeeding children who spoke on the issue), and even children who are already eating complementary foods are allowed access to breast milk when they demand it. "Suckling is done whenever the child wishes to suck," as one caregiver from Nsingo ward explained. Caregivers of complementary feeding children offered a range of estimates for the amount of time it took to feed their children, and there was notable dissent over whether it was quicker to feed a child nshima or porridge. (One caregiver who made the comparison stated that feeding porridge was faster while another noted that it was quicker to feed her child nshima.)

Breastfeeding mothers did not make any reference to receiving help from other family members in order to reduce their overall workload and help them meet breastfeeding requirements, although some respondents did note that other household members sometimes helped to feed children receiving complementary foods, allowing the mother to have a meal herself. Mothers in our sample who were carrying out exclusive breastfeeding at the time the research was conducted reported that they were unable to estimate the number of times their babies fed because they did so on demand. Echoing other exclusively breastfeeding mothers' responses, one mother from Nsingo ward explained: "I breastfeed the baby on demand so I cannot tell the number of times as it is not routine" (caregiver, Nsingo ward, Chipata). A discussant from the same focus group also reported: "We do not help each other with feeding children. The elders discourage us from doing so. This is to protect our children from many diseases such as HIV/AIDS and Ebola." While it is probable that this advice refers to breastfeeding another woman's baby, the meaning is not completely clear because the surrounding context of the quotation refers to complementary feeding, which suggests that elders may be discouraging complementary feeding of other women's babies, rather than breastfeeding.

A focus group discussant from Mbala's Intala ward summed up many of the issues addressed in this section in the following detailed response:

> During rainy season, we normally carry uncooked food. When the child is hungry, we prepare and cook the food right there at the fields and feed the child … For porridge, it may take 15 minutes for those who are quick and 30 to 35 minutes for the slow ones. As for nshima, the quick ones take seven minutes and 20 minutes for those that are slow. If a friend is busy or sick, she can get help from other people, there is no problem with that. If I visit a friend and find that she is feeding the baby and trying to eat herself, I help her with feeding the baby so that she can eat as well (FGD, Intala ward, Mbala).

It is worth dissecting this response in the light of preceding statements. First, we note that the caregiver is both prepared and responsive, ready to make a fire (itself challenging, given the points made earlier about cooking in the rainy season) and cook the foodstuffs she has brought to feed her child in the fields. Second, while her suggested timings vary considerably, this probably reflects the reality of feeding different children. Moreover, none of the timings exceed 35 minutes. Finally, she makes an important point about solidarity and cooperation, emphasising that caregivers can and do support each other to help ensure proper feeding of both child and caregiver.

The common thread running through all of the findings presented in this section is the very heavy work burden experienced by women. Virtually every aspect of the overall subsistence system contributes to this burden. Under these circumstances, implementing programme activities that ultimately add to this workload will be challenging. Ideally, thought should be directed towards seeking ways to reduce the work burdens borne by female caregivers through innovation, simple technologies, or behaviour change, particularly around gender roles.

6. Knowledge and Use of MIYCN and Health Services

Knowledge of available services oriented toward improving the health and nutrition of mothers, infants, and young children is a necessary prerequisite for uptake of these services. In this section, we explore the issue of knowledge and information: What information is available to caregivers of infants and young children, or to pregnant women? Where do caregivers and pregnant women get this information from? We also explore the associated issue of uptake: Do caregivers and pregnant women act on the information if there are available and accessible services on offer? What possible barriers might people face that would prevent or discourage them from service uptake? It is also important to understand what kind of health- and nutrition-related messages caregivers have been (or are being) exposed to, and to identify the greatest knowledge gaps, in order to tailor the development of appropriate messaging content as part of the MCDP design.

We should note here that the timing of this study's data collection was deliberately fixed prior to the rollout of the 1,000 Days Programme in the study wards. This means that the particular package of priority interventions contemplated by the 1,000 Days Programme had not yet been established in the study areas at the time of data collection. However, because the programme's package of interventions includes some strengthening of existing service delivery, exploring the issues around the uptake of these existing services is nonetheless helpful, because the results of this research can be fed into the process of building and strengthening the 1,000 Days package. Issues related specifically to the uptake of the priority interventions once the programme has rolled out will be explored in the service utilisation component of the upcoming process evaluation.

6.1. Messages and Sources of Nutrition Information

> *We also consult with older people, such as grandmothers, on several situations. We consult [with] them because they are more experienced and know a lot of things that can be helpful to us, our husbands, and children. We also consult with neighbours and friends, only those we can trust.*
>
> *When I want to consult, I would go to the doctor at the clinic. The doctor is capable of telling me what to do. I can also consult my grandmother as she is open to me and can tell me anything I need to know. I don't need any support.*
>
> (FGD, Chinyika ward, Mbala)

Where do caregivers and pregnant women obtain information about health and nutrition—both for themselves, and for the infants and young children in their care? What kind of information is on offer? These questions were explored in both focus group discussions and individual in-depth interviews with caregivers and pregnant women. Key findings presented in this section include the following:

- Clinics are the most important source of MIYCN information, channelled through relevant antenatal and under-five sessions.
- Clinic personnel enjoy good credibility in the study communities.

- Advice and recommendations offered by clinics are well tailored to children's age or women's reproductive status.
- Some recommendations on water, hygiene, and sanitation issues are also offered.
- Other important sources of MIYCN information include the radio, neighbourhood health volunteers, older relatives, and other respected people (such as marriage instructors).

Overwhelmingly, the clinic was the most widely reported source of health and nutrition information for caregivers and for pregnant women across sample wards. The distance from study communities to clinics varied (see Section 3), but even in areas with more limited access to clinics, interviewees and focus group discussants identified the clinics as crucial sources of information on health and nutrition for infants, young children, and pregnant women. Within the clinics themselves, respondents cited doctors and nurses as the personnel with whom they tended to interact and from whom they received information. In Chipata's Nsingo ward, FGD participants noted that they attended both under-five sessions and, when pregnant, antenatal check-ups: "We hear about nutrition and child feeding from the clinic. They teach us during antenatal and under-five clinic visits. They tell us [about] the need to give the baby three meals per day. We are also told to eat a lot of vegetables and groundnuts in relish and porridge. They also tell us to pound dry *kapenta* and mixed with the baby's porridge" (FGD, Nsingo Ward, Chipata).

Clinic personnel also enjoyed good credibility among the caregivers and pregnant women who spoke about the issue. One respondent noted that in the event that a child in your care was observed to be underweight, the doctor would "sit you down and educate you" (FGD, Nsingo ward, Chipata). Indeed, in Mbala's Chinyika ward, focus group discussants asserted that they did not receive information from any other source: "We obtain information from the clinic and no other place [general agreement]. They have never taught us anything at school regarding child feeding. From the radio, we have not heard. Community health workers are there in the village but do not teach us anything on child feeding" (FGD, Chinyika ward, Mbala). We should, however, note that other respondents from this ward reported obtaining information from other sources, such as older people and the radio. Interestingly, one pregnant woman interviewed in Nthope ward observed that her clinic did not provide pregnant women with any dietary advice, but rather focused upon avoiding infection by disease.

Nutrition advice provided by clinics depended, as it should, upon the person receiving the advice. For caregivers of infants under six months, exclusive breastfeeding was emphasised: "At the clinic, they teach us not to feed our babies on solid foods or water, not until the baby is six months old. They also teach us to continuously breastfeed the baby in the first month because breast milk contains a lot of nutrients for the baby" (FGD, Intala ward, Mbala). However, as this mother from Chipata's Nthope ward reported, this advice is not always easy to follow—even with the best intentions—because it is mediated by quotidian realities, power, and social dynamics within the household: "My mother-in-law last month told me to start giving the baby porridge because he was crying a lot and I did that […] Now the baby eats a lot after eating and he doesn't cry. I started giving him porridge at four months, I just couldn't stand him crying. I follow instructions from the clinic but this one I couldn't wait

until the baby was six months old because I was sure that the crying was due to hunger" (caregiver, Nthope ward, Chipata).[20] For caregivers of young children aged six months and older, clinic personnel reportedly stress meal frequency (feeding four times a day) and dietary diversity, particularly the inclusion of vitamin-rich, protein, or high-energy foods such as meat, pumpkin, beans, pounded *kapenta*, and ground nuts. In one study ward (Intala), focus group discussants also referenced possible synergies between agriculture and nutrition, noting that Agricultural Officers had encouraged and taught them to grow a variety of nutritious crops. Pregnant women attending antenatal consultations are also given nutrition and health advice at clinics: "The clinic advises us to eat vegetables such as cabbage, rape, and pumpkin leaves. They tell us not to use soda when cooking relish such as okra. They said soda is not good for the unborn baby" (caregiver, Chinyika ward, Mbala).

In addition to providing counselling on best feeding practices for pregnant women and caregivers of infants and young children, some clinics also offer advice on water, hygiene, and sanitation topics. In Mbala's Nthope ward, for example, caregivers reported that they had been advised to construct pit latrines and rubbish pits, and to avoid taking their meals near the toilet facilities.

As indicated above, while the clinic is the preeminent source of information in the wards where this study was carried out, it is not by any means the only source of information. Caregivers and pregnant women also reported receiving information and advice on nutrition and health topics from a range of other sources. After the clinic, the two most salient sources of information referenced in the data were the radio (both the Zambian National Broadcasting channel and the Catholic-run Radio Maria) and other members of the community, particularly older relatives. A smaller number of respondents mentioned neighbourhood volunteers and health committees as information sources. In Chipata's Nthope ward, focus group discussants noted that at the clinic, the nurse was at times too busy with other duties (such as attending childbirths) to offer much in the way of nutrition training. At such times, the discussants noted, neighbourhood volunteers who operated out of the clinic could fill this gap. The knowledge of such volunteers was said to be more limited, but the focus group discussants reported that they (the volunteers) did at times receive training from the nurse at the clinic. The messaging broadcast via radio is similar to that provided by the clinic, in that it emphasises dietary diversity and balanced meals: "I heard that we are supposed to cook different types of food. This means that children should not eat one type of relish in a day. The programme focused on nutrition aspect, stressing on the need to have a balanced meal all the time. I heard this on Radio Maria" (caregiver, Nsingo ward, Chipata). Radio programmes were also reported to emphasise hygiene and sanitation messaging.

Elders (and, to a lesser degree, peers) both within and outside households were also cited as sources of information about young child feeding (although generally not breastfeeding of infants). The advice received was similar to that provided by the radio and the clinic staff: ensure children's meals are both diverse and nutrient-dense by adding groundnuts "so that the child can have good nourishment" (Chewa: *nthanzi*. FGD, Nsingo Ward, Chipata). As one caregiver from Chinyika ward in Mbala reported: "Apart from the clinic, we have parents and the father of the children who

[20] At the time of data collection, the child referred to by this caregiver was five months old and was four months old when porridge was introduced as described.

help us in how to feed the small child. Our parents will talk about feeding the child; they will say 'please take care feeding this child, this child used to look healthy, now he/she has lost weight.' My parents and my mother in-law do tell me to be putting things that give energy (like milk) in the porridge."

As noted above, pregnant women obtain information from similar sources, principally from attendance at antenatal consultations run by clinics, but also from elders, mothers-in-law, and friends. One response from a pregnant interviewee in Nthope ward in Chipata helps us to understand the plural nature of information sources accessed by pregnant women and caregivers: "I can go to the nurse to ask. It's because I feel she has learnt these things [nutrition, health issues] so she is able to advise me. I can also ask from my friends or old/elderly women. I would ask so that I would have knowledge on the things I do not know" (caregiver, Nthope ward, Chipata). Another respondent from Intala ward in Mbala reported that information and advice could also be obtained from the traditional Bemba marriage instructors (*bana chimbusa*): "I also get information from *bana chimbusa*. She told me not to eat too much rice when pregnant in order to avoid blood from draining" (caregiver, Intala ward, Mbala). Advice received from these various sources was similar to that provided to caregivers of complementary feeding children, with an emphasis on quantity and diversity, as well as suggesting additions such as offal.

Finally, we note that caregivers reported (although much less frequently) receiving advice from the Ministry of Community Development, Mother and Child Health, from the NGO Action Aid, and (in Chipata's Nthope ward) from a "white woman." (We were unable to verify this person's identity. She may be a missionary or a volunteer with the Peace Corps or a similar programme, but she was said to teach at the school and to be "associated with the clinic.") It is worth noting here that discourse around best practices in nutrition and health is already a part of caregivers' and pregnant women's lives as a result of significant exposure to nutrition and health messaging content. The 1,000 MCDP can benefit from the existence of this messaging base and the fact that the ground has already been broken. The concepts that the 1,000 MCDP will be promoting are not completely new, and this should benefit the programme, assuming that other enabling conditions and good delivery channels are in place.

6.2. Knowledge of Available MIYCN and Health Services

> *We have a number of health services in the area. These include antenatal and under five years clinic. At antenatal clinic, they teach us how to take care of ourselves during pregnancy; they also tell us the kind of foods to eat in order for baby in the womb to grow properly. Another programme is Chipolopolo, administered by Mbala District Hospital and Action Aid (FGD, Chinyika ward, Mbala).*[21]

What do women in our study communities know about the health and nutrition services locally available to caregivers of infants and young children, or to pregnant women? Responses to these questions are particularly relevant to the MCDP because of the programme's focus on leveraging, and where necessary strengthening, existing

[21] This quotation is somewhat misinformed. The Irish Aid-funded Chipolopolo pilot is not implemented by Action Aid, but rather by the Ministry of Health with support from UNICEF.

services. We also note that it is important to understand the perspectives of potential beneficiaries (caregivers and pregnant women) on available services. While a given service may, in theory, be available at a given location, it may not be accessed by its intended beneficiaries, which suggests that there may be a problem associated with delivery or utilisation. Ultimately, we are interested in understanding what respondents regard as the gamut of services which they themselves access. In this section, we present our results by ward because of the emphasis on clinic-based service provision. (As explained in Section 3, each of the study wards possessed a separate clinic infrastructure, and the villages within each ward all accessed the same clinic facilities.)

Key results in this section are as follows:

- All clinics offered under-five and antenatal services, which serve as a mechanism for imparting key health and nutrition information to caregivers and pregnant women.
- Some "extra" services are offered in some clinics. The clinic in Nsingo offers traditional birth attendant services, while Nthope's clinic benefits from the work of specialised nutrition, water, and sanitation experts.
- In Chiniyka ward, an MNP-sachet programme is being piloted.

Nsingo Ward, Chipata

Nsingo informants referenced "scale services" for children under the age of five and the antenatal consultations provided at clinics. As noted above, these provide context for the provision of health and nutrition information to caregivers and pregnant women.

Other available services that caregivers were aware of include vaccination programmes (measles) and childbirth assistance from traditional birth attendants. The clinic also provides advice on preventing and managing conditions such as malaria and diarrhoea. Discussants in one focus group particularly lamented the fact that the Mwami Mission Hospital used to provide food assistance many years ago (groundnuts, *kapenta*, rice, and cooking oil) but no longer does so.

Nthope Ward, Chipata

In Nthope, nutrition advice services are provided primarily through the clinic, where caregivers and pregnant women attend under-five and antenatal consultations. The clinic benefits from the services of the previously mentioned "white nutrition expert" (who teaches women food preparation techniques), as well as from the expertise of a dedicated hygiene and sanitation expert. Nthope respondents also mentioned the work of neighbourhood volunteers who help to convey maternal health messages. In addition to these services, respondents from Nthope cited the work of an HIV/AIDS club and a programme focused on orphans. The latter provides shoes and clothes and has sunk a borehole from which "we have all benefitted, in that we draw water from the borehole" (caregiver, Nthope ward, Chipata).

Chinyika Ward, Mbala

Chinyika ward stands out as the only ward in our study where respondents mentioned services beyond those delivered via clinic sessions targeted at caregivers of children under the age of five and pregnant women, specifically the Chipolopolo programme. In this programme, caregivers of children aged between 6 and 23 months are provided with sachets of standard 15-micronutrient power mix, distributed free of charge through the clinic, and are advised to administer 10 sachets per month to their children with food. Understandings of the intervention varied, however, illustrating the importance of proper and reinforced programme communications. While one respondent asserted that Chipolopolo was usually given to children who are "not looking healthy," focus group discussants stated that it was not recommended for children who were ill. Parents "do give their children Chipolopolo, although others throw [it] away because they haven't found any good in it" (caregiver, Chinyika ward, Mbala). Other respondents reported that they had been told that Chipolopolo would aid their children's brain development.

Intala Ward, Mbala

In Intala ward, respondents referenced only under-five and antenatal sessions provided by the clinic. One caregiver also observed: "There is under-five clinic and I do take the child but they do not teach on feeding the child. They teach just a little on that subject" (caregiver, Intala ward, Mbala). As previously noted, there was no discussion of the Chipolopolo intervention at all: "We receive under-five and antenatal services at the clinic. Apart from these, there are no other health services that are offered" (FGD, Intala ward, Mbala).

6.3. MIYCN and Health Services: Uptake and Challenges

In the preceding sections, we examined the sources of nutrition and health information and knowledge, the messaging content, and other available services from the point of view of caregivers and pregnant women. We now turn to questions of uptake: Do caregivers and pregnant women follow health and nutrition advice they have been given? Do they attend consultations or counselling at clinics? If they do not, what are the reasons for the uptake gap? For obvious reasons, the answers to these questions are directly relevant to the design, rollout, and implementation of MIYCN interventions such as those built into the design of the MCDP. This is especially true of programme components designed to promote behaviour change. In this section, we explore these questions through interviews and focus group discussions with caregivers and pregnant women.

Key findings detailed below include the following:

- The data revealed good self-reported clinic attendance, although some women reported missing sessions because they were "lazy" or lacked energy. One clinic imposes punishments on women who miss clinic sessions and has tried to incentivise institutional childbirth.
- Caregivers also attend clinics in response to acute health problems such as diarrhoea.
- Many respondents reported a range of problems and obstacles to following MIYCN advice and recommendations, including time allocation and work burdens that made it difficult for women to accommodate new or more

complex activities, such as cooking fresh nshima at every meal or boiling drinking water.

- Recommendations on feeding frequency and increasing dietary diversity were also hard to follow for financial reasons.
- Respondents offered varied opinions about support from husbands or partners in implementing recommended practices.
- Chipolopolo has met with ambivalence in Chinyika ward, although to a large extent this is probably the result of communication gaps in helping people to understand the pilot programme.

Across the wards included in the study sample, respondents generally reported good attendance at under-five and antenatal clinics, although some caregivers complained about the distance, commenting that they were too "lazy" to go. It was also suggested that nurses who make community-level visits for growth monitoring of children under the age of five should combine these activities with administering vitamins and vaccines, because adding additional clinic visits for vaccinations wastes time. Interestingly, the clinic in one ward (Chinyika, in Mbala) had developed a system of punishments for failure to attend under-five clinics, and focus group discussants in this ward noted that the system was an effective mechanism for ensuring attendance: "Even if you checked our under-five cards, you will see that we do take the children. If you don't take the child to the clinic for under-five, they punish right from the clinic. They can make you sweep the floor at the clinic, mow the grass, or even dig. So we do take our children for under-five just to avoid the punishment" (FGD, Chinyika ward, Mbala). Similarly stern measures have been established at this clinic to incentivise institutional childbirth: Mothers who give birth at home are subsequently charged a punitive 50 kwacha fine when they bring their newborn babies into the clinic. The clinic also requires husbands to attend the first antenatal visit. We should note that in addition to attending under-five and antenatal clinics, caregivers go to clinics to access general health services, particularly to seek treatment for children suffering from diarrhoea, seizures, respiratory problems, measles, or other childhood diseases.

Some respondents reported making a significant effort to comply with the advice dispensed at clinic sessions, commenting that "we made a decision to follow and practise teachings from the clinic," and that "we all use these services and do not face challenges while accessing them." However, the majority of respondents across the study wards in both the Chipata and Mbala districts reported a range of problems and obstacles that prevented full compliance and service uptake. We should note at the outset that the principal problem here does not seem to be attendance at clinic sessions (one can say that there is a willingness to engage with service provision), but rather with following the advice offered at these sessions.

An important obstacle to compliance with clinic-dispensed advice is time allocation. As noted in Section 5 of this report, women lead busy lives and must balance a wide and complex range of tasks in order to ensure that their households have water, fuel, and cooked food. For example, in a focus group discussion carried out in Chipata's Nsingo ward, a number of participants concurred that they (caregivers) did not "follow most of the teachings because they tend to be very busy with other things and they feel that some of these teachings delay them doing other chores." In the same

focus group, discussants noted that they had been advised by the clinic to always prepare fresh nshima for their young children, rather than feeding leftovers. Again, this was interpreted as an unreasonable request because of the extra time required. (As described in Section 5, cooking nshima can take approximately one hour, but the time taken to acquire firewood and start a cooking fire must also be taken into account, especially in the wet season.) Some respondents also cited their own "laziness"—which should probably be glossed as tiredness, lack of energy, or unwillingness to add to their already substantial work burdens—as an obstacle to putting clinic teachings into practice. In Chipata's Nthope ward, a mother of five children (the youngest of whom was five months old) explained some of the factors and challenges she faced, such as carrying a child to the clinic when pregnant, and noted that the reaction of the clinic staff to her absenteeism had itself been discouraging: "The first two children I stopped taking them for under-five clinic when they were two years old. I would get pregnant when the child is two years old so I used to feel lazy to go to the under-five clinic, I used to feel lazy to carry the baby. Sometimes the nurses would get upset when I miss sessions, so I decided to stop going there. I intend to continue taking my two under-five years children that I have now to the under-five clinic until they are over age. I will continue with these because nowadays they check the under-five cards whenever a child is starting school" (caregiver, Nthope ward, Chipata).

Likewise, in Mbala's Intala ward, focus group discussants pointed to "laziness" or "other commitments" to explain why some of them did not attend antenatal or under-five activities organised at the clinic. The same discussants also explained that even though they were informed about the relationship between dirty water and gastrointestinal problems, and had been advised by the clinic staff to boil water or add chlorine, "we usually don't boil the water because of our laziness or we just don't listen" (FGD, Intala ward, Mbala). Focus group discussants in Chipata's Nsingo ward recounted a similar story. Although they had been advised by the clinic to place their babies on mats and ensure that they did not pick up dirt or contaminated items from the floor to put in their mouths (to help alleviate the gum itching associated with teething), some felt that they simply did not have time to constantly monitor their children. One respondent from Chiynika ward in Mbala reported missing a clinic session because of a funeral, flagging the point that clinic attendance might not be prioritised when in competition with important social or cultural obligations.

Few respondents cited lack of understanding as a reason for noncompliance with clinic advice, although it is worth noting that one woman—a mother of a 15-month old daughter in Chipata's Nthope ward—did not understand that the age of her child placed her squarely in the target beneficiary group: "I do not take part in the clinic activities and I am not a beneficiary of the services. I just hear from people who go to the clinic about these teachings. I do not know their activity schedule but am willing to start receiving so that I can also learn things" (caregiver, Nthope ward, Chipata).

As previously noted, dietary advice provided by clinics to pregnant women and caregivers of young children often focuses on increasing dietary diversity by including protein- and micronutrient-dense foods, as well as increasing the number of meals provided each day. These requests have cost implications, in terms of money, time, and work. Some respondents addressed this issue, highlighting the financial burden as an obstacle to following the dietary advice provided by clinics. A discussant at a focus group in Nthope ward observed that "…if the child must be

eating five times a day as recommended at the clinic, we fail to follow [the advice] because food is hard to find because finance are not easy to come by hence we tend not to buy some food. Feeding of different foods is difficult because we do not have some of them at hand like milk, bananas as you need money to buy them" (FGD, Nthope Ward, Chipata). A pregnant discussant from the same FGD went on to explain that husbands only responded to their dietary needs when the situation became serious: "Pregnant women try to eat foods that increase the blood levels in the body. Husbands just become serious in providing milk or different foods when they have observed that their pregnant wife is sick or has fainted and the clinic says she needs more blood" (FGD, Nthope ward, Chipata).

Not all caregivers reported unsupportive behaviour from husbands, however. Reflecting on advice received at antenatal sessions held at the clinic, a mother from Chinyika ward noted: "My husband used to help me, as he is the one who gave me the pregnancy" (caregiver, Chinyika ward, Mbala). Focus group discussants in Chinyika ward also complained that food preparation and cooking demonstrations held at the clinic made impractical demands in terms of ingredients and offered nothing in the way of tangible benefits: "People only come here to teach us on various foods and how to prepare them but they don't provide anything tangible … All they do is make demonstrations on how to prepare foods for children. They normally bring with them food samples such as meat, fish, *kapenta*, chicken, groundnuts, and cooking oil. These food samples are then briefly cooked and pounded afterwards. Once that is done, they would then mix different foods to make a sample … It is a big challenge for us here to obtain these various ingredients on our own. We just cannot manage to meet or have all the ingredients to prepare the meal, hence most people here do not benefit from this initiative" (FGD, Chinyika ward, Mbala).

As noted previously, the Chipolopolo initiative was only discussed in Chinyika ward. While some caregivers were happy to participate in the programme, administering the MNP sachets as directed, it was noted that supplies were irregular and that the supplements were therefore administered "whenever the providers bring [them] … we do not receive every month. They give once in while when they come and it is especially when a child is not doing well" (FGD, Chinyika ward, Mbala). Participants in the other focus group discussion held in this ward expressed dissatisfaction with the initiative, complaining that "the Chipolopolo team (nutrition team from health), they just come here to teach and disappear" (FGD, Chinyika Ward, Mbala). Discussants in this focus group also pointed out that children had been tested for HIV and those who tested positive were excluded from the intervention.[22] It was also noted that because one child had died after taking Chipolopolo, "most of the women in the village shy away from Chipolopolo" (FGD, Chinyika ward, Mbala). This point was also made by a Chinyika mother (whose child was too young to participate in the intervention): "Many people in this village have not embraced this programme" (caregiver, Chinyika ward, Mbala).

Finally, it is worth mentioning some of the challenges to uptake that were raised by focus group discussants and interviewees across the sample wards, but which have less salience in the data. These include a report that water boiled over a wood fire, per the advice received from the clinic, smells of smoke and is unpleasant to drink; an

[22] This exclusion presumably related to the fact that the Chipolopolo intervention in Mbala was part of a trial evaluation.

observation that clinics are not properly equipped to carry out antenatal examinations; and concern that women without spouses (single or widowed) can find clinic visits embarrassing.

6.4. Other Support and Services Needed

> *What we need here is for the government to provide us with food for the children (FGD, Chinyika ward, Mbala).*
>
> *We need help in the form of food such as groundnuts, cooking oil, and clothing for our babies. This help in my opinion can come from people like you [research team] and other organisations [general agreement] (FGD, Nsingo ward, Chipata).*

During focus group discussions and FES interviews, participants were asked questions about other kinds of services or support they felt they needed access to in order to improve the health and nutrition status of their children and of pregnant women in the communities. This line of questioning is always potentially problematic because the information it elicits can take the form of impractical "wish lists." During data collection for this study, we attempted to mitigate this effect by training our research teams to probe beyond initial responses of this kind. Nonetheless, a substantial number of responses from across the study wards, and from all categories of respondent, focused on a desire for direct food transfers (of cooking oil, mealie meal, beans, groundnuts, rice, and other foods) and supplements, preferably distributed by clinics. To bolster these arguments, respondents made reference to transfers being distributed by other clinics, or by their own clinics in the past: "We need provision of soybean meal and cooking oil to help in porridge preparation. Also to give HEPs, which they used to give at the under-five clinic.[23] The giving of soya beans and cooking oil used to be done in the olden days at the clinic but they don't give anymore. In Mwami clinic right in Chipata, they do give women with babies. They also give baby clothes and soap so that you have where to start from, but in this village we do not have such supports" (FGD, Nsingo ward, Chipata). Perhaps surprisingly, in the whole study sample of FGD participants and interview respondents, only one caregiver suggested that cash transfers might be a useful instrument for promoting better nutrition in her community.

Suggestions for additional support and services included the following:

- Providing food transfers and supplements, channelled through clinics
- Providing inputs for livelihoods activities, especially seeds and fertiliser
- Strengthening local health and nutrition services by training more local people to do these jobs, so that caregivers and pregnant women do not have to travel to clinics
- Involving men in health and nutrition programming activities

While these requests were certainly prevalent among responses, they were not by any means the only suggestions made by study participants. In the same focus group referenced above (where some participants suggested reinstating food transfers), other participants focused on support for agriculture-based livelihoods activities,

[23] HEPs were nutritional supplements administered to children under the age of five.

explaining: “It’s better they give us seed so that we can cultivate ourselves” (FGD, Nsingo Ward, Chipata). Interestingly, participants in this group also reflected upon the unsustainability of the food transfer model: “Whoever fails upon being given seed, that is their fault. The clinic cannot manage to give each and everyone groundnuts just for eating (general agreement). This kind of sentiment—a request for strengthening the potential of local livelihoods activities—was commonly expressed in interviews and focus group discussions, with people suggesting that donations of seeds and fertiliser would be most useful. One caregiver from Nthope even stated: “There is no support that I need; as a household, we will just concentrate on cultivating” (caregiver, Nthope ward, Chipata).

As discussed earlier in this section, the clinics are the primary sources of information on nutrition and health topics for caregivers and pregnant women. However, women also rely on informal networks within the community, particularly older relatives and friends. When asked about additional services that would be useful, several respondents spoke about the issue of access to information, suggesting that providing in-community training could be a positive step. As discussants in a FGD in Nsingo ward, Chipata, noted: “There should be people trained from within the community in health matters, especially child nutrition, so that they can be going round the community to teach people on health issues. Because in their [the discussants’] view, the staff at the clinic was overwhelmed with other diseases…” (FGD, Nsingo ward, Chipata). Responses indicated that caregivers and pregnant women were anxious to have better access to information, and that they would be willing to receive this information not only from clinic personnel but also from trained volunteers from among their peer group within their communities. People within this group are in fact already being consulted for information, and respondents in our study sample indicated that they respect the knowledge and experience of others within their communities: “We can also consult with our elders so that they teach us the secrets to their successes on raising children. Sometimes I consult with my friends who seem to be feeding their children in a different but good manner than myself so that I learn from them also. We consult people that have been through the process of children and pregnancies” (FGD, Nthope ward, Chipata). Another important point raised by focus group discussants in Mbala concerns distance and time/work commitments. These discussants noted that they “tend to be very tired due to farm work and this makes it difficult for us to seek information…” As a result, they suggested: “We need the clinic or health people to be closer to where we are. Get some people from the village and train them so that they can come to teach us as well” (FGD, Chinyika ward, Mbala). Finally, although not very salient in the data, it is worth noting that discussants in one Mbala focus group pointed to the potential role of men in nutrition programming. They called for husbands to be included in, or even obliged to attend, nutrition trainings and meetings, arguing that “there is a strong need to incorporate men in such meetings. Each married woman, for example, must come with the husband” (FGD, Chinyika ward, Mbala).

Two potential areas of intervention were notably absent from responses to these questions and are therefore worth mentioning. Perhaps as a result of the ambivalence towards the Chipolopolo project (as discussed previously), none of the caregiver or pregnant women respondents suggested that they would like to benefit from an expanded or rolled-out Chipolopolo programme. This is an area that would certainly benefit from further research. The second topic which was notable for its low profile

in the data set was the issue of micro-enterprise, micro-finance, or small business support. Where livelihoods interventions were requested, these focused exclusively on support for agricultural activities.

Overall, findings from this section speak to programme design in a number of ways. We note that clinics accessed by the members of study communities were doing a good job of offering sessions for children under five and antenatal sessions to caregivers and pregnant women and, through these services, channelling standard information about best practices in MIYCN. This is encouraging information, and it lends support to the idea of using the existing clinic platform for communicating the MIYCN messaging planned for the MCDP. That said, respondents also suggested that they would welcome a strengthening of MIYCN knowledge resources within their communities in order to reduce dependence on clinic attendance, which can be challenging when seen in the context of all the other work burdens borne by women. Respondents suggested training more local people to carry out this work. Ultimately, however, the two greatest obstacles to improving MIYCN practices and implementing dietary recommendations offered through the programme will be financial constraints and the burden of work already borne by women.

7. Conclusions and Implications for Policies, Programmes, and Research

In this section, we summarise the key findings presented in the preceding sections and suggest how they may inform programmes, policy, and research. We remind readers that the RQA should:

- Sharpen our understanding of the theory of change
- Provide inputs to the design of survey instruments
- Provide information about other programmes in the area
- Inform the design of the 1,000 Days Programme

Specifically, the RQA set out to address the following central question:

What is the nature and experience of poverty and undernutrition, including access to food, dietary and feeding practices, and behaviour for households with young children in rural Zambia?

This question was broken down into a series of sub-questions, which guided the structure of this report. The key results are summarised below.

WASH Conditions in Study Communities

Key evidence-based recommendations:

- Prioritize access to water: in locations where water access is remote, consider supporting local borehole initiatives

- Prioritize hygiene and safe drinking water promotion, and explore appropriate technology purification solutions

Most households and communities visited for this study collect water either from a surface source (such as the local stream) or from a borehole within their village. Water was often referred to as a scarce resource (particularly during the dry season), and water is often consumed untreated. Pit latrines are the most prevalent toilet facility, with most household wastes (including those from children under two) being disposed of in latrines. Water- and sanitation-related interventions under the MCDP will need to take into account these local conditions and perhaps prioritise ensuring access to clean water.

Feeding and Dietary Practices, Including Access to Food

Key evidence-based recommendations:

- Ensure access to IFA supplementation for pregnant women (and see discussion below on Chipolopolo MNP pilot and communications strategy)

- Ensure robust delivery of nutrition-sensitive agriculture components of the MCDP; in particular, this component must take seasonality into account, and

programme design should consider the possibility of different approaches in the wet and dry seasons

- Explore the possibility of exploiting synergies with livelihoods or social protection programming with the aim of reducing economic constraints on the purchase of nutritious foodstuffs

- Strengthen nutrition education for women and men, and ensure that clinics, identified as a key information resource, are providing appropriate information on breastfeeding (early initiation of breastfeeding, six months of exclusive breastfeeding, on-demand feeding), complementary feeding, and pregnant and lactating women's diets. It is key that men should be included in this training, and encouraged to support breastfeeding women by helping to reduce their workload and ensuring that they have better access to food. It will also be important to address and attempt to change food taboos which may have the effect of reducing dietary diversity

A central pillar of the MCDP relates to improving nutrition outcomes through better diets for infants, young children, and pregnant women. The key intervention areas for these target groups are implementing best practices in breastfeeding for children aged between zero and six months, and improving meal frequency and dietary diversity among children aged between 7 and 24 months, as well as pregnant women. Achieving these goals is challenging and requires a number of conditions to be met. Specifically, caregivers and pregnant women must have access to greater knowledge, better access to recommended foods, and more power to make decisions within their households. They must also have time and energy to devote to any recommended activities that might add to their workloads (discussed in more detail below).

While it is clear from the responses that some guidance on appropriate diets for children, pregnant women, and young mothers is available at local clinics, following through on this nutritional guidance presents a challenge for many women who do not have access to the recommended foods. It will be important for the MCDP to minimise implementation barriers for beneficiaries by ensuring access to vital inputs—such as the planned provision of fortified staples and nutritional supplements—while also strengthening and ensuring robust implementation of the planned nutrition-sensitive interventions in the productive sector. Additionally, while caregivers and pregnant women do possess a basic level of nutrition knowledge, there are some misunderstandings about the nutritional value of certain foods, with many mothers emphasising the nutritional benefits of starches and fewer demonstrating an understanding of the importance of proteins. Recognising this and educating women on the nutritional value of each food group will be an important contribution of the MCDP.

The women interviewed for our study reported that the primary constraint to accessing nutritious food was a lack of money. Secondary concerns included environmental issues such as a lack of water and soil infertility, both of which compromise crop yield. Women reported some coping strategies for these obstacles, such as diversifying their crops or taking up piecework, but the issue of water scarcity during the dry season appears largely insurmountable. Access to food changes significantly between the rainy season (when food, and especially vegetables, are more plentiful) and the dry season (when food is much more scarce). Additionally,

items that typically have to be purchased or bartered for (such as milk, rice, and meat) are completely inaccessible for families with financial challenges, which most respondents reported facing regularly. A successful nutrition intervention will need to take these seasonal access and financial issues into consideration. It will be important to explore possible linkages with nutrition-sensitive agriculture programmes, other livelihood or income-generation initiatives, and possibly the social protection sector: findings about the challenges of diversifying diets and improving available quantities of food speak especially to the topic of agriculture-based livelihoods. Currently, the MCDP intervention package includes a nutrition-sensitive agriculture component, but we would take this opportunity to emphasize the need to ensure that this component is strongly and effectively implemented, because it is so fundamental to the achievement of overall MCDP objectives.

Importantly, a number of women identified their husbands (and the polygamous patriarchal society in which they live) as one of the problems they face when attempting to secure nutritious foods for their families. Women frequently expressed frustration with their husbands' financial decisions, which they believed negatively impacted the resources available to themselves and their children. Men take responsibility for the majority of household-level financial decisions, including what is purchased for the home in the way of foods and cooking supplies. Some women reported requesting that their husbands purchase certain items, or making suggestions as to which crops to grow, but ultimately most food-related decisions were determined by men (because these decisions are also financial decisions). As such, men constitute a significant potential support for or hindrance to MCDP implementation at the household level. It would behoove the MCDP to examine the sociocultural context of each community when refining and rolling out each intervention, recognising the often limited autonomy mothers have when making decisions about money and food, and recruiting men's buy-in to support positive behaviour change and render uptake of services by women more feasible.

Finally, we should note that cultural constraints on young child feeding exist in the form of taboos around the consumption of various food items. Taboos were found in both the Ngoni communities of the Eastern Province and the Mambwe villages in the north. These should be taken into consideration when culturally appropriate nutrition behaviour change materials and syllabi are developed.

Work and Time Allocation

Key evidence-based recommendations:

- Where possible, establish local channels for the distribution of supplements and nutritional products

- Leverage low-impact and appropriate technologies which could reduce the work (and environmental) burdens associated with firewood collection and cooking. Suggestions emerging from the research include promotion of two-burner clay stoves; other possibilities include solar cookers. With training inputs, procurement could support local artisans (thus promoting local markets) and also involve men (increasing their role in the programme)

Mothers and caregivers live with a very heavy burden of agricultural work and domestic chores, which they must balance with childcare activities. While some assistance is sometimes available from children within the household or from other women, men are not always supportive and there are several tasks that are usually done by women. These include fetching water and collecting firewood (unless felling and transporting large trees is involved); processing staples such as maize and cassava (although men do help with maize milling in areas where the hammer mill is far away); and preparing food. In the rainy season, food preparation becomes even more time consuming because fires must be started with wet wood, and at times women must wait for the rain to stop because kitchen areas may have leaky roofs.

It would be useful in future research to build on the activity-specific recall approach and include direct observation data collection with the aim of capturing more quantitative data on women's time allocation. Even without this, however, we can state with some confidence that any increased demands on women's time resulting from activities associated with the MCDP (such as increased requirements for clinic visits) will need to be carefully assessed. As part of the theory of change, ways of mitigating potential increases to women's time burdens should be considered. As an example, establishing channels for distributing supplements and nutritional products locally, rather than through more distant health centres, could be explored in more remote areas. Leveraging simple, low-impact technologies could also have positive impacts on reducing the time women currently need to allocate to domestic tasks. One example of such an innovation is the two-burner clay stove, which conserves fuel and allows two pots to be cooked simultaneously, thus saving time.

Knowledge and Use of MIYCN and Health Services

Key evidence-based recommendations:

- Consider developing a cadre of community health and nutrition peer educators, to make access to reliable MIYCN information more readily available

- Carefully analyse the results of the Chipolopolo pilot, taking account of possible bottlenecks and weaknesses in the communications strategy used in the programme

- Explore the possibility of intensifying the use of radio as a communications medium for MCDP messaging; our data suggests that after the clinic, the radio is the most important source of nutrition messages

- Given the prominence of groundnuts as a high-energy protein source, and the fact that groundnuts are often stored at home, it is important to consider the problem of aflotoxins (also an issue with maize) and their probable association with stunting and morbidity. Ismail et al. (2014) recommend a holistic approach to this problem involving the mobilization of the agricultural, legislative, and public health sectors

- Schools appear to be an under-utilized channel for promoting MIYCN messaging—the MCDP should consider incorporating such messaging in

national curricula. Furthermore, schools should be supported in carrying out under-5 card checks of matriculating students

- Churches, of numerous denominations, are ubiquitous in Zambian communities, and attendance appears to be an important feature of peoples lives. Church leaders, moreover, enjoy excellent authority and credibility. We recommend that they be recruited more actively as partners in MCDP health and nutrition promotion activities

The principal services available to pregnant women and caregivers of infants and young children currently revolve around the provision of care and information at the antenatal and under-five clinics held at health centres.[24] These were identified in all the study wards as key sources of information about nutrition and health topics. (Other important sources included elder community members within and outside households, as well as radio broadcasts.) While caregivers and pregnant women do attend these sessions regularly (and in some locations are punished for failing to do so), a number of respondents spoke about trying to develop more local information channels by training local people. This would ideally have the effect of greatly improving access to important nutrition and health information.

Access to nutrition and health information is only the first dimension of uptake, however. As matters currently stand in the wards where this study was carried out, caregivers and pregnant women are often unable to follow nutrition advice because of the time and economic burdens they face. Cooking special meals (such as fresh nshima) requires more time and investment in fuel, for example, while procuring the extra ingredients suggested for a more diverse diet brings with it serious financial challenges. This indicates to us that the planned provision of fortified staples and specialised nutritional products is a particularly key element of the theory of change if the desired outcomes are to be achieved, as detailed above and throughout this report. We should also observe here that although this study did not focus on the Chipolopolo intervention, we did capture data that revealed a degree of ambivalence towards the supplement (which was thought to have been related to the death of a child in one community). Before launching any nutritional supplements as part of the MCDP, we would advise programme designers to explore the cultural acceptability of such supplements, and to establish excellent communication channels to explain their purpose.

Final Note

This research set out to explore foundational MIYCN issues in sociocultural, economic, and environmental contexts similar to those in which the MCDP will be implemented. Zambia is culturally diverse, and there will of course be some degree of local variation, but we are confident that the findings presented here are relevant to a broad range of poor rural Zambian contexts. Overall, the findings reveal a complex context, and achieving the desired programme outcomes will require careful and successful engagement with a wide range of potential challenges—from increasing

[24] This question was originally designed to explore knowledge and use of priority interventions but was modified slightly to reflect that while some health and MIYCN services were available in the study wards, these were not part of the MCDP at the time of the research because the priority interventions had not yet been rolled out.

the knowledge base of caregivers to improving the quantity and quality of available and accessible food and addressing water and sanitation limitations—all while working within sociocultural frameworks and in accordance with women's work norms, which may militate against the intervention uptake. The MCDP is designed as a cluster of tried and tested interventions, and while this structure may be advantageous (in that it has the potential to confront a wide range of nutrition-related problems), it could also present operational challenges related to multisectoral complexities. We would like to note at this point that taking these complexities in both context and intervention modality into account, three years may be a short programme cycle, and it could be important to consider extending it in order to increase the likelihood of achieving the desired objectives. Finally, we would encourage the MCDP designers, managers and implementers to consider innovative delivery strategies which could be incorporated within the existing programme framework, not to change the overall list of Priority Interventions, but with the aim of drawing on lessons learned in other places where different delivery strategies have been tried. Examples which would be worth considering include Homestead Food Production initiatives designed to increase food security and dietary diversity, community feeding initiatives along the lines of those provided by India's Anganwadi Centres, and the use of community nutrition counsellors modelled on Bangladesh's Shasthya Sebikas or India's ASHAs.[25]

[25] See: http://www.hki.org/our-work/improving-nutrition/helping-families-grow-better-food#.VI72tlrolFI (Homestead Food Production), http://wcd.nic.in/icds.htm (feeding centres) and http://research.brac.net/publications_details.php?scat=30&tid=487&v=0 (Shasthya Sebikas)

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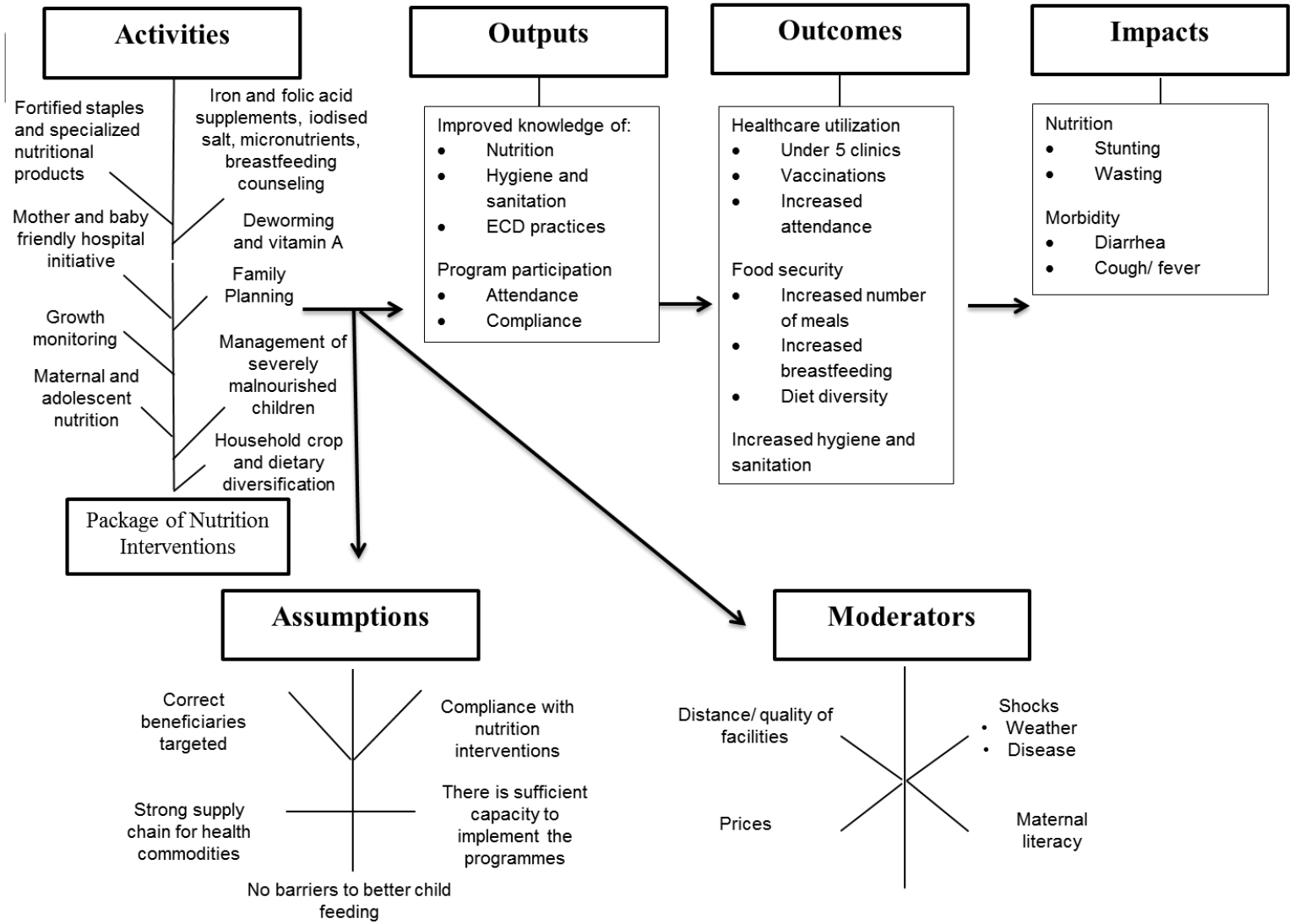
Annex 1. Theory of Change



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