



Nutrition, social and behaviour change strategy for dairy development programs in western and southeastern Kenya



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Nutrition, social and behaviour change strategy for dairy development programs in western and southeastern Kenya

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The findings and conclusions contained within the report are those of the authors and do not necessarily reflect the positions or policies of the Bill & Melinda Gates Foundation or the UK government.

Acronyms and abbreviations

ANC	Antenatal care
ASF	Animal-source food
AVCD	Accelerated Value Chain Development
BA	Barrier analysis
BMI	Body mass index
CHEW	Community Health Extension Worker
CHV	Community Health Volunteer
COM-B	Capability, Opportunity and Motivation of Behaviour
CotD	Cost of the Diet
CU2	Children under two years of age
CU5	Children under five years of age
D/ND	Doer/non-doer interview
DHS	Demographic and health survey
EBF	Exclusive breastfeeding
EO	Energy only diet
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus group discussion
FHAB	Food habits nutritious diet
GM	Grandmother
IIED	International Institute for Environment and Development
ILRI	International Livestock Research Institute
IYCF	Infant and young child feeding
KDHS	Kenya Demographic and Health Survey
KES	Kenyan Shillings
KII	Key Informant Interview
KNBS	Kenya National Bureau of Statistics
LW	Lactating women
MAD	Minimum acceptable diet
MIL	Mother-in-law
MILs	Mothers-in-law
MIYCN	Maternal, infant and young child nutrition

MN	Macronutrient diet
mo	Months
MoA	Ministry of Agriculture
MoH	Ministry of Health
NUT	Nutritious diet
OFSP	Orange-fleshed sweet potato
PLW	Pregnant and lactating women
PSI	Population Services International
PW	Pregnant women
RSPH	Rollins School of Public Health, Emory University
SBCC	Social and behaviour change communication
UHT	Ultra-high temperature
USAID	United States Agency for International Development
USD	United States Dollar
VA	Vitamin A
VAD	Vitamin A deficiency
WASH	Water, sanitation and hygiene
WRA	Women of reproductive age

I Introduction

The purpose of this social and behaviour change communication (SBCC) strategy is to inform the nutrition strategy of the Accelerated Value Chain Development (AVCD) project in Kenya and to guide nutrition strategies of related projects. This SBCC strategy was developed as a component of the MoreMilk program, a Bill and Melinda Gates Foundation and UK Department for International Development-funded dairy development project, consisting of five components related to milk. The SBCC component of MoreMilk took place in rural areas of Kenya and Tanzania. This report relates to Kenya, where the SBCC research was embedded within the wider AVCD project, funded by the United States Agency for International Development (USAID).

The goals of the MoreMilk SBCC component and AVCD dairy value chain development activities are to improve dietary diversity, food security and rural incomes by improving milk production, productivity, supply and market access. The dairy value chain work of the AVCD project aims to reach 40,000 smallholder farmers in the western counties of Busia, Vihiga, Homa Bay, Kisumu, Migori and Siaya and the semi-arid southeastern counties of Taita Taveta, Kitui and Makueni. It seeks to establish six dairy business hubs reaching 5,000 farmers—offering animal health, artificial insemination, advisory and financial services—and nine innovation platforms serving farmers, processors, market traders and service providers.

In recognition that interventions geared towards increased dairy productivity may lead to increased milk production and sale but not automatically translate to increased consumption of milk at the household level, the SBCC strategy will target dairy value chain actors with key messages on agrinutrition. The SBCC activities will be integrated within the production interventions where communities will receive a holistic package of activities. This SBCC strategy is for use by members of the MoreMilk program and wider AVCD Dairy Project and its partners, as well as those engaged in the design and implementation of nutrition-sensitive dairy development programs with smallholder farmers in similar settings. This is a living document for team members to adapt and apply as they design and implement SBCC activities.

To inform the development of the AVCD SBCC strategy, ILRI partnered with Emory University Rollins School of Public Health (RSPH) to carry out formative research. The team conducted extensive data collection in the target counties using a combination of rapid ethnographic methods, namely focus group discussions (FGDs), key informant interviews (KIIs), in-depth interviews, barrier analysis (BA), doer/non-doer surveys (D/ND) and market analysis, using the Cost of the Diet (CotD) approach.

An SBCC strategy is the bridge between the situation analysis and the actual implementation of the SBCC program and guides the creation and roll-out of materials, products and activities. This strategy is intended to serve as a roadmap to guide the AVCD team. The focus of this SBCC strategy is on the identification of priority behaviours by households, namely diversification of diets at household and individual levels, increased consumption of safe milk by pregnant and lactating women (PLW) and children under two years of age (CU2) to improve nutrition. Since women's empowerment is emerging as a determinant of household nutrition, the study also explored how the empowerment of women and men was understood by the respondents, how it was seen to affect household nutrition and what were perceived as opportunities to enhance the empowerment of men and women.

ILRI has used this SBCC strategy to develop adapted materials and media, to identify key channels or methods for transmitting priority messages and to identify non-communication activities, such as improvements in dairy production, to make it easier for households to adopt these priority behaviours.

2 Background

2.1 Malnutrition in Kenya

Approximately one in four (26%) children under five years of age (CU5) in Kenya is stunted, with 8% severely stunted. The prevalence of stunting is higher among children in rural areas (29%) than in urban areas (20%) and decreases as household wealth increases (Kenya National Bureau of Statistics [KNBS] et al. 2015). Nationally, 4% of CU5 are wasted and 1% are severely wasted. Wasting levels are highest among children in the age groups of 6–8 months (mo) and 9–11 mo (7% each). This corresponds to the period in which children are typically introduced to complementary foods, which may vary in quality and quantity and are more vulnerable to infectious disease due to increasing mobility and exploratory behaviour (Ngure et al. 2013).

Table 1 shows the prevalence of stunting and wasting in CU5 and thinness and overweight or obesity in women of reproductive age, at a national level and in project counties in the four regions in which this project has been implemented (KNBS et al. 2015). Multiple factors are likely to contribute to a high prevalence of stunting, most notably suboptimal Infant and Young Child Feeding (IYCF) practices and a high burden of diarrhoeal diseases. The underlying contributors to these include chronic food insecurity and infrastructural, behavioural and physical barriers to adequate water, sanitation and hygiene (WASH) practices, many of which are precipitated by poverty. Levels of child undernutrition are higher in the southeastern project areas (Eastern and Coast Regions), compared to the western ones (Western and Nyanza Regions). Levels of wasting, an indication of acute undernutrition, are relatively low in the western regions, approximately half the level reported nationally.

Table 1: Prevalence of stunting/wasting in CU5 and thinness and overweight/obesity in women of reproductive age

	Children under five years of age		Women of reproductive age	
	Stunting (%)	Wasting (%)	Thin (%)	Overweight/obese (%)
National	26.0	4.0	8.9	32.8
Urban	19.8	3.4	5.5	43.3
Rural	29.1	4.4	11.2	25.8
Region				
Eastern	30.1	4.4	9.8	30.1
Coast	30.8	4.5	11.0	32.1
Western	25.2	1.9	8.6	24.4
Nyanza	22.7	2.0	6.3	26.5

* Prevalence at a regional level is higher than the national average

Source: KNBS et al. (2015)

Among women of reproductive age (WRA), the national prevalence of thinness has decreased and overweight increased in recent years, with 9% WRA being thin (Body Mass Index (BMI) <18.5 kg/m²) and 33% overweight (BMI ≥25 kg/m²) in the most recent (2014) Demographic and Health Survey (DHS) (KNBS et al. 2015), compared to 12% thin

and 25% overweight five years previously (KNBS and ICF Macro 2010). Both measures are closely associated with socioeconomic status, with levels ranging from 22% thin and 12% overweight in the lowest wealth quintile, to 4% thin and 50% overweight in the highest wealth quintile (KNBS et al. 2015). Table 1 includes indicators of women's nutritional status in the project regions.

Table 2 depicts national levels of anaemia, iron deficiency, iron deficiency anaemia and vitamin A deficiency (VAD), based on the 2011 National Micronutrient Survey (Kenya Ministry of Health [MoH] 2011). Of all population groups, pregnant women (PW) have the highest prevalence of anaemia, iron deficiency and iron deficiency anaemia, approximately 42%, 36% and 26% respectively. Iron deficiency is involved in approximately half of anaemia cases in CU5 and close to two-thirds of cases in pregnant and non-pregnant women (Table 2). Anaemia is of great public health significance in PW and moderate public health significance in both CU5 and non-pregnant women (MoH 2011; World Health Organization [WHO] 2011).

VA is an essential micronutrient, needed for normal vision, immune function, growth and development (Imdad et al. 2011; Mayo-Wilson et al. 2011). VAD is classified as being of mild public health significance in Kenya, with a national prevalence of 4% across all subpopulations and the highest prevalence in CU5 at 9%. Marginal VAD, which is suggested to increase susceptibility to infection, affects approximately one-quarter of the population (24%) and over half of CU5 (53%). Zinc deficiency is reported to affect approximately two-thirds of PW (68%) and more than three-quarters of all other subpopulations.

Table 2: Prevalence of anaemia, iron deficiency, iron deficiency anaemia, vitamin A deficiency and zinc deficiency at national level, by population group

	¹ Anaemia (%)		Iron deficiency (%)		Iron deficiency anaemia (%)		² VAD (%)		Marginal VAD (%)	Zinc deficiency (%)
Children <5 y	26.3	++	21.8	13.3	9.2	+	52.6	81.6		
Children 5–14 y	16.5	+	9.4	4.9	4.7	+	37.6	79.0		
Pregnant women	41.6	+++	36.1	26.0	5.4	+	7.8	67.9		
Non-pregnant women	21.9	++	21.3	14.0	2.0	+	21.6	79.9		
Men	9.3	+	3.6	2.9	0.0		2.0	77.4		

+ Level of public health significance for anaemia and vitamin A deficiency

¹ Prevalence of anaemia of 5.0–19.9% = mild (+), 20.0–39.9% = moderate (++), ≥40% = severe (+++)

² Prevalence of low serum retinol of 2–9% = mild (+), 10–19% = moderate (++), ≥20% = severe (+++)

Source: KNBS et al. (2015)

2.2 Infant and young child feeding practices

The most recent nationally representative dietary assessment amongst Kenyan children 6–23 mo indicates only 41% received an adequately diverse diet (KNBS et al. 2015), based on consumption of four or more of seven food groups during a 24-hour reference period (WHO 2017). Feeding practices of less than a quarter (22%) of children met the three criteria for a Minimum Acceptable Diet (MAD), based on (i) receiving the recommended number of meals per day; (ii) continued breastfeeding (or appropriate milk feed for non-breastfed children); and (iii) consuming four or more of seven food groups on a given day. Table 3 shows the variation in IYCF practices between children in urban and rural settings and between the four project regions. Suboptimal IYCF practices were especially prevalent in Western Region, where just 10% received a MAD and were above the national average for all indicators in Nyanza Region.

Dietary assessments reported by KNBS et al. (2015) in the 2014 DHS indicate that close to three-quarters (72%) of Kenyan children 6–23 mo had consumed food(s) rich in VA on the previous day, while one third had consumed iron-rich food(s). Milk, other than breast milk, was consumed on the previous day by 49% of children, meat or fish by 21%, eggs by 17% and other dairy products (including cheese or yoghurt) by 13% (KNBS et al. 2015). The percentage of children consuming iron- and VA-rich foods and various forms of ASF increased with the age of the child.

Table 3: Infant and young child feeding practices among children 6–23 months at a national level and in project regions

	Minimum Dietary Diversity (%)	Minimum Meal Frequency (%)	Minimum Acceptable Diet (%)	Vit A-rich foods consumed in last 24 hours (%)	Iron-rich foods consumed in last 24 hours (%)
National	40.9	50.8	21.8	71.9	33.3
Urban	56.5	58.9	31.2	83.7	40.9
Rural	32.1	46.2	16.5	65.2	29.1
Region					
Eastern	33.5 *	66.3	21.1 *	64.4 *	21.4 *
Coast	27.9 *	51.4	14.4 *	66.1 *	28.3 *
Western	29.0 *	24.6 *	10.3 *	66.2 *	31.8 *
Nyanza	45.7	54.0	24.5	80.4	46.7

* Percentage of children meeting cut-offs or consuming specific food categories at a regional level is below the national average

Source: KNBS et al. (2015)

2.3 Water, sanitation and hygiene and health

Counties participating in the AVCD project include those with some of the highest levels of child diarrhoeal disease in the country. Unsafe water, poor sanitation facilities and poor hygiene practices are likely to contribute to the prevalence of diarrhoea. Unimproved water sources, which increase the spread of waterborne disease, provide the primary source of drinking water for 39% of rural households, compared to 10% of those in urban areas (KNBS et al. 2015). Close to two-thirds (64%) of rural households rely on unimproved toilet facilities, most commonly a pit latrine without a concrete slab or an open pit. Hand washing is one of the most effective ways to prevent the spread of infection, however, a place for hand washing was observed in only approximately a quarter (27%) of rural households and only 10% had soap and water available.

Table 4 highlights that access to hand-washing facilities is limited, particularly in Western and Nyanza Regions.

Table 4: Prevalence of diarrhoea in children under five years of age; access to hand-washing resources at a national level and in project regions

	† Prevalence of child diarrhoea (%)	Place for hand washing within household (%)	Place for hand washing with soap and water (%)	Place for hand washing with water only (%)
National	15.2	33.6	16.6	8.0
Urban	14.3	42.7	25.7	9.3
Rural	15.7	27.1	10.2	5.9
Region				
Eastern	14.3	39.1	14.7 *	6.8 *
Coast	17.6 **	30.3 *	7.4 **	7.0 *
Western	20.1 **	25.6 **	9.8 **	2.6 **
Nyanza	18.9 **	16.5 **	8.5 **	4.2 **

† Prevalence of diarrhoea in 14 days prior to survey, based on parental recall

* Prevalence below the national average

** Prevalence below the average for rural areas

Source: KNBS et al. (2015)

While surveys routinely capture indicators relating to water access and sanitation facilities, poor food hygiene practices can also contribute to diarrhoea burden in CU2. This includes consumption of unsafe milk that has not been properly collected, treated, handled or stored. Exposure to livestock faeces, including cattle, goats and poultry, has received

increasing attention in recent years as presenting a risk for child stunting, both through diarrhoea and environmental enteropathy (i.e. subclinical changes in the gastrointestinal tract which limit nutrient absorption) (Headey et al. 2017). Since measurement of these exposures is complicated and relevant data are not routinely collected in studies of child diarrhoea, our understanding of poor food hygiene and exposure to livestock as contributors to diarrhoea burden and stunting in Kenyan children is limited. Despite this, the theoretical underpinnings of these relationships warrant their inclusion in dairy development projects. Ignoring pathways of potential harm in such projects, including the consumption of unsafe milk and contact with faecal material, threatens to undermine the potential benefits of these projects in relation to poverty, food, nutrition security and health.

2.4 Milk consumption and nutrition

Milk and dairy products can substantially increase the nutrient content of diets based largely on staple foods in rural Kenyan households. Although studies that have demonstrated positive nutritional outcomes to be associated with milk consumption are limited, this evidence gap has been attributed to poor study design, low statistical power and the multiple, complex factors that influence nutritional status (Grace et al. 2018). Research to date has shown milk consumption to contribute significantly to children's height, weight, cognitive performance and immune function and to be important for the development of healthy bones and teeth, and during pregnancy and lactation.

In a feeding intervention study in Kenyan primary schools, inclusion of milk in a daily 'snack' was associated with a higher growth rate among younger children and those with stunted growth, increased arm muscle mass and higher vitamin B12 levels (Neumann et al. 2007). Dairy products are widely promoted as important for bone health and fracture prevention, primarily due to their high calcium content although recent evidence has suggested lower daily intakes are sufficient for this effect (Bischoff-Ferrari et al. 2007). The planetary health reference diet proposed by the EAT Lancet Commission promotes consumption of one cup of whole milk (250 g) and up to two cups (500 g) per day (Willett et al. 2019).

Recent findings from Kenya highlight the need for caution about the potential that access to cow's milk could lead to suboptimal infant feeding practices. Intensification of smallholder dairy production was associated with early initiation of complementary feeding, with children from high dairy-producing households more likely to be given cow's milk under 6 mo of age, compared to those in households not involved in dairy production (Wyatt et al. 2013). Early initiation of complementary feeding was suggested to be linked to the increased workload for women in intensified dairy systems, including the requirement for young children to be left with other caregivers and women's perceptions that increased workload reduces breast milk sufficiency.

Efforts to enhance productivity and economic returns in dairy production systems, such as through the AVCD Project, may have mixed effects on diets and the nutritional status of members of smallholder households. This SBCC strategy is intended to outline approaches and actions to encourage greater milk consumption and diversification of diets for women and young children, while avoiding unintended negative effects associated with caregivers' workloads (which may undermine exclusive breastfeeding (EBF) and time available for food acquisition, preparation and child feeding), children's exposure to cattle faeces, or the prioritization of sale of milk to meet other household expenses.

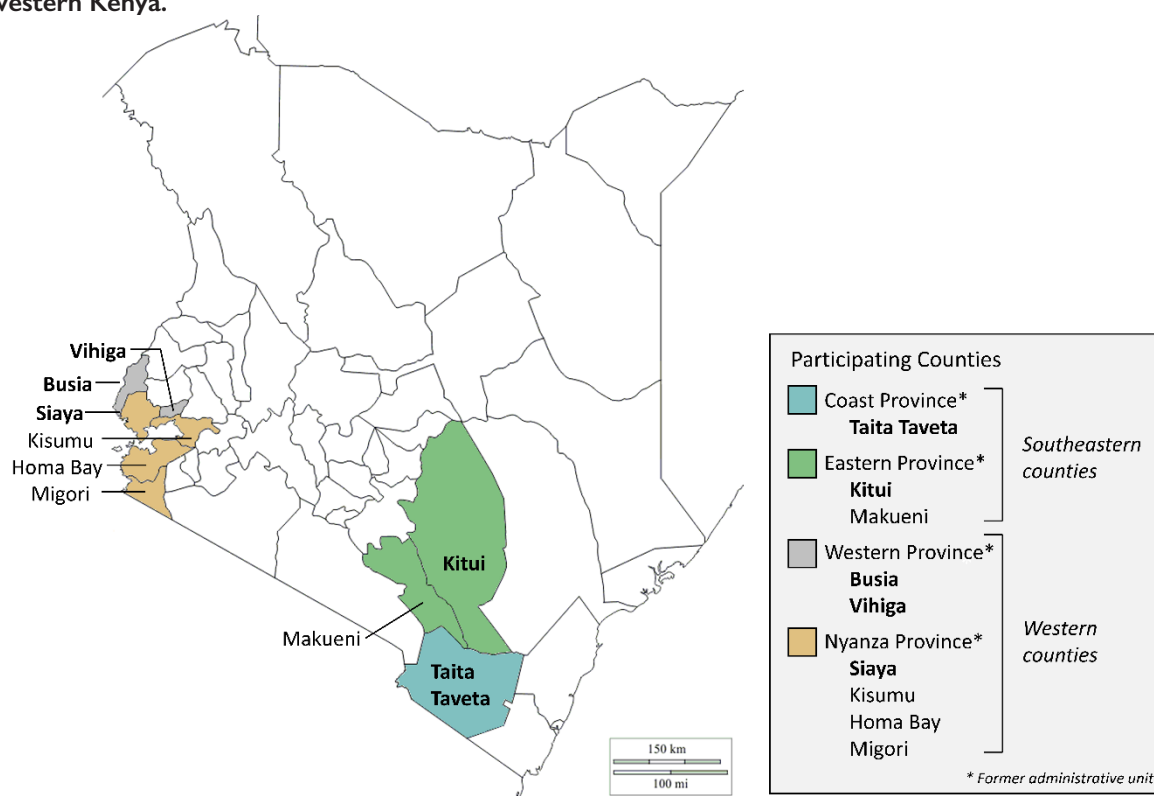
3 Accelerated value chain development dairy project

There are three main dimensions to the AVCD Dairy Project: improving productivity, increasing market access and enhancing household nutrition. A key goal of the project is to improve the food and nutrition security of smallholder dairy farming households through inclusive agriculture, enabling greater access to and consumption of safe milk products and increasing dietary diversity, with a focus on CU2 and WRA in participating areas. The MoreMilk program sensitizes actors across the milk value chain on optimal nutrition, with a particular emphasis on the first 1,000 days of life, which is the critical window of opportunity to influence nutrition and health outcomes, through pregnancy to a child's second birthday.

Figure 1 is a map showing the location of sites participating in the MoreMilk program of the AVCD project, in southeastern and western Kenya.

Counties participating in formative research to inform the SBCC strategy are shown in bold.

Figure 1: Location of sites participating in the MoreMilk program of the AVCD project in southeastern and western Kenya.



A two-pronged approach is used to actualize the outcomes for women and children by (i) integrating nutrition interventions into the implementation of the dairy component's activities, using a holistic value chain approach to engage with all project beneficiaries and (ii) undertaking specific nutrition-related activities to improve women's diets and IYCF practices.

Emory University's Rollins School of Public Health (RSPH) and ILRI have developed this targeted SBCC strategy to guide AVCD dairy activities and future dairy development projects. The strategy presents options for developing extension materials that consider a range of communication channels, from 'traditional' community meetings, community health worker counselling activities and mother-to-mother support groups, to interactive radio broadcasts and social marketing, which targets dairy value chain actors and members of the wider community. The strategy guides specific interventions targeting the primary caregivers and key influencers of maternal diets and IYCF practices within the communities of interest. Due to the intrinsic relationship between health and nutrition, the SBCC tools will also incorporate key messages on the importance of utilizing maternal and child health and nutrition services.

4 Methodology

4.1 Objectives and priority behaviours

Five objectives guided the formative research that informed the development of the MoreMilk SBCC strategy:

1. To characterize barriers to and enablers of critical or priority behaviours in the context of community value systems;
2. To develop problem trees for each of the priority behaviours;
3. To map primary and relevant behavioural determinants for each practice onto the theoretical domain's framework of behaviour change, including identifying priority target audiences;
4. To identify the most suitable platforms and practices for SBCC delivery; and
5. To identify specific behaviour change techniques relevant to the prominent behavioral domains in the participating communities.

For this research, we prioritized the key Maternal, Infant and Young Child Nutrition (MIYCN) practices that link to the AVCD Dairy Project's Theory of Change and that had low levels of uptake in the participating communities. The primary priority behaviours included improved milk consumption in PLW and children above one year of age, specifically and enhanced household and individual dietary diversity more broadly.

The current program also sought to mitigate the potential for unintended consequences on breastfeeding by including promotion of EBF to 6 mo as a priority behaviour. Given the potential for household members' exposure to contaminated milk or animal faeces with dairy intensification, safe milk handling, preparation and storage were also included as a priority behaviour. The SBCC strategy was developed with a deliberate effort to increase milk set aside for home consumption, especially for women and children. Table 5 outlines priority behaviours for the MoreMilk component of the AVCD Dairy Project. Due to resource constraints, the formative research and SBCC strategy focus predominantly on dietary behaviours and the boiling of milk.

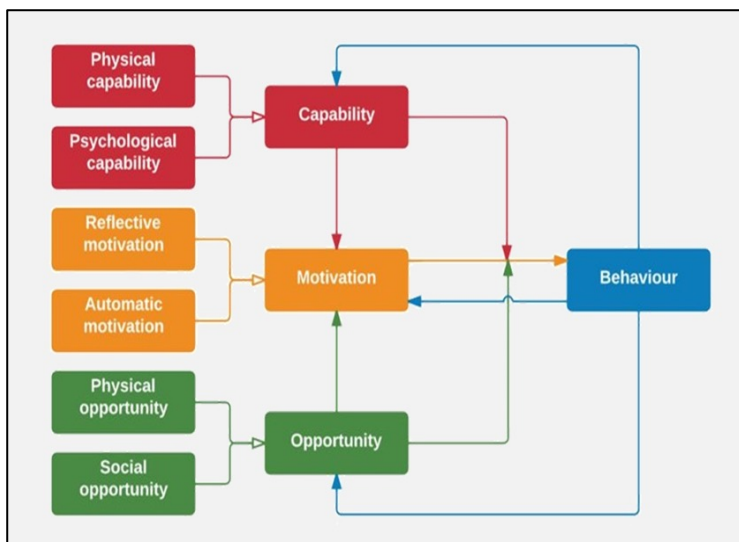
Table 5: Priority behaviours for the MoreMilk SBCC strategy

Priority behaviours for the MoreMilk SBCC strategy

1. PLW consume at least one serving of safe dairy products each day, year-round.
2. PLW consume foods from at least five food groups daily, year round.
3. Mothers give only breast milk to their child for the first 6 mo of life.
4. Caregivers provide children 12–23 mo with at least one serving of safe dairy products each day, year-round.
5. Caregivers provide children 6–23 mo with foods from at least four of seven food groups daily, year round.
6. Households set aside milk for home consumption.
7. Households boil milk before consuming and cover before and after boiling.
8. Households remove animal faeces from the compound at least twice daily.

4.2 Theoretical framework

Michie et al.'s (2005) Theoretical Domains Framework informed the formative research approach, analyses and ultimately the development of the SBCC framework, including the key activities and intervention functions. This framework distinguishes those factors shaping behaviour into three domains, namely capability, motivation and opportunity. These domains are further characterized as physical and psychological capability, reflective and automatic motivation, and physical and social opportunity (Figure 2). The Capability, Opportunity and Motivation of Behaviour (COM-B) model proposes that these three domains and their constitutive parts contribute to the behaviour of interest.

Figure 2: The Capability, Opportunity and Motivation of Behaviour Model.

Source: Michie et al. (2005)

Key definitions are provided in Table 6. Formative research allows one to identify which aspects of the COM-B model are the most influential and important drivers of a given behaviour.

Once identified, users then use the Taxonomy of Behaviour Change techniques to map the most appropriate behaviour change strategy to the given COM-B domain and specific determinant.

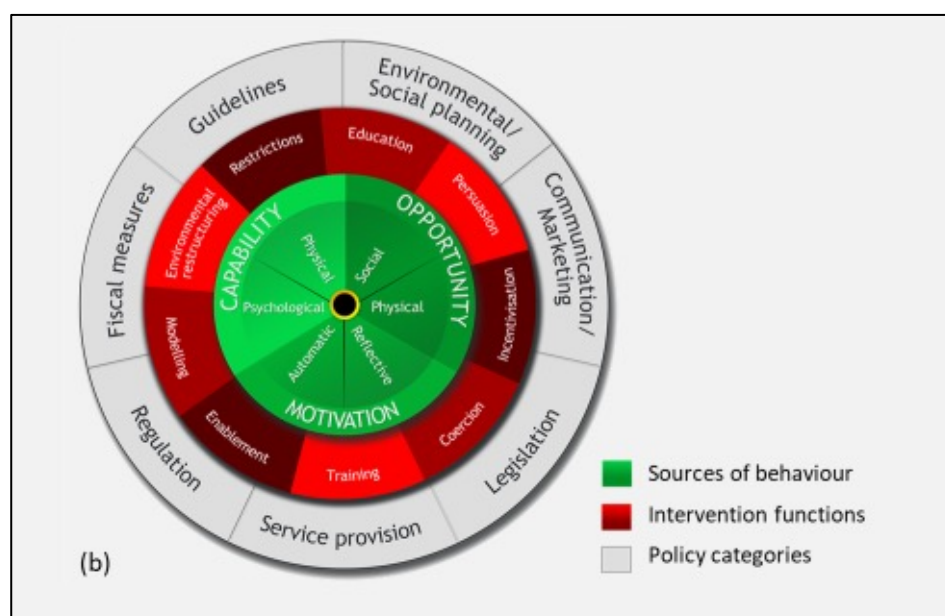
Table 6: Definitions of key concepts in the COM-B Model

Definitions of key concepts in the COM-B Model	
Capability	'The individual's psychological and physical capability to engage in the activity concerned. It includes having the necessary knowledge and skills.' This includes both physical capability and psychological capability ('the capacity to engage in the necessary thought processes – comprehension, reasoning').
Opportunity	'All the factors that lie outside the individual that make the behaviour possible or prompt it.' Physical opportunity reflects the environment, time, context and resources; while social opportunity is defined by social influences and norms, social and familial roles.
Motivation	'All those brain processes that energize and direct behaviour, not just goals and conscious decision-making.' Reflective motivation, involving evaluations and plans, is distinguished from automatic motivation, which stems from emotions and impulses due to associative learning or innate dispositions.

Source: Michie et al. (2011)

Building on the COM-B framework, we used Michie et al.'s (2005) Behaviour Change Wheel approach (Figure 3) to guide the SBCC strategy development based on the formative research. This tool utilizes the Theoretical Domains Framework to identify the most appropriate intervention functions and specific techniques based on the dominant behavioral determinants (sources of behaviour).

Figure 3: Behaviour Change Wheel.



Source: Michie et al. (2005)

A knowledge-based behaviour may require a behavioral function related to education. A specific technique for achieving behaviour change through the education function would be providing information. Additional functions and examples of relevant behaviour change techniques are shown in Table 7.

Table 7: Intervention functions and associated behaviour change techniques

Function	Description	Behaviour change techniques for achieving function
Education	Increasing knowledge or understanding	Providing information on recommendations, benefits and consequences
Persuasion	Using communication to induce positive or negative feelings or stimulate action	Narrative dramas, stories without an end, goal-setting
Incentivization	Creating an expectation of reward	Providing small rewards to families who achieve a behaviour
Coercion	Creating an expectation of punishment or cost	Public humiliation if caught performing negative behaviour; charging a fine or fee for negative behaviour; discussing negative consequences of not practising a behaviour
Training	Imparting skills	Hands-on demonstrations or practice, role-playing
Restriction	Using rules to reduce the opportunity to engage in target behaviour (or to increase target behaviour by reducing opportunities to engage in competing behaviours)	Establishing and enforcing tobacco-free zones, enforcing code on marketing or selling of breastmilk substitutes
Environmental restructuring	Changing the physical or social context	Providing materials or equipment needed to perform specific behaviours, providing cues to action or reminders (e.g. text message reminder systems)
Modelling	Providing an example to which people can aspire	Positive deviants, narrative dramas, stories without an end, demonstrations, role-playing
Enablement	Increasing means or reducing barriers to increase capacity (beyond education and training) or opportunity (beyond environmental restructuring)	Enhancing food production or affordability, increasing availability of specific foods, shifting gender norms to promote task shifting

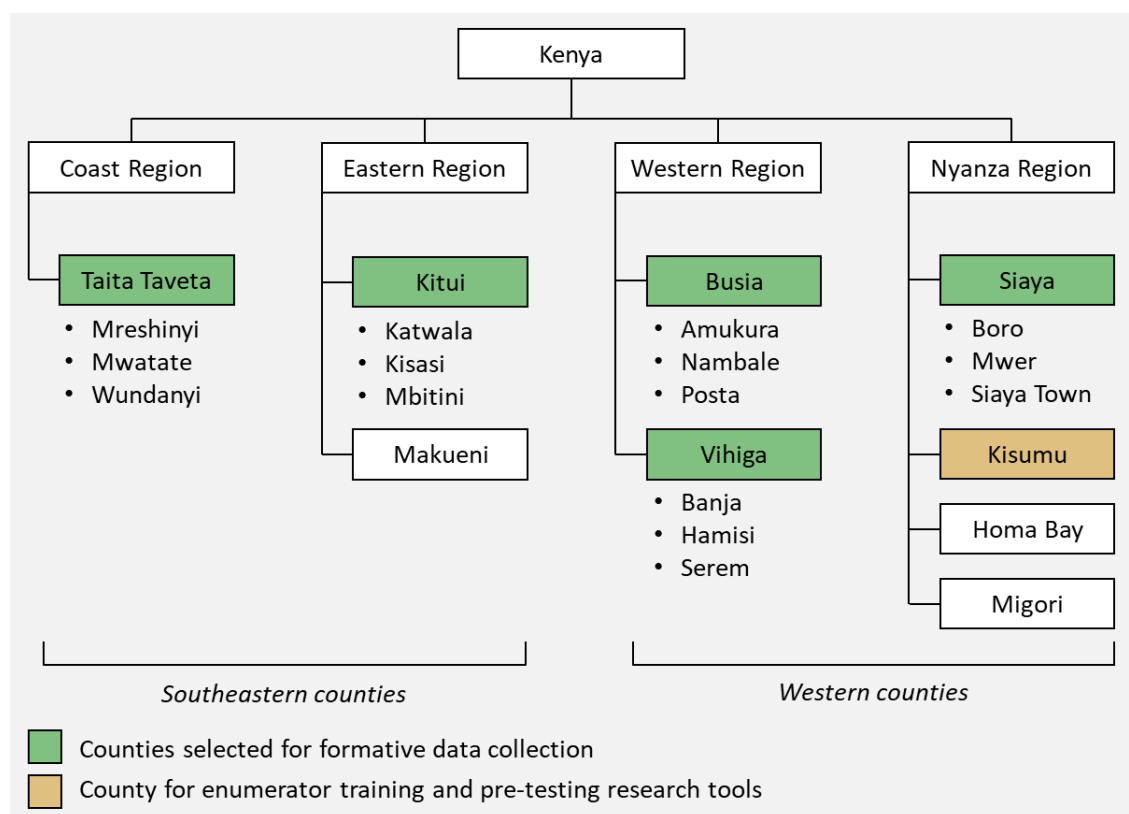
4.3 Formative data collection, processing and analysis

Design

Formative research was conducted in February and March 2017 in five of the nine counties participating in the dairy component of the AVCD Project. First, all counties were clustered based on similarities in agro-ecological and socio-cultural characteristics. Next, five counties were selected from these clusters for data collection, namely Busia, Vihiga and Siaya in western Kenya and Taita Taveta and Kitui in the southeast. This purposive selection was undertaken by the ILRI nutrition lead on the formative research team. The distribution of these counties across the four regions involved in the wider project is shown in Figure 4.

In Figure 4, counties selected for pre-testing of research tools and for formative research to inform the MoreMilk SBCC strategy are shaded (orange and green respectively). Participating communities within each county are listed.

Figure 4: Counties participating in the AVCD project.



The enumerator training (Figure 5) and pretesting of research tools was undertaken in Kisumu County, after which the tools were revised accordingly. Formative research involved a cross-sectional approach using a range of techniques:

1. Rapid ethnographic research methods (FGDs and KIs);
2. Barrier analyses with D/ND surveys;
3. Direct observation of childcare, feeding and WASH practices; and
4. Market surveys and food frequency questionnaires.

These methods are summarized below. A list of research tools, with links to access these tools on the CGSpace online repository, is included in Appendix I. A debriefing session was held each day during the data collection period. This provided an opportunity for team members to share key findings that had emerged during data collection that day and for team leaders to respond to any queries raised, to improve the quality and detail of the data collected.

Figure 5: Training of research assistants in Kisumu County, where pre-testing was conducted.



1) Rapid ethnographic research

Rapid ethnographic research was conducted in each of the five selected counties. A total of 30 FGDs were conducted, six in each site, with two sets of guide questions covering different topics. Discussions explored value systems, attitudes to gender and women's empowerment, food acquisition and consumption practices, household, maternal and child diets, barriers and facilitators to priority behaviours relating to maternal diets, IYCF practices and dairy farming. The research team was divided into two groups, working concurrently. One group conducted discussions on women's empowerment while the other focused on the nutrition component. Each discussion engaged 8–10 individuals, with the following groups: (i) PW or women with a CU2; (ii) grandmothers (GMs), above 50 years of age; and (iii) husbands of PW or fathers with a CU2. PW and mothers of young children were selected as the primary caregivers of children and other household members and generally the primary audience in most programs on feeding and care practices. The GMs and fathers were selected as potential primary influencers of the primary audience, the mother.

Forty-three KIs were administered to two groups of participants: those affiliated to the MoH and Ministry of Agriculture (MoA) and those with key roles in the community. Interviews with Ministry staff were administered to county and subcounty nutritionists, ward and subcounty agriculture officers, community health extension workers (CHEWs), livestock officers and public health officers. The other group included community and religious leaders, community health volunteers (CHVs), female elders and agriculture extension agents. The KIs focused on (i) characterizing food security and poverty within the community, (ii) describing ongoing and past programs and the perceptions of their successes and failures, (iii) exploring perceived best practices in social and behaviour change relating to nutrition-sensitive agriculture and potential delivery platforms.

Audio recordings of interviews and focus groups were reviewed and detailed summaries developed. Verbatim transcripts were beyond the financial scope of the project. The detailed summaries were then used to develop a codebook, which included all thematic areas. The codebook was updated regularly with information from the detailed summaries. The information in the codebook was then used to guide the teams in the abstraction of data into an Excel template using a thematic analysis approach.

2 and 3) Barrier analysis surveys and observations

A BA survey of D/NDs key practices was undertaken to investigate and identify behavioral determinants associated with several priority behaviours (Table 8). The D/ND surveys also captured basic socio-demographic characteristics of the

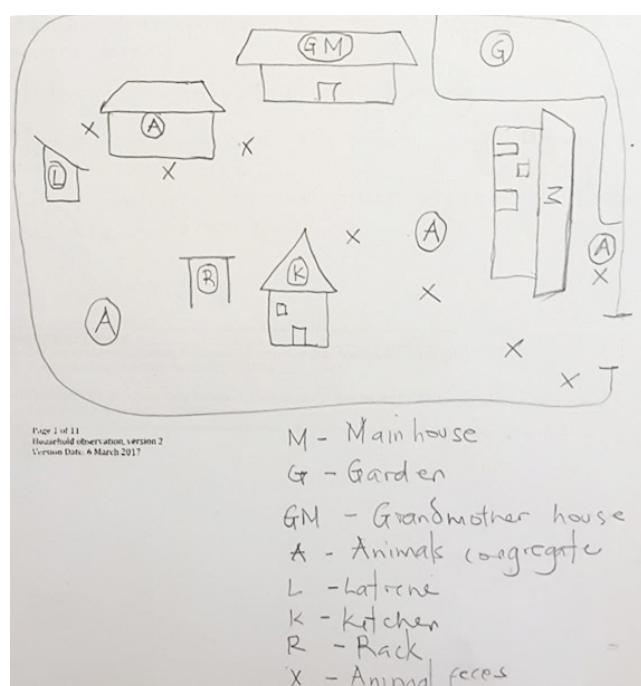
households, including the Household Hunger Scale (Ballard et al. 2011). This experience-based scale, developed by the Food and Nutrition Technical Assistance (FANTA) project and the Food and Agriculture Organization of the United Nations (FAO), captures more severe forms of household food deprivation based on three hunger-related aspects of insecure food access. A total of 40 women were recruited in each county, including 10 women from each of four categories, namely (i) PW; (ii) lactating women (LW) with a child under 6 mo; (iii) women with a child 6–12 mo; and (iv) women with a child 12–23 mo. These categories were selected to increase the representative nature and accuracy of information on current behaviours and factors enabling or preventing these behaviours.

Table 8: Priority behaviours under investigation through Barrier Analysis

Priority behaviours under investigation through Barrier Analysis
Pregnant and lactating women
<ul style="list-style-type: none"> • Consumption of at least one serving of safe dairy products each day. • Consumption of foods from at least five of ten food groups each day. • Consumption of one extra meal or snack each day.
Mothers of children <6 mo
<ul style="list-style-type: none"> • Giving only breast milk to their child for the first 6 mo of life.
Mothers of children 6–23 mo
<ul style="list-style-type: none"> • Providing children 12–23 mo with at least one serving of safe dairy products each day. • Providing children 6–23 mo with foods from at least four of seven food groups daily. • Boiling milk before feeding to children 6–23 mo.

Coupled with the D/ND survey, an observation checklist was completed for each household visited. The observation checklist involved observing practices relating to child feeding, food preparation and storage, animal management, handwashing, disposal of waste and child faeces and other aspects of sanitation and hygiene. A sketch of the homestead was included as part of the observation checklist (see Figure 6 for an example).

Figure 6: Sketch of a homestead in Kitui County during the observation exercise.



All D/ND surveys and observation records were reviewed by team leaders to ensure consistency with the protocol. Descriptive analyses were used to summarize categorical data and thematic analyses for open-ended responses.

4) Market surveys and cost of the diet

Availability and affordability of food are commonly cited as barriers to increasing the diversity of diets, both of which can vary between seasons. To explore these determinants in the formative research communities, we conducted market surveys and performed analyses using the CotD method (Deptford et al. 2017). Several tools are available to model optimal diets and associated costs, helping to inform better policies in the context of agriculture, markets and nutrition. Linear programming is one such tool and is especially useful for examining constraints that reflect cultural contexts and local food systems. This analysis was done using the CotD linear programming tool to estimate the lowest cost for the amount and combination of local foods needed to meet the average nutrient needs of a typical household, comprising two adults and four children.

The CotD software contains five databases:

- i. The energy and nutrient content of foods;
- ii. The macro- and micronutrient requirements of different population groups;
- iii. Predefined groups of individuals in typical households (this was modified to reflect the average size and composition of households in the study settings);
- iv. The sizes of foods portions; and
- v. Currency conversion factors.

Data were collected through a market survey to calculate the average cost of foods per 100 g, while FGDs or dietary surveys were used to assess local dietary habits and preferences. These data are presented to a linear programming solver within the software that selects the least expensive combination of local foods for four standard diets:

- *Energy only diet (EO)* – meets the recommended average energy specifications only;
- *Macronutrient diet (MN)* – meets recommended intakes for energy, protein and fat;
- *Nutritious diet (NUT)* – meets recommended intakes for energy, protein, fat and 13 micronutrients; and
- *Food habits nutritious diet (FHAB)* – meets the same intake requirements as a NUT diet but also considers the typical dietary habits of households in the assessment site.

For each diet, the output summarizes the costs, quantity and proportion of energy and nutrient specifications provided by all the foods selected. These can be viewed for a given individual or household, by day, week, season and year. By expressing the cost as a percentage of income, the affordability of the diet can be estimated.

In this study, a market survey was developed using a food list created in consultation with local stakeholders and was administered in the formative research counties (three in western Kenya, two in southeastern Kenya) as reflected in Figure 4. In three markets of varying size in each county, information was collected on the cost per 100 g from two to four vendors for each food type (i.e. staple foods, meats, vegetables, fruits). Market surveys were conducted at a single time point, with vendors asked to provide current price data, as well as retrospective data corresponding to three other seasons over a 12-month period.

A food frequency questionnaire was administered to 12 randomly selected households in each community participating in the D/ND survey, to characterize usual dietary patterns. Food items were classified into four groups, according to their frequency of consumption. These data were used in the calculation of the FHAB diet using CotD software, to identify foods that were accessible, affordable and acceptable in each of the seasons and to inform targeted messaging to enhance household and individual dietary diversity. Modelling was performed to minimize costs and maximize nutrient adequacy. Various scenarios replicating home production of maize or the ready availability of milk were modelled, to assess the potential programmatic impact of specific crop or livestock interventions.

5 Results

5.1 Behavioural and contextual analysis

Food prices

Measuring community socio-economic characteristics enables researchers in development practice to compare ex-ante and ex-post situations, the relevance of development intervention to a community and predict the likelihood of success of the intervention. Community socio-economic stratification to measure vulnerabilities often requires the use of proxy or indirect indicators to approximate the phenomena being described, as phenomena such as vulnerability do not have a direct measure or sign. Examples of proxy indicators include health, governance, political rights, literacy and economic well-being. These proxy indicators have been used to develop a social vulnerability index for countries in Africa (Adger and Vincent 2005). In this study, we stratified the communities by wealth and household type, in terms of headship, wealth status and affliction by HIV/AIDS and developed proxy indicators with community members for each stratification category.

Based on prices averaged across seasons, food vendors and communities, Tables 9 and 10 present the least and most expensive food items respectively for the southeastern and western counties. This price data was collected for four seasons across the year.

Sugarcane was the least expensive item in both areas, with other lower-priced food items largely fruits and vegetables. ASF featured prominently amongst the most expensive items, including various forms of fish, meat and powdered milk. Based on available data across sites and seasons, fresh and locally-fermented cow's milk was approximately half the price of ultra high temperature (UHT) processed milk (at 6 Kenyan Shillings (KES), KES 7 and KES 14/100 g respectively). Powdered milk was more readily available in the southeastern counties than in western Kenya, with prices ranging from KES 72–84/100 g.

Table 9: Least expensive foods, averaged across food vendors, communities and seasons

Southeastern counties	Price (per 100 g)		Western counties	Price (per 100 g)	
	KES	USD*		KES	USD*
Sugarcane	1.2	0.01	Sugarcane	1.4	0.01
Sugar apple, sweetsop	2.4	0.02	Pumpkin	2.1	0.02
Papaya	2.8	0.03	Papaya	2.2	0.02
Salt, non-iodized	3.0	0.03	Avocado	2.2	0.02
Banana, ripe	3.9	0.04	Cabbage	2.4	0.02
Salt, iodized	3.9	0.04	Sweet potato, white	2.7	0.03
Banana, unripe	4.1	0.04	Sweet potato, orange	3.0	0.03
Mango	4.1	0.04	Beer, local, grain	3.1	0.03
Java plum, jambolan	4.2	0.04	Sweet potato, yellow	3.1	0.03
Cabbage	4.2	0.04	Cowpea leaf	3.2	0.03
Avocado	4.7	0.05	Cassava	3.3	0.03
Leafy vegetables	4.7	0.05	Kale	3.5	0.03
Guava	4.8	0.05	Banana, unripe	3.6	0.04
Orange juice	5.5	0.05	Banana, ripe	3.7	0.04
Sorghum, dry	5.6	0.05	Pumpkin leaf	3.9	0.04

* Currency conversion based on USD 1.00 = KES 103 as at March-April 2017

Table 10 excludes items that do not contribute to dietary diversity scores, including condiments, beverages and processed snack foods (e.g. crisps, sweets). Animal-sourced foods are shaded in grey.

Table 10: Most expensive foods, averaged across food vendors, communities and seasons

Southeastern counties	Price (per 100 g)		Western counties	Price (per 100 g)	
	KES	USD*		KES	USD*
Infant cereal, <i>Cerelac</i>	100	0.97	Milk powder, fortified	133	1.29
Milk powder, non-fat	84	0.82	Fish, tilapia, fried	114	1.11
Fish, Nile perch, fried	79	0.77	Fish, lung fish, fried	110	1.06
<i>Weetabix</i> cereal	78	0.76	Fish, tilapia, dried	101	0.98
Fish, tilapia, fried	74	0.72	Infant cereal, <i>Cerelac</i>	87	0.84
Milk powder, whole	72	0.70	Fish, Nile perch, fried	84	0.81
Milk powder, fortified	72	0.70	Fish, Nile perch	73	0.71
Fish, small, fresh	67	0.65	Fish, mud fish	70	0.68
Fish, Nile tilapia (<i>perege</i>), fried	59	0.57	Fish, mud fish, fried	66	0.64
Fish, small, dried	52	0.50	Beef, kidney	48	0.47
Soya	51	0.49	Beef, liver	48	0.46
Lamb, liver, raw	48	0.47	Lamb, kidney	47	0.46
Goat, raw	45	0.44	Soya	40	0.39
Fish, mackerel (<i>una</i>), fried	44	0.43	Fish, dried	39	0.38
Lamb, kidneys, raw	44	0.43	Goat	39	0.38

* Currency conversion based on USD 1.00 = KES 103 as at March-April 2017

Cost of alternative diets

CotD analysis was used to calculate the lowest daily cost for the four theoretical diets, for a typical family of two adults and four children, as seen in Table 11.

Table 11: Members of a ‘typical household’ in study communities, for Cost of the Diet analyses

Members of a ‘typical household’ in study communities, for CotD analyses	
Adults	
Man, 30–59 y, 50 kg, moderately active	
Woman, 30–59 y, 45 kg, moderately active, 7–12 mo lactation	
Children	
12–23 mo	
8–9 y	
10–11 y	
12–13 y	

Table 12 presents the costs of four standard diets based entirely on market-sourced foods and for four scenarios involving maize and/or milk being produced by the household (or received free of charge through other means).

The findings presented here are based on analysis of data from western Kenya only. Daily costs for alternative diets are shown in Table 12, with the average FHAB diet shown to be double the cost of an EO diet. In Vihiga County, a scenario where all foods were market-sourced meant that families would need to spend KES145/day for an EO diet; KES154/day (USD1.50) for an MN diet; KES291/day for a NUT diet and KES390/day for an FHAB diet. Similar trends were noted in Siaya, where a family acquiring all foods from market sources would need to spend KES184/day for an EO diet; KES187/day for an MN diet; KES328/day for a NUT diet and KES388/day for an FHAB diet.

The CotD varied considerably with the seasons, with the FHAB diet costing up to KES432/day in the lean season in Vihiga. Modelling maize, the main staple, as fully sourced from home production and adjusting for associated production costs (estimated at 20%; ‘with 80% free maize’ in Table 12) reduced FHAB diet costs by 11% (KES346/day) in Vihiga and by 14% (KES331/day) in Siaya. In addition to own maize, modelling milk and milk products as being sourced from a household’s own dairy cattle reduced costs of the FHAB diet by 20% (KES312/day) in Vihiga and by 31% (KES290/day) in Siaya (‘with free milk + 80% free maize’ in Table 12).

Table 12: Average daily cost of alternative diets for a family of two adults and four children, by county and overall

Diet type	Daily cost (KES)				Daily cost (USD) *			
	Vihiga	Busia	Siaya	Average	Vihiga	Busia	Siaya	Average
Energy only (EO)	145	185	184	171	1.41	1.79	1.79	1.66
Macronutrient diet (MN)	154	188	187	177	1.50	1.82	1.82	1.71
Nutritious diet (NUT)	291	328	352	324	2.82	3.18	3.42	3.14
Food habits diet (FHAB)	390	243	388	340	3.79	2.36	3.76	3.30
with 100% free maize	333	198	313	281	3.24	1.92	3.04	2.73
with 80% free maize	346	209	331	295	3.36	2.03	3.22	2.87
with free milk	355	212	358	308	3.45	2.06	3.47	2.99
with free milk + 80% free maize	312	169	290	257	3.03	1.64	2.82	2.50

* Currency conversion based on USD 1.00 = KES 103 as at March-April 2017

Drawing on multi-season food price and dietary data, these analyses provide critical insights into the feasibility of alternative diets and how interventions could be designed to realize nutritionally secure and sustainable diets for families in these areas. Food consumption patterns reflected market prices, with lower-cost foods like kale, avocado and sugarcane more commonly consumed than more costly ASF. Local stakeholder interviews revealed the average monthly household income for poorer households to be approximately KES 3,000 (USD 29.41), demonstrating the challenge of acquiring foods to meet even basic energy needs (average EO diet costs KES 5,130/month) and placing nutritious diets well outside a household's capacity, even when maize and milk were sourced from home production.

Food security and dietary patterns

In line with the CotD findings, approximately one in five households participating in D/ND surveys (22% and 18% in western and southeastern counties respectively) reported moderate to severe food deprivation in the previous 30 days, meaning they sometimes went to bed hungry or did not eat all day. The prevalence of moderate food insecurity in these communities, which can also influence the dietary quality, is likely to be much higher. Estimates from the *State of Food Security and Nutrition in the World 2020* report indicate moderate to severe food insecurity to affect 61% of the population in Eastern Africa (FAO et al. 2020).

In western counties, FGD participants identified *ugali* (stiff porridge made from maize, sorghum or cassava), kales and small fish (*omena*) as being commonly consumed. For other AFS, including fish, chicken and goat meat and offal, consumption frequency varied widely, from considered a common food by some participants but eaten monthly or less often by others. As a food that 'fills the stomach,' *ugali* was prioritized when making decisions about food purchases, preparation and consumption. Participants noted fruits were consumed less frequently due to seasonal availability and price. Beans, a preferred food for women but not men, were consumed when available and affordable. Similarly, consumption of carrots, nuts (e.g. groundnuts) and sesame was limited by availability in markets and their relatively high price. Adults were said to consume eggs infrequently, due to taste preferences and affordability.

In southeastern counties, *ugali* made from white maize flour was preferred because it was affordable. Brown *ugali* (made using millet, rather than maize) was associated with poverty. Seasonal variation in fruit consumption was noted, with fruits such as mangoes, passion fruit, ripe bananas and avocados eaten in abundance when in season. Legumes, including beans and pigeon peas, were also available and commonly consumed. Male respondents indicated that cabbage, spinach, Irish potatoes, capsicum and tomatoes were readily available and usually eaten by women. Eggs were liked, especially by elder women, but were not affordable.

Western counties noted limited availability and high cost of milk which resulted in infrequent consumption; however, when available, it was indicated that children would be prioritized. Women frequently consumed black tea with sugar, rather than milk tea because of availability and affordability. In southeastern counties, respondents perceived milk to be readily available because many people kept cattle. It was commonly consumed, fresh, fermented, in tea and meals. Differences in milk consumption and dietary patterns are noted to reflect differing livelihood strategies between regions. The southeastern counties are within an area traditionally associated with extensive cattle-keeping, whereas levels of cattle ownership and hence milk production is relatively low in western Kenya, where livelihoods centre around crop-based agriculture, fishing and aquaculture.

Nutritional knowledge and perceived benefits of a diverse diet

All population groups involved in FGDs had a sound knowledge of dietary diversity and the importance of consuming a 'balanced diet' for health. Participants were typically able to describe a balanced diet correctly, by naming foods from multiple different food groups (e.g. staple foods, legumes, green leafy vegetables, other vegetables, fruits, fish). In southeastern counties, some women believed that consuming a balanced diet would help fight diseases such as HIV. In food grouping exercises, mothers of young children typically grouped foods according to their nutritional value (i.e. proteins, carbohydrates, vitamins and minerals), while men and elder women grouped them according to how they are prepared or when they are served (e.g. with tea, with *ugali*, or in the morning).

Both male and female participants were able to describe the functions of different nutritional components of foods (i.e. protein, carbohydrates and vitamins) and the consequences of consuming or not consuming them. Many participants conveyed knowledge that vitamins and minerals were protective foods that could prevent diseases; however, they did not freely name and identify functions of specific micronutrients (i.e. VA or iron). For example, some participants reported that eating carrots could help one see better but lacked specific knowledge about VA or other examples of foods containing VA. Examples of specific food items reported to protect against illness included watermelon and mangoes, said to prevent anaemia, typhoid fever and parasitic infections, and milk and avocados, said to prevent asthma.

Some discussion groups, including men in western counties and elder women in southeastern counties, also described the value of specific foods in terms of providing energy, fighting disease and 'building the body' (Table 13). *Ugali* was widely reported to be the main staple food for men. Both male and female participants perceived *ugali* to be more filling than other foods and therefore to be preferred by men over other staples (like green bananas [*matoke*] or rice) and beans (which were seen as children's food). Similar distinctions in the suitability of foods were not reported for women. Chicken legs and wings, which contain a small amount of meat, were said not to be given to men out of respect for their role as head of household and would instead be given to women. Men would commonly eat chicken gizzards.

Enablers of a diverse diet included livestock-keeping and cultivation of fruits and vegetables: 'We have chickens so we can get eggs; guavas are on the trees that we have planted, hence we can get the fruits, and vegetables like *mrenda* are obtained from the farm easily' (GM, Vihiga County). A lack of income was identified as a common barrier to accessing a diverse range of foods: 'We don't have money to afford a balanced diet. We normally eat *ugali* and bananas, with vegetables like *mrenda* (a green leafy vegetable)' (GM, Vihiga County).

Table 13: Functional attributes of consuming specific foods, as perceived by focus group participants

Attribute	Foods		
Give energy, warm the body	<ul style="list-style-type: none"> • <i>Ugali</i> • Cassava • Green banana 	<ul style="list-style-type: none"> • Plantain (<i>matoke</i>) • Porridge • Milk 	<ul style="list-style-type: none"> • Arrowroot • Sweet potato • Potato
Build the body	<ul style="list-style-type: none"> • <i>Ugali</i> (all types) • Pilau (spiced rice dish) • Chapati (flat bread) • Chicken • Beef 	<ul style="list-style-type: none"> • Large and small fish (<i>omena</i>) • Blood • Intestines • Termites 	<ul style="list-style-type: none"> • Cooking oil (<i>Elianto and Kimbo</i>) • Tomato • Mushroom • Onion
Build blood	<ul style="list-style-type: none"> • Watermelon • Mango • Orange • Avocado 	<ul style="list-style-type: none"> • Sweet potato • Small fish (<i>omena</i>) • Eggs • <i>Blue Band</i> margarine 	<ul style="list-style-type: none"> • Green leafy vegetables, e.g. kale (<i>sukuma wiki</i>), jute mallow (<i>mrenda</i>), arrowroot leaves
Strengthen the body to fight disease	<ul style="list-style-type: none"> • All types of fruit • Avocado 	<ul style="list-style-type: none"> • Fish • Pigeon pea 	<ul style="list-style-type: none"> • Green leafy vegetables, e.g. cowpea leaves
Strengthen bones	<ul style="list-style-type: none"> • Milk 	<ul style="list-style-type: none"> • Small fish (<i>omena</i>) 	<ul style="list-style-type: none"> • Arrowroot and leaves
Improve skin	<ul style="list-style-type: none"> • Black nightshade (<i>sutsa</i>) 	<ul style="list-style-type: none"> • All types of fruit 	<ul style="list-style-type: none"> • All types of vegetables
Reduce constipation	<ul style="list-style-type: none"> • Wild vegetables 	<ul style="list-style-type: none"> • Spinach 	<ul style="list-style-type: none"> • Amaranth
Improve eyesight	<ul style="list-style-type: none"> • Carrot 		
Prevent asthma	<ul style="list-style-type: none"> • Milk 	<ul style="list-style-type: none"> • Avocado 	

Attitudes and beliefs about maternal, infant and young child nutrition

While the previous section illustrates general knowledge and perceptions of food within the participating communities, this section focuses on the priority dietary behaviours examined through BA (described in Table 8), namely dietary diversity of mothers and children, milk consumption by mothers and children, EBF to 6 mo and boiling milk prior to consumption. A summary is provided for each of these behaviours, while detailed tables exploring enablers and barriers and mapping these to the COM-B framework are contained in Appendix 7.

Topic: Maternal dietary diversity

Behaviour: Pregnant and lactating women consume foods from at least five food groups daily, year-round

Limited nationally representative data are available on maternal dietary diversity and milk consumption, as this information is not collected as part of the DHS or the Multiple Indicator Cluster Survey. Among PLW participating in the D/ND surveys ($n = 99$), 38% reported having consumed 5 or more of 10 food groups in the previous 24 hours, meeting the threshold for minimum dietary diversity (MDD) (FAO 2016). The percentage of women achieving MDD was highest in Taita Taveta (60%) and lowest in Kitui (20%); and higher among LW than PW (45% and 32% respectively). Figure 7 depicts the number of survey respondents with adequate dietary diversity for pregnant and lactating women in the study sites (based on consumption of five or more food groups on the day prior to survey), overall, by category and by community.

Figure 7: Maternal dietary diversity.

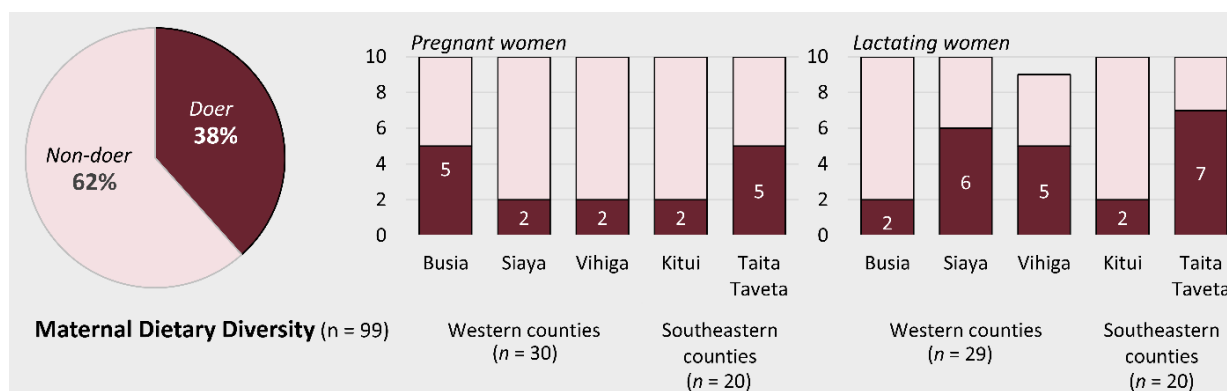


Table 14 lists foods that FGD participants indicated women should avoid while pregnant or breastfeeding. Several micronutrient and protein-rich foods, including milk, small fish and eggs, were perceived as being harmful during pregnancy because they would cause the baby to grow large *in utero*, resulting in a difficult delivery and potentially requiring a Caesarean section. Some foods with negative associations for pregnancy were also discouraged during lactation, including several ASF (eggs, small fish and meat). However, the underlying reasons and extent to which these beliefs were held varied between groups. In contrast, milk was among several foods believed to increase breast milk supply and said to be encouraged for LW.

Table 14: Food items not suitable for consumption during pregnancy and lactation

	Food item	Reason to avoid
Pregnancy	Milk, small fish (<i>omena</i>), legumes, Potatoes, watermelon, ripe banana, sesame, avocado, <i>Blue Band</i> margarine	Will make the baby large, leading to a difficult delivery
	Lemons	Tightens the vagina, leading to difficult childbirth; causes women's legs to swell
	Eggs	Will make the baby large, leading to a difficult delivery; may cause baldness in baby or large head; pregnant woman will produce a lot of saliva; causes high body temperature; advised to eat less than once per week/month
	Sugar	Baby will have a ' <i>mouth that drips saliva all the time</i> '
	<i>Githeri</i> (dish of maize and beans)	May cause constipation or diarrhoea
	Fried foods	Rapid heartbeat
	Lactation	Eggs
Lemons		Curdles breast milk and causes anaemia
Kale and Cowpea leaves, Soda, Black tea, Sodium bicarbonate		Insufficient breast milk
<i>Githeri</i> (dish of maize and beans)		May cause constipation or diarrhoea
Beans		Cause diarrhoea
Meat		Can transmit diseases to child through breastmilk (fathers only)
Small fish (<i>omena</i>) and other fish		Causes ' <i>muyeka</i> ' in mother and breastfeeding child - a type of fish disease that causes itching

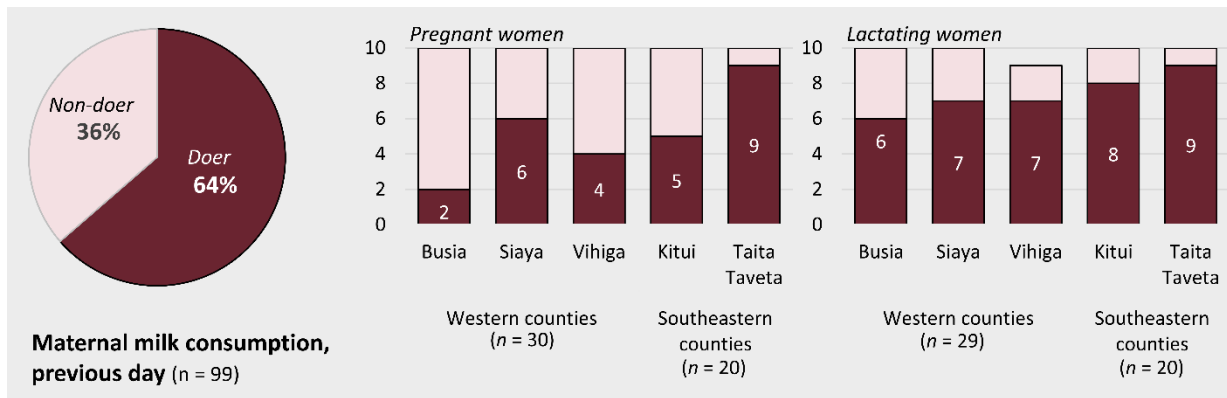
Participants in FGDs noted that traditions of intra-household food allocation often meant that women would consume lower quality or quantities of food, as a result of being served last. One group of elder women laughed about how food would be shared between family members and all agreed men would be served first and women last. A group of men indicated children would be served first and suggested other factors influencing food allocation:

'Children are served first and the mother is served last and sometimes may go without food. During the dry period, mothers sometimes don't eat; however, some eat early before their husbands. In the olden days, or in some households, men are given food first so that they have the opportunity to look for food. Fathers may be denied food for not contributing to family budget or for a misunderstanding in the home.' (Fathers, Busia County).

Behaviour: Pregnant and lactating women consume at least one serving of safe dairy products each day, year-round

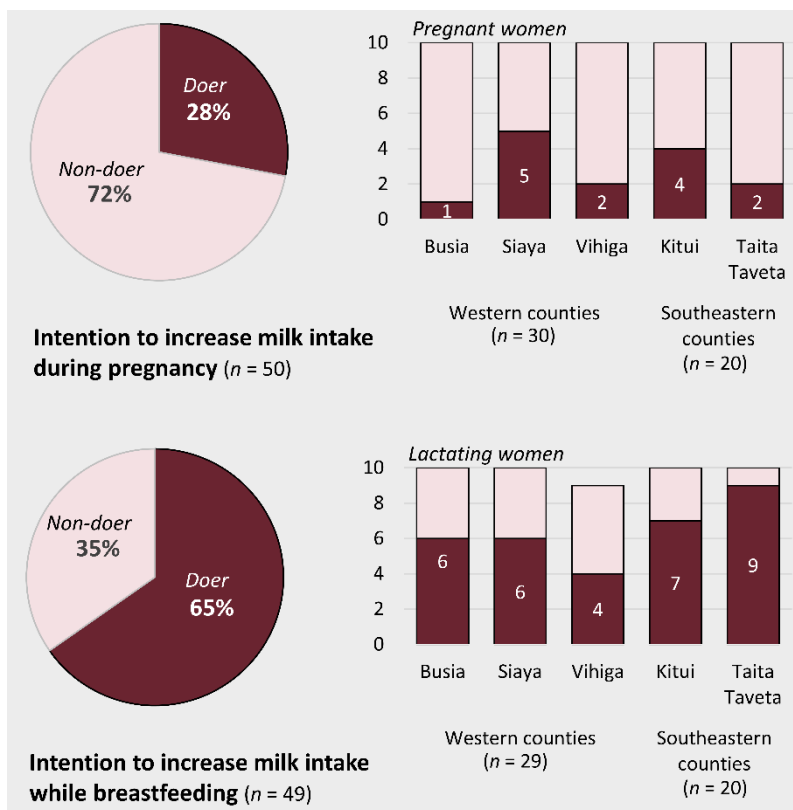
Overall, close to two-thirds of PLW (64%) had consumed milk on the day prior to the survey (Figure 8). The proportion consuming milk was higher among LW than PW (76% and 52%, respectively) and varied between counties, from 40% in Busia to 90% in Taita Taveta.

Figure 8: Milk consumption on day prior to survey by pregnant and lactating women in the study sites, overall, by category and by community.



When asked whether they intended to alter their consumption of milk during pregnancy or lactation, a substantial difference was seen between PW (n = 50) and those breastfeeding a child <6 mo (n = 49). Just over a quarter of women (28%) intended to increase milk intake during their current pregnancy, compared to approximately two-thirds (65%) of women during their current lactation (Figure 9).

Figure 9: Intention to increase milk consumption during current pregnancy or lactation in the study sites, overall and by community.



Despite the low proportion of PW intending to increase their milk intake, multiple benefits of milk intake during pregnancy were described. Maternal benefits were most commonly cited, including providing energy, supporting health and increasing strength (mentioned by 48%, 42% and 38% of PW respectively). Milk consumption during pregnancy was also considered to improve the health, growth and strength of the baby (24%, 22% and 12% respectively). Approximately one-third of respondents (32%) perceived milk consumption to have negative consequences during pregnancy. This included concerns about a large baby, an associated difficult delivery and maternal illness, such as brucellosis (10%, 10% and 8% respectively).

Physical and economic access were overwhelmingly cited as determinants of milk consumption, with the financial capacity to purchase milk and cattle-keeping identified as enabling factors (74% and 52% respectively) and a lack of money, lack of lactating cows and low milk production as barriers (78%, 30% and 20% respectively). In FGDs, mothers, fathers and GMs noted that when a low volume of milk was available, it may be made into tea and distributed to all household members, or priority may be given to school-aged children, as it was considered to support growth and school performance.

Figure 10 illustrates a Problem Tree and Figure 11 depicts a Solution Tree relating to safe, sufficient milk consumption by women and children 12–23 mo.

These were developed based on findings from FGDs, KIIs and D/ND surveys, to support the identification of barriers to priority behaviours and activities or techniques to enable behavioural change. Larger copies of these Problem and Solution Trees, as well as those for other behaviours, are provided in Appendix 2.

Figure 10: Problem Tree relating to safe, sufficient milk consumption by women and children 12–23 months.

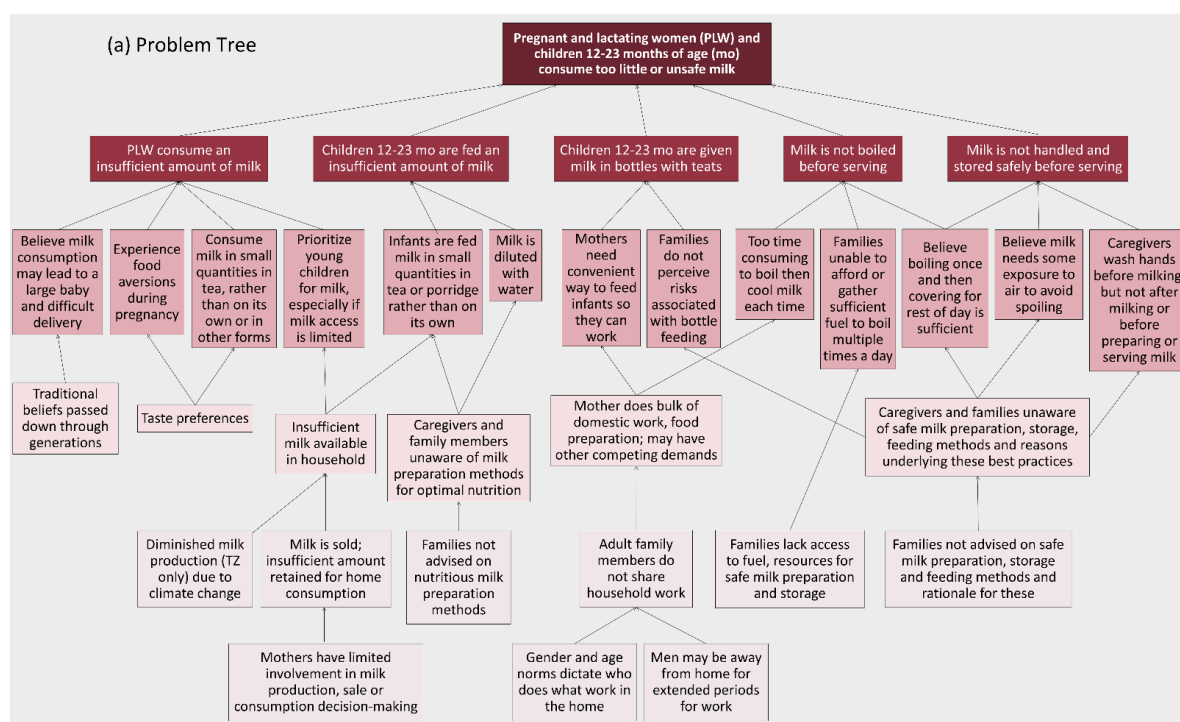
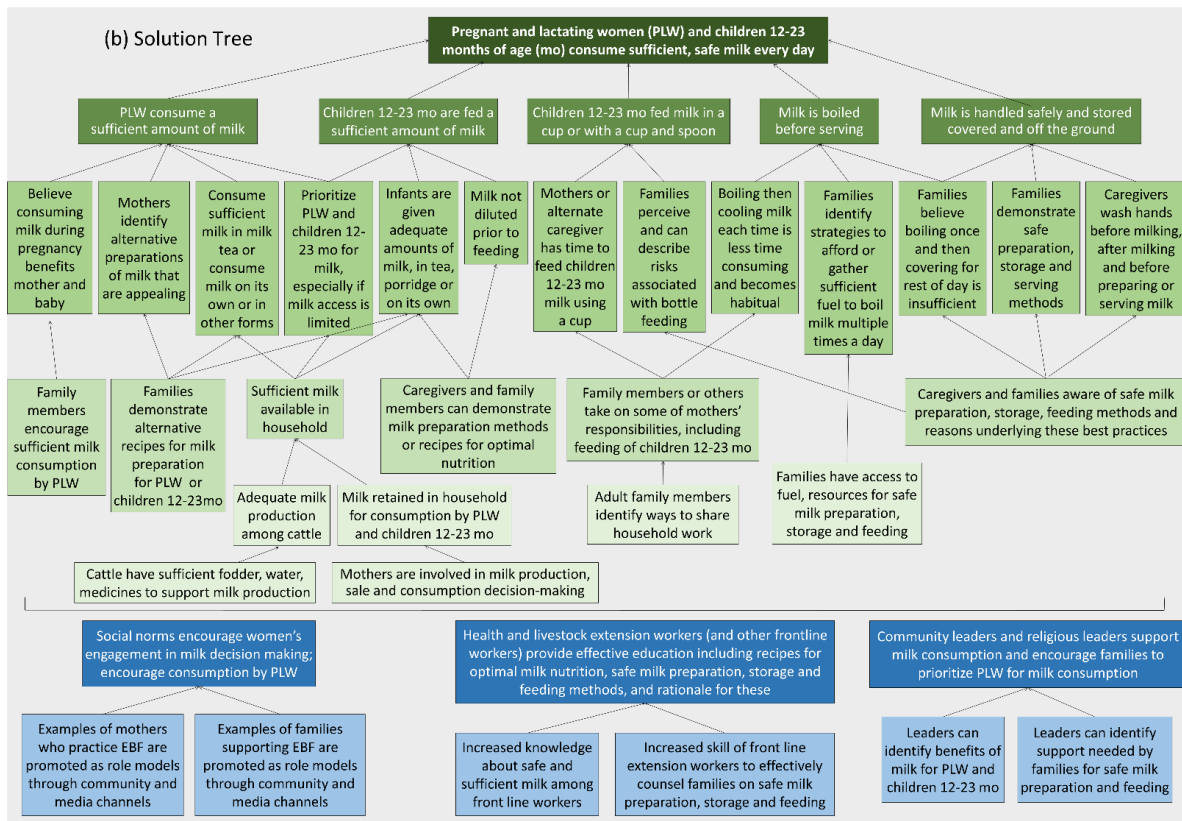


Figure 11: Solution Tree relating to consumption of at least one serving of dairy products each day by pregnant and lactating women and children 12–23 months.

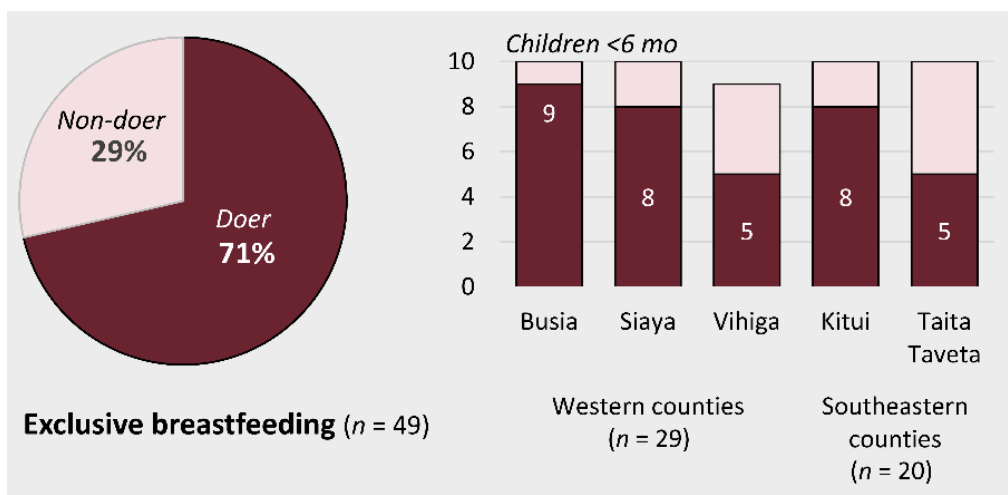


Topic: Exclusive breastfeeding

Behaviour: Mothers give only breast milk for the first six months of life

Breastfeeding in Kenya is common and of long duration, with national data indicating almost all children (99%) commence breastfeeding and the median duration of any breastfeeding is 22.0 mo (KNBS et al. 2015). The median duration of EBF increased from 0.7 mo to 3.3 mo between 2008–2009 and the 2014 DHS but remains well below the recommended 6 mo. Based on survey responses from the five project counties, 72% of children 0-6 mo had received breast milk only the previous day (Figure 12), compared to 61% reported nationally for children of the same age (KNBS et al. 2015).

Figure 12: Exclusive breastfeeding of children <6 months in the study sites, overall and by community.



Participants in FGDs could readily describe recommendations and benefits of EBF. Many mothers and some GMs could describe appropriate breastfeeding techniques related to latch, positioning, feeding on demand and breast emptying. It was widely held that most people within the household and wider community would support EBF, including women's husbands, other family members and local leaders (e.g. chiefs, religious leaders and leaders of women's groups). Factors enabling EBF included women's direct and positive experiences (e.g. own experience in previous lactations or having a close friend or relative who had practised EBF), access to adequate food and/or animal milk, being able to stay near the baby and support from husbands.

Some participants mentioned that elder female family members (i.e. mother-in-law [MIL], child's GMs) may not support EBF, due to expectations for mothers to attend to household chores such as fetching water or firewood. Husbands were also said to encourage mothers to introduce other foods early, especially if the child continued to cry. Mothers, fathers and GMs mentioned common practices that continue to undermine EBF and early initiation of breastfeeding, including giving water or milk to cleanse the stomach, giving warm salt water to eliminate worms and 'build blood' and giving gripe water for stomach pains.

One mother described an experience of her child being offered locally-brewed beer as a newborn: 'When I came from the hospital after delivering my first child, I stayed for two days and on the third day my MIL came, took the baby out of the house and gave it some local brew to taste. The child accepted and licked the beer and this signified that the child accepted the name intended for him. However, if a baby refuses to lick the beer, then it means that the child would not be given the name' (PLW, Busia County).

Some participants acknowledged that children might cry for many reasons but crying was overwhelmingly perceived by all groups as a sign of hunger. Thus, persistent crying or a failure to settle after breastfeeding was interpreted as a sign that a mother had insufficient milk. This would lead to the provision of other foods before 6 mo, namely animal milk and/or porridge. One elder woman shared her experience of introducing foods to her grandchild before 6 mo: 'I gave my grandchild porridge at two months because of constant crying and when I did so, he stopped crying. He is now seven months and very healthy.'

Insufficient breast milk was largely attributed to insufficient food intake by a mother, often due to low access. Maternal stress, use of certain contraceptives and illness were also believed to contribute to insufficient milk. Mothers being separated from their infant for work or other reasons were said to necessitate porridge and/or animal milk being provided to the child while the mother was away. Breast milk expression was rare, with limited awareness of the practice or knowledge of how to express and store milk safely. Elder women were not supportive of this practice, as they felt the milk would lose its quality if exposed to air or left for long.

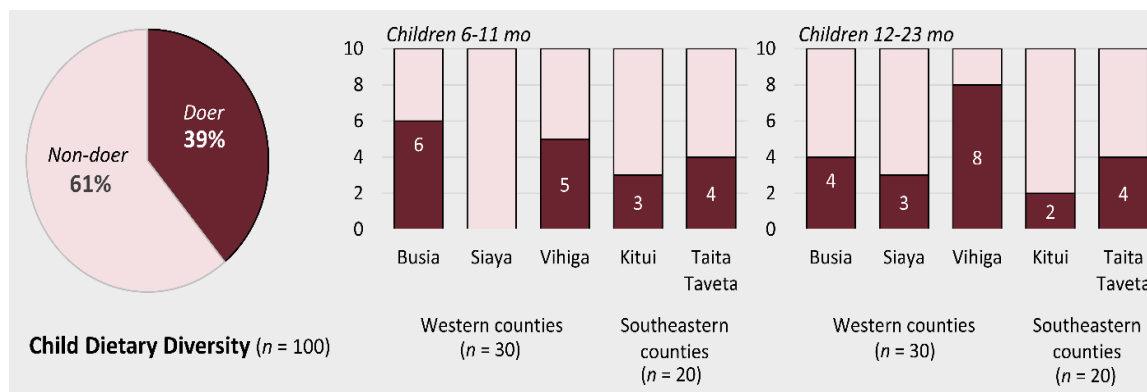
Topic: Dietary diversity among children 6–23 mo

Behaviour: Caregivers provide children 6–23 mo with foods from at least four food groups daily, year-round

As noted in the introduction, a majority of Kenyan children 6–23 mo do not consume an adequately diverse diet. While the project's priority behaviour for child dietary diversity advocates consumption of at least four food groups daily, D/ND analyses included breast milk as an additional food group based on a WHO expert consultation in June 2017, which increased the total number of groups from seven to eight and the threshold for MDD from four to five (WHO 2017). Thus, children 6–11 mo were assumed to be receiving some breast milk and their mothers were classified as 'doers' if their child had consumed food from four or more groups on the day of recall. For children 12–23 mo, mothers were considered doers if their breastfed children had consumed food from four or more groups, or their non-breastfed child had consumed from dairy and an additional four or more food groups the previous day. All other mothers were coded as non-doers.

Figure 13 depicts adequate dietary diversity for children 6–23 mo in the study sites (based on consumption of at least four food groups by breastfed children and at least five by non-breastfed children, on the day prior to the survey), overall, by age category and by the community.

Figure 13: Child dietary diversity.



Only 39% of children 6–23 mo consumed an adequately diverse diet, comparable to the most recent national data of 41% (KNBS et al. 2015). Levels varied between counties, from 15% of children in Siaya to 65% in Vihiga (Figure 13). Most mothers reported feeling they were able to feed their child from four or more food groups and that this would be supported by most people within their household and community. A large majority of mothers (83%) felt it was somewhat difficult to access the necessary resources to feed their child from four or more food groups daily. A lack of money was by far the most commonly reported barrier to a diverse diet, cited by 86% of survey respondents. Other common barriers included difficulties in cultivating one's own produce, lack of livestock, low availability of foods in markets and limited time for food preparation.

Common responses by mothers to an open-ended question about perceived advantages of a diverse diet included improving children's health, preventing disease, increasing growth, strength and weight, and improving children's moods. BA findings indicate doers were significantly more likely than non-doers to (i) identify increased energy as a positive outcome (44% vs 25%), (ii) describe benefits of consuming specific food groups (29% vs 14%) and (iii) name a greater number of benefits (mean of 3.1 vs 2.6) (Park 2020).

Participants in FGDs spoke knowledgeably about the benefits of dietary diversity and specific foods for young children. Porridge made of sorghum, millet or maize and milk were identified as the common first foods introduced to an infant. Some participants mentioned adding small fish (*omena*) and/or beans, to make the baby strong. *Omena*, either in small pieces or in a broth, was believed to be beneficial as a source of energy for infants. Fruits like avocados and ripe bananas, or green bananas and potatoes are mashed and may be introduced at approximately 6 mo, since these are considered to be light foods and easily digestible by the baby.

Beans and various forms of meat were not typically introduced until a child was at least one year old because they were considered 'too hard' for a younger child's stomach. In some communities (including in Vihiga County), participants indicated liver to be introduced to children as young as 6 mo because its soft texture enables it to be easily consumed, whereas other meats would be introduced between 1–2 years when children have teeth to enable chewing. Eggs would also be withheld until 1–2 years, due to beliefs that earlier introduction would delay children's speech.

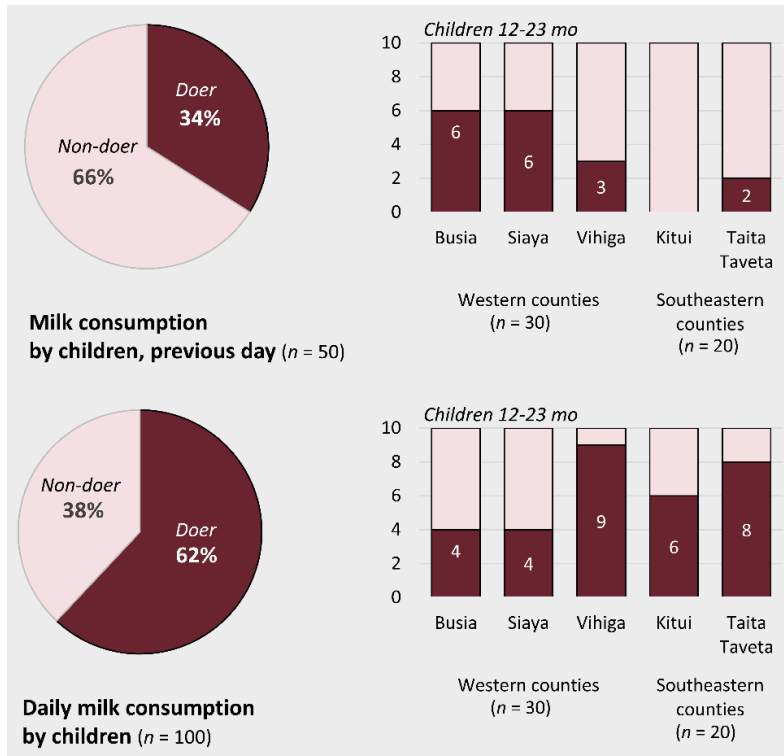
Porridge, green leafy vegetables, cooked banana and potato were identified as common foods, due to their availability and affordability. Access to meat was said to be limited by cost but when available would typically be given to the household head 'because he is the one who must work' and the mother saw him (the husband) first. Respondents indicated that children would rarely be given priority in the allocation of meat within the household but it was agreed that they would often be prioritized for milk.

Behaviour: Caregivers provide children 12–23 mo with at least one serving of safe dairy products each day, year-round

Information on children's milk intake was available through 24-hour dietary recall assessments, indicating whether or not a child had consumed milk or other dairy products on the day prior to the survey, as well as a general question about

milk consumption frequency. As shown in Figure 14, approximately one-third of children 12–23 mo (34%) had consumed milk on the previous day, with substantial variation between counties. Milk was consumed by 6 of 10 children in Busia and Siaya counties but by no children in Kitui. Dietary data from the previous day contrasted with mothers' responses to a general question about the frequency with which milk was given to their child aged 12–23 mo, in which close to two-thirds of women (62%) reported providing milk at least once daily (Figure 14).

Figure 14: Milk consumption by children 12–23 months in the study sites (based on the day prior to survey and reported usual practice), overall, by age category and by community.



The benefits of milk for young children were widely acknowledged, both in surveys and FGDs. Mothers acknowledged that milk had benefits for children's health, strength, growth, energy and satisfaction. Disadvantages were rarely mentioned but some respondents noted the potential for milk to cause diarrhoea and a few referred to specific zoonotic diseases, such as brucellosis. BA revealed no significant differences in perceived advantages and disadvantages of giving milk to children between doers and non-doers.

For women, the accessibility and availability of milk were primary determinants of milk consumption by children. Money, or lack of it, was the most commonly cited facilitator and barrier to feeding additional servings of milk. Doers were significantly more likely to mention cattle ownership and household milk production as facilitators, compared with non-doers (73% vs 41%; Park 2020). Despite few children in southeastern counties recorded as having consumed milk in dietary assessments, FGD participants described widespread cattle ownership and milk availability as enabling frequent milk consumption in this area. In western counties, milk access was said to be limited to households with cows and quantities of milk to be small.

Younger children were commonly reported to be prioritized for receiving milk, in times of scarcity: 'If (the amount of) milk is not enough, children are given first priority and prepared tea with milk and adults take black tea.' (Fathers, Kitui County). This conflicts with dietary data collected through D/ND questionnaires, which found higher numbers of PLW to have consumed milk than children 6–23 mo (64% vs 28%). Lower numbers of FGD participants indicated that milk would be distributed evenly among household members and sometimes diluted with water to 'make it go further.' In some sites, participants indicated fermented milk would be reserved for adults (both men and women) and fresh milk for children.

Gendered empowerment and nutrition

Since key decisions around milk allocation for consumption and sales may have gender dimensions, a detailed gender analysis was conducted to inform the integration of gender into the SBCC strategy and broader AVCD project. In the five counties participating in formative research, empowerment was associated with self-determination (i.e. an individual's ability to reach life goals) and with participation in development projects (i.e. with the provision of training, assets and group support). The definition had a component of individual 'growth,' either in wealth or capabilities. Respondents strongly emphasised being able to support children's education. Educating boys was considered an investment for future empowerment because of the support that male children may be able to provide to their parents in their older age. In contrast, girls were seen as having fewer opportunities to earn well and to decide how to use their earnings and therefore less opportunity to provide financial support to parents.

Empowered men and empowered women

In all interviews, empowerment of men was associated with a combination of wealth and personal attributes (such as being 'hard-working,' motivated and wise), which resulted in independence, power and respect from family and the community. An empowered man was perceived as someone who could provide money for food purchases, schooling, clothes and medicine for the family and who could help others. Women also associated men's empowerment with their fertility. Empowerment of women related mostly to their ability to look after the family by preparing food (or, in some cases, providing money to buy food), washing clothes, farming and selling produce, teaching children good manners and not being reliant on their husband to buy small household items. Participants in all FGDs also described a business component—empowered women could run a business and manage the earnings well.

While the empowerment of men was connected to their decision-making power, the empowerment of women was related to their contribution to joint decision-making with their husbands. Women could be empowered and have no decision-making in the household. The ability to sell surplus agricultural produce and control income were considered to be two important indicators of a woman's empowerment while for men, respondents assumed all men were free to sell surplus produce and control income. All respondents considered women's empowerment to be mediated by men. If a man decided to not support the empowerment of his wife or daughter, she may remain disempowered, even if she had inherited livestock or was very knowledgeable. Men and social norms were mentioned as the most frequent obstacles to women's empowerment across all FGDs. In contrast, empowerment of men was not reliant on support from women but external circumstances (e.g. inheriting property, participating in a development project) and personal characteristics (e.g. being physically strong, having the knowledge to raise livestock).

Negative associations of empowerment

Empowered women and men were considered by all respondents to be more at risk of marital infidelity, which is associated with a higher risk of HIV/AIDs for the whole family. Arrogance amongst empowered men was judged negatively; however, there were many more negative associations of empowered women, across both male and female discussion groups. Empowered women were said to be selfish and arrogant, particularly towards their husbands and to seek to make all decisions in the household independently, without their husband's involvement. This might result in divorce, which would negatively impact the stability of the family and the well-being of children.

In one village in the southeastern counties, elder women spoke highly of empowered men as strong, wealthy and wise. In contrast, an empowered woman was considered to always be selfish, boastful and arrogant and, as a result, to be alone. They contended this to be the nature of women. In another village, men depicted a negative image of empowered women as 'rough' and 'tough.' Elder women in the same village had a very clear and positive description of an empowered woman as someone strong in all situations, even when her children do not have enough food to eat. An empowered woman was said to work hard and have self-confidence. The female respondents attested that an empowered woman would not tolerate being abused by her husband; that she would be a leader and intervene to correct wrongs she sees around her.

Empowerment and food and nutrition security

All groups identified the ability to provide 'good food' to one's family as a prerequisite for empowerment. Good food was interpreted as sufficient, diverse, regular and nutritious. It was generally described that an empowered woman would cook diverse and nutritious meals, have time to prepare food, feed their family regularly, use own-cultivated produce or purchase food with her own money. An empowered man would provide enough money for diverse food purchases and cultivate land to feed his family, either directly or through income generation. Growing a variety of crops on one's own land and raising good breeds of livestock were mentioned as indicators of empowerment, as means to provide good food for the family and for sale, to enable the purchase of diverse foods and other household necessities. Livestock, particularly dairy cattle and chickens, were considered an important means of empowering women and supporting their role of providing food. Through milk or eggs, dairy cattle and chickens could provide food that women could use to feed their family or sell.

Findings indicate that strategies for gendered empowerment that are more likely to be acceptable and effective to enhance food and nutrition security should involve both WRA, who prepare food and elder women, who prepare food and provide advice to younger women on nutrition. Strategies should support both groups of women to improve farming practices, engage in the marketing of agricultural products, sourcing diverse foods and prepare nutritious meals. It appeared that joint decision-making between women and their husbands was more acceptable than sole decision-making by women. Further research is needed to understand the strategic importance of supporting women's decision-making and the mechanisms through which this might be achieved.

Men's empowerment appeared to depend on their ability to make decisions both inside and outside the household and suggests their involvement in decisions on household nutrition is important. It is also evident that action is needed to enhance men's appreciation of their key role in supporting women's empowerment. Enabling men in their role as providers of food (e.g. through improved agricultural practices or development of business skills) has the potential both to empower men and to strengthen household food and nutrition security. Finally, given the negative perceptions of women's empowerment in some communities, an SBCC strategy should present messages carefully to avoid alienating people.

6 SBCC strategy and implementation

6.1 Audience segmentation

The priority behaviours of this SBCC strategy focus on safe milk consumption and dietary diversity among WRA during the first 1,000 days. This period is considered a ‘window of opportunity,’ beyond which stunting and impaired development are difficult to reverse and may negatively impact school performance and health, productivity and earnings in adulthood. As such, SBCC activities primarily target WRA, with a special focus on PLW and CU2.

Given the influence of social and environmental opportunities on the priority behaviours in this context, SBCC activities must also target wider audiences, including those influential members of the household and community, to create an enabling environment for change. Supporting activities to overcome access barriers and to reinforce SBCC messages are also essential to stimulate effective social and behaviour change around the priority behaviours outlined. In Appendix 3, we describe the priority target audiences identified in these communities, including those who enable behaviour change because of their role in delivering or facilitating SBCC activities.

Appendix 3 describes the characteristics of priority audiences. Each audience has a unique role, with particular behaviours and areas of influence that can shape maternal nutrition and IYCF practices. Social and behaviour change activities should be tailored to address and overcome the specific barriers affecting each group and capitalize on existing motivators and facilitators. The demographic characteristics are derived from surveillance and census data, while the psychographic characteristics (i.e. needs, hopes, concerns and aspirations) are derived from the formative research. The socio-cultural and behavioral characteristics are derived from a mix of secondary analysis of surveillance or census data (e.g. DHS) and findings from formative research.

An important component of an SBCC strategy is a thorough understanding and analysis of the target audiences. One widely recommended tool for this analysis is an audience profile. An audience profile is a document that creates a living image of the target audiences that will guide decisions throughout the program. The audience profile tells a story and is representative of key features of the target audiences. The process of thinking through audience profiles is critical to developing activities and related tools that are audience-centred and specific to real issues faced by the audience. Understanding the target audience helps to develop programs and interventions that truly meet the needs of the intended beneficiaries (and not what the project *thinks* they need), which is essential to influencing their behaviour.

Audience profiles are based on formative research, including the details specified in Appendix 3, as well as team members’ familiarity with the villages, communities and target populations in which they are working. Profiles should include extensive details of the characteristics and daily routines of the target population. Audience profiles can then be used to develop culturally appropriate and targeted communication materials, such as edutainment scripts, social marketing materials (e.g. posters), or family counselling materials. An example of an audience profile for this context can be found in Appendix 4. We recommend that ILRI and the SBCC partner selected for implementing this strategy create audience profiles for their priority audiences using the data in Appendix 3, complemented with their own understanding of community members and stakeholders based on their experiences working in their selected communities.

Recommended SBCC strategic approaches

SBCC is a behaviour-centred process to enable individuals, households, groups and communities to adopt and sustain evidence-based practices. To achieve this, SBCC involves the coordinated use of three complementary strategic approaches to achieve the behavioral and social objectives: (1) Advocacy, (2) Community Mobilization and (3) Behaviour Change Communication. The team has identified existing and potentially new platforms that ILRI partners can use for delivery of the SBCC strategy using these three strategies, the details of which are provided in Appendix 6. The table of strategies and platforms in Appendix 6 should be reviewed, revised and updated regularly, based on work plans. We also encourage ILRI to make intentional efforts to sensitize community members on the importance of utilizing health care services to foster cross-linkages and intersectoral communication. Where applicable, the SBCC can be used as a platform for screening and referral for preventive and therapeutic care.

Advocacy

Advocacy informs and motivates leaders to create a supportive environment to achieve program objectives and development goals. The target for advocacy in this SBCC strategy includes decision-makers in the MoH and MoA. The behaviour we seek to initiate and sustain is enhanced collaboration between these two Ministries, to achieve integrated training of both health and agricultural extension agents on nutrition, milk hygiene and livestock management, to ensure messages delivered are harmonized and consistent. Effective mobilization requires a common voice for nutrition, in partnership with multisectoral stakeholders (i.e. across agriculture, WASH, health, education). With a shared vision, the sustainability of advocacy initiatives can be achieved for greater impact within the community.

Community mobilization

Community or social mobilization engages and supports the participation of institutions, community networks and social, civic and religious groups to increase demand for or sustain progress toward a development objective. This arm of the SBCC strategy is critical for addressing potentially harmful social norms (e.g. early introduction of milk or food to children before 6 mo, enforcing dietary restrictions during pregnancy) or enabling and expanding on positive social norms (e.g. providing milk to LW to increase breast milk supply). These community or social mobilization activities create an enabling environment for recommended behaviours.

We recommend that the community or social mobilization arm of the strategy builds on the social norms related to what makes a good father or GM and motivate these groups to (1) support PLW with diverse food, rest and workload sharing; (2) bring home milk for the mother or child 6–23 mo and support allocation of milk for home consumption; (3) allocate an adequate amount of additional money to the food budget, enable the purchase of a variety of nutrient-rich foods; and (4) re-orientate beliefs about child crying so that they do not encourage giving milk, porridge or other foods before 6 mo.

Additional mobilization can occur around the importance of safe milk for WRA and during the first 1,000 days, and how to make milk safe and keep it safe. Given the high penetration and uptake of radio, especially among men, a radio program may be a useful strategy for education, persuasion and enablement. Recommended models include a radio drama series (as described below) or information sessions where panelists of respected voices can discuss key program components. FarmRadio International has experience working in Kenya and ‘Shamba Shape Up’ is a locally produced television show that delivers research-informed and practical farming advice. Both may be potential partners for livestock and dairy programs. The inclusion of a radio platform will be dependent on funding availability.

Behaviour change communication

Behaviour change communication or interpersonal communication involves face-to-face dialogue with individuals or groups to inform, motivate, problem-solve or plan, to promote and sustain behaviour change. This arm of the SBCC strategy

will work directly with families in the first 1,000 days, including mothers, fathers and GMs and will build on existing platforms, namely farmer groups, mother-to-mother support groups and home visits. Group counselling will involve the preparation and use of 'edutainment' (e.g. short films, television shows and radio dramas).

As an example, one might consider a serial drama recorded in 10–15-minute segments, with each segment corresponding to different session themes. The segments may be played for community groups and serve as starting points for discussion, education, problem-solving and planning. To ensure that education, intentions and goals acquired during sessions translate into behaviour change, families should also be provided with tools that will assist them in self-monitoring their behaviours and tracking their goals.

A detailed curriculum for the interpersonal communication component is critical to ensure consistency and fidelity of implementation. We strongly recommend that ILRI and their SBCC partner use adult education or active learning pedagogy and emphasize experiential, evidence-based techniques for behaviour change, grounded in experiential learning and application. A detailed listing of target behaviours, bridges to action and examples of specific behaviour change techniques targeting these behaviours for different priority audience groups can be found in Appendix 6.

7 Recommendations

When implementing and adapting this strategy across dairy development projects in Kenya, we recommend that ILRI and its nutrition team should identify and work closely with a partner with a strong track record in SBCC to manage implementation and evaluation. Partners should have SBCC expertise in multiple domains, including agriculture, gender or women's empowerment and nutrition. Potential partners with an active presence in Kenya and an appropriate track record include Save the Children, Mercy Corps, ACF International, Population Services International (PSI), Concern Worldwide, Food for the Hungry and Farm Radio International. Others with expertise in media include Digital Green.

This strategy should be revisited at least annually to be updated by partners. Appendix 5 includes specific frameworks for the priority behaviours, to help guide programming to address barriers and enablers identified through formative research. Appendix 6 contains key messages that can assist in shaping curricula, policy briefs and advocacy actions. Appendix 7 lists priorities and recommended indicators for monitoring and evaluation.

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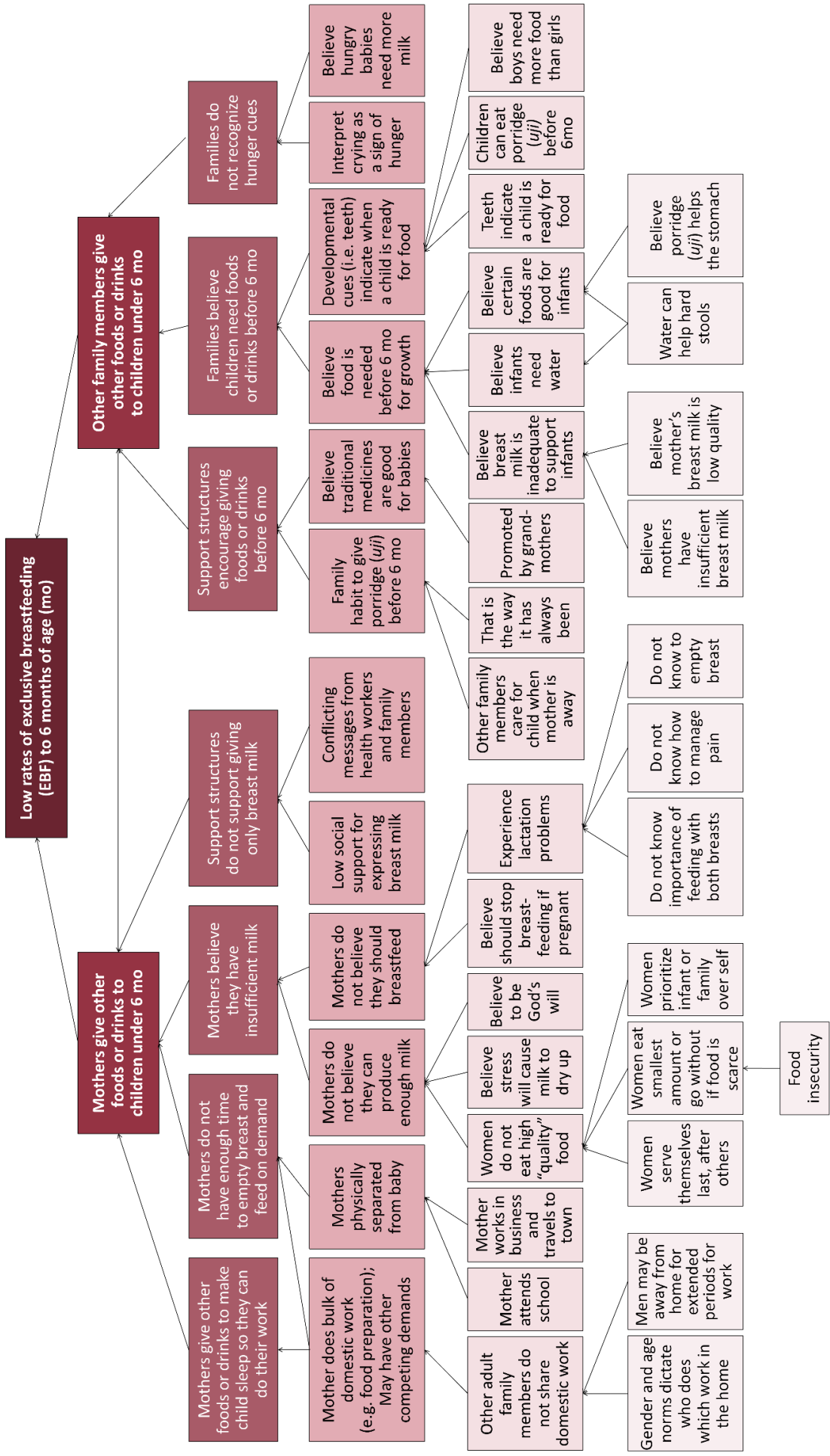
Appendix I. Overview of formative research tools

Tool	Topics covered	Informants	Link to access online
FGD guides	<p>Characteristics, knowledge and skills of a 'good' mother, father and GM;</p> <p>Understanding of empowerment for men and women and perceived challenges and opportunities to improve empowerment;</p> <p>Handwashing facilities and practices, disposal of child faeces;</p> <p>Livestock housing and management;</p> <p>Current or past health and nutrition programs;</p> <p>Nutritional knowledge and beliefs, particularly for PLW and CU2;</p> <p>Food procurement and intra-household food allocation;</p> <p>Feeding milk to children; hygiene of milk preparation and storage.</p>	<p>Mothers – Women currently pregnant or breastfeeding a CU2;</p> <p>Fathers – Men with a CU2;</p> <p>GMs – Women >50 years of age with at least one grandchild</p>	<p>https://cgspace.cgiar.org/handle/10568/113214</p>
KII guides	<p>Size, characteristics and priorities of local communities;</p> <p>Current programs focusing on maternal and child nutrition, handwashing and livestock management;</p> <p>Factors influencing success or failure of previous maternal and child; nutrition, handwashing and livestock management programs;</p> <p>Factors that may influence strategy implementation.</p>	<p>Community and religious leaders;</p> <p>Relevant government officials (e.g. health, nutrition, agriculture, environment, social welfare, children).</p>	<p>https://cgspace.cgiar.org/handle/10568/113214</p>
D/ND questionnaires	<p>Household demographic and socioeconomic characteristics;</p> <p>Household Hunger Scale;</p> <p>Questions relating to priority behaviours (see Table 8) – including current behaviour, motivation, capacity and barriers to change behaviour.</p>	<p>PW;</p> <p>LW with a child <6 mo;</p> <p>Women with a child 6–11 mo;</p> <p>Women with a child 12–23 mo.</p>	<p>https://cgspace.cgiar.org/handle/10568/113214</p>

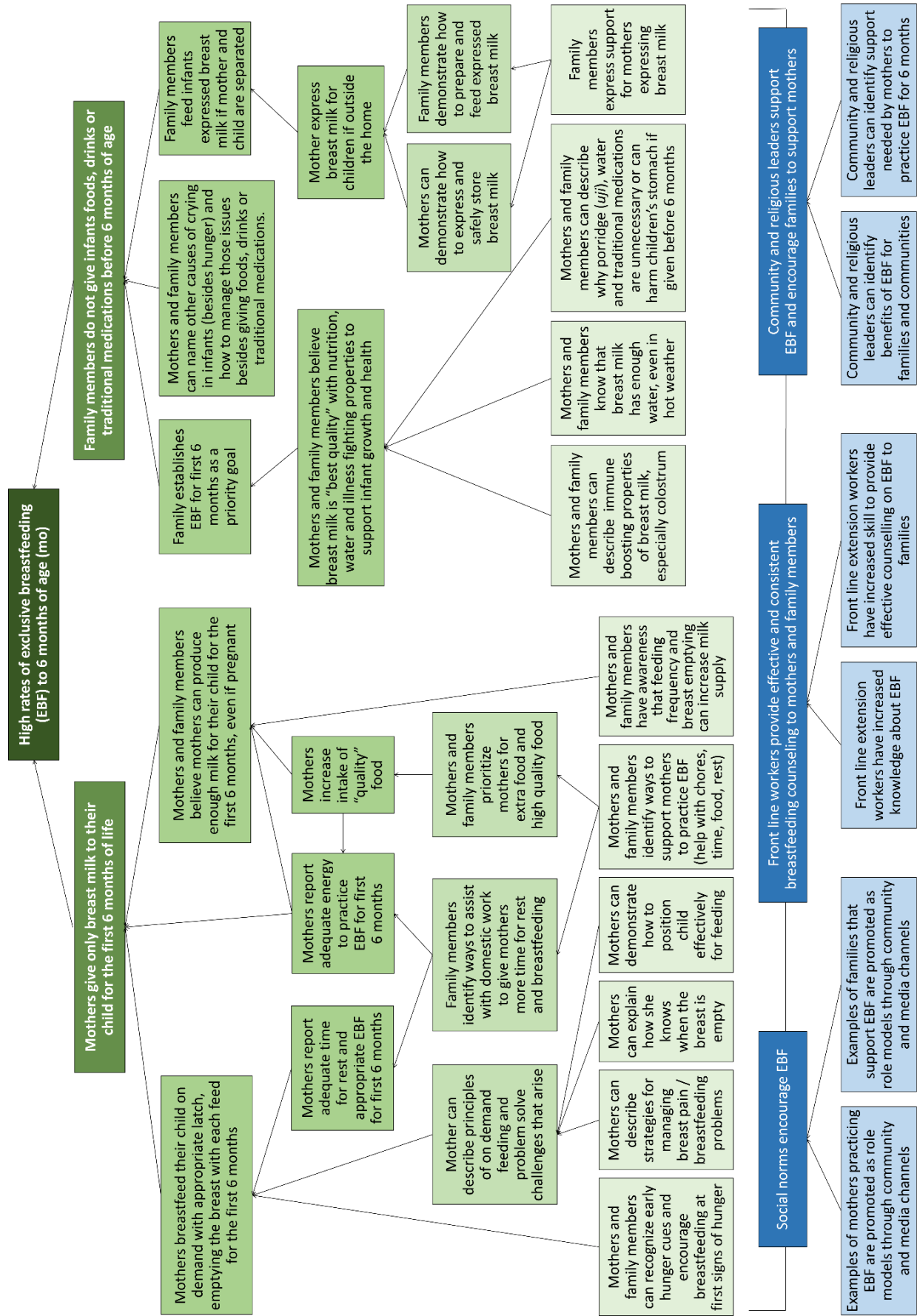
Tool	Topics covered	Informants	Link to access online
Household observation records for child feeding, care-giving and WASH practices	<p>Timing and frequency of child feeding;</p> <p>Food preparation, storage and child feeding practices;</p> <p>Hygiene of dishes, pots and utensils;</p> <p>Handwashing facilities and practices;</p> <p>Access to latrines and disposal of child faeces;</p> <p>Livestock ownership, housing and management;</p> <p>Hygiene of child play areas.</p>	<p>PW;</p> <p>Women with a CU2.</p>	<p>https://cgspace.cgiar.org/handle/10568/113214</p>
Market surveys	Current food price data and retrospective data for other seasons.	Food vendors	<p>https://cgspace.cgiar.org/handle/10568/113214</p>
Food frequency questionnaire	Frequency of household consuming specific food items over twelve months.	Women with a CU2.	<p>https://cgspace.cgiar.org/handle/10568/113214</p>

Appendix 2. Problem and solution trees

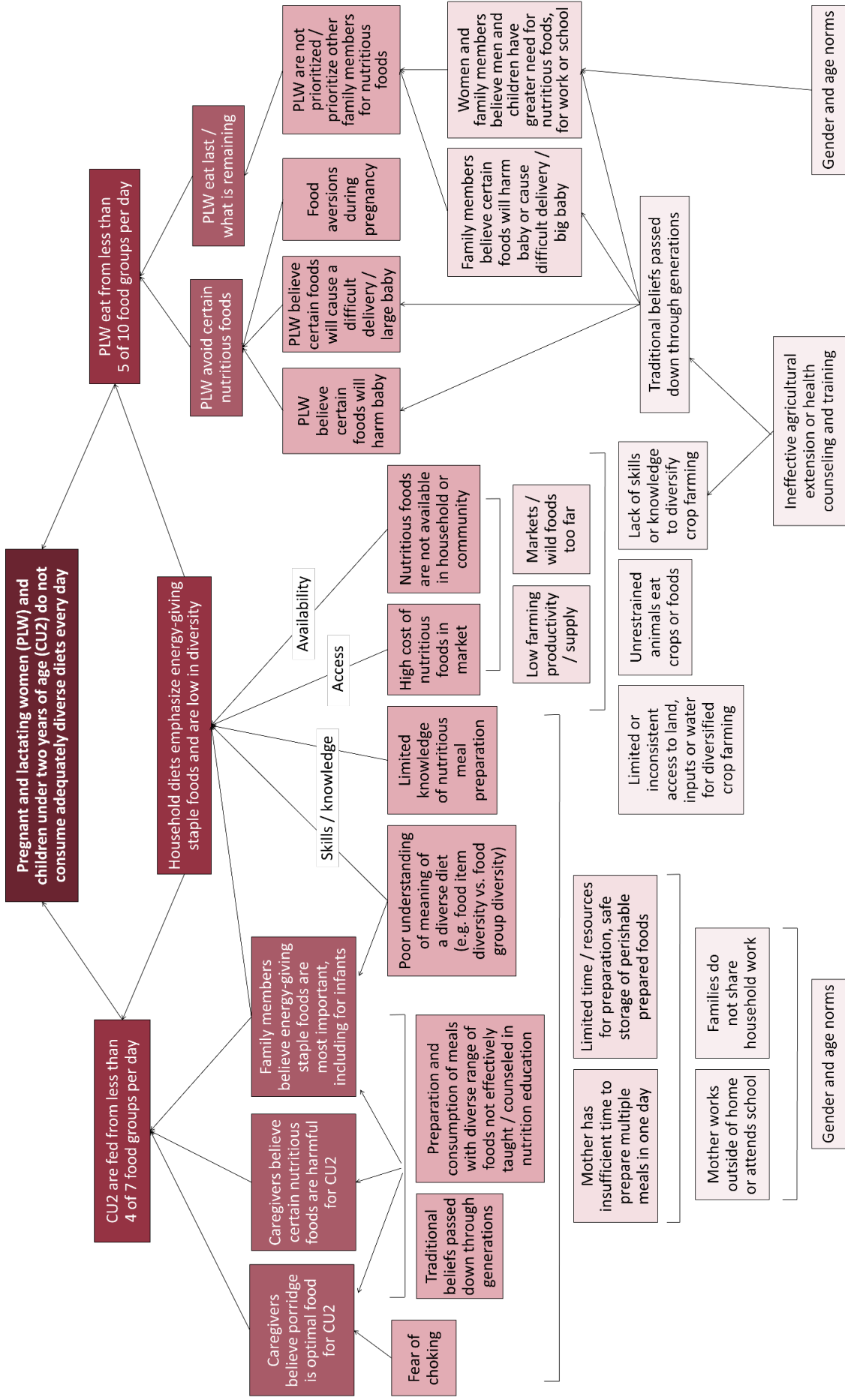
Problem Tree: Exclusive breastfeeding



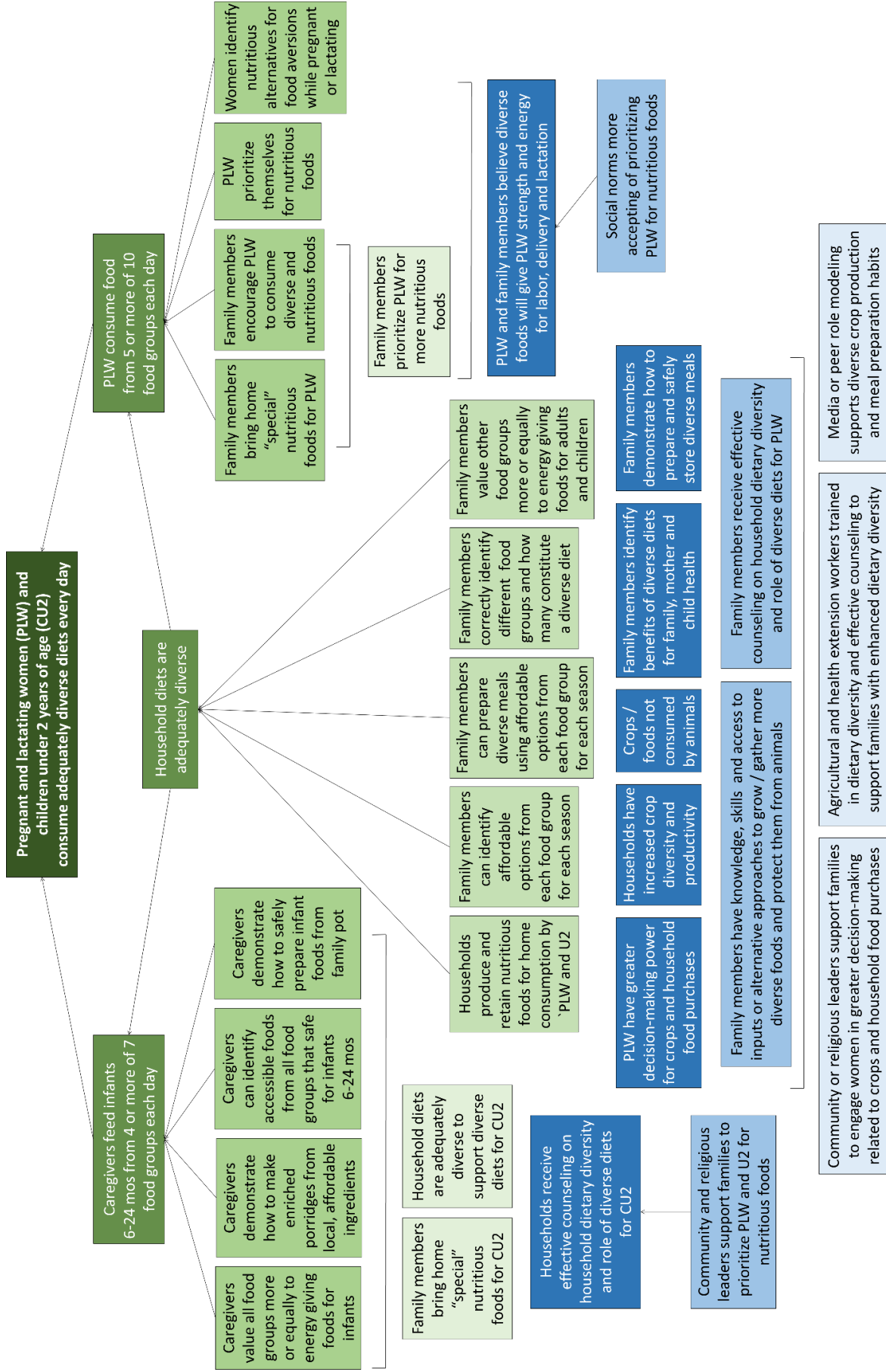
Solution tree: Exclusive breastfeeding



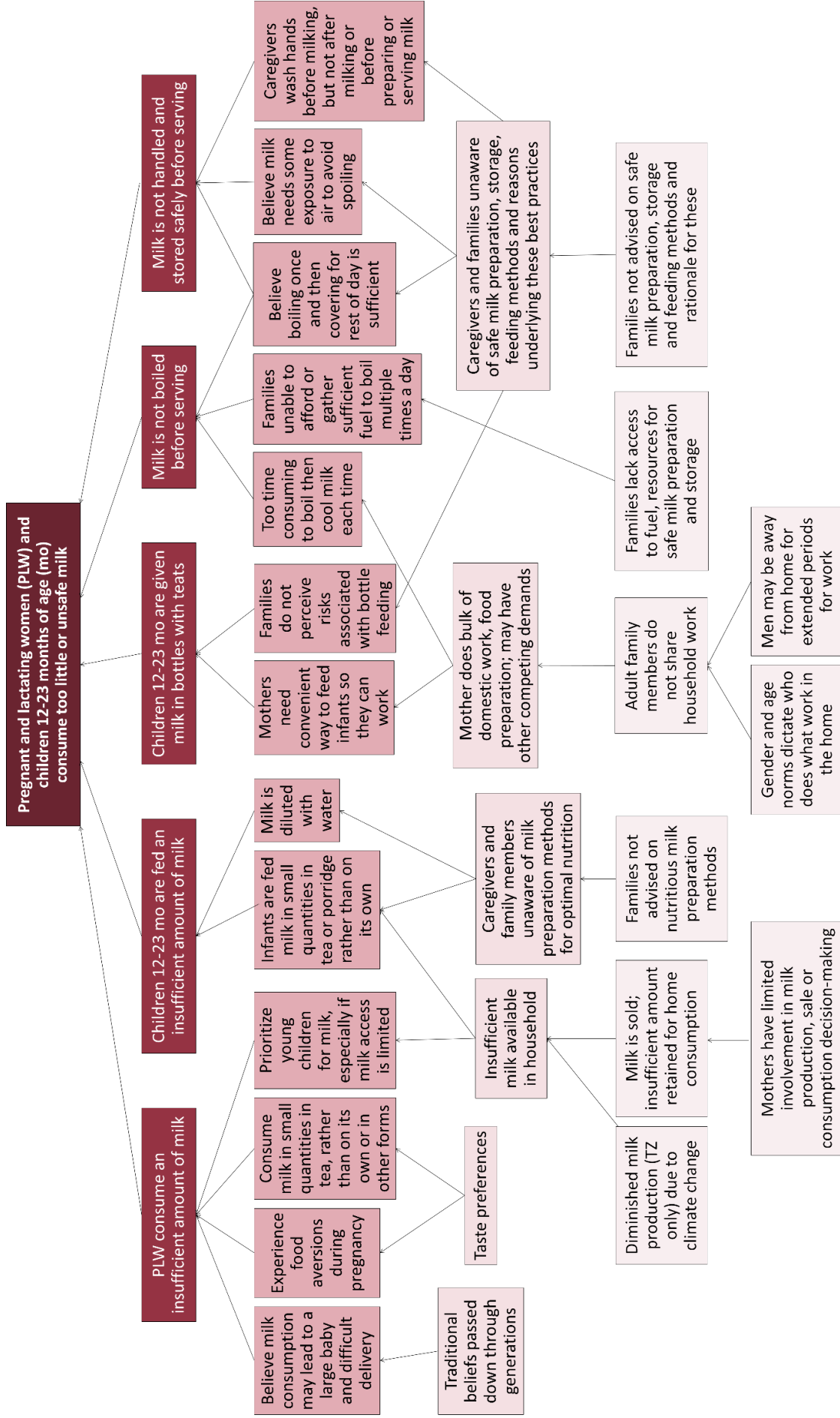
Problem tree: Dietary diversity



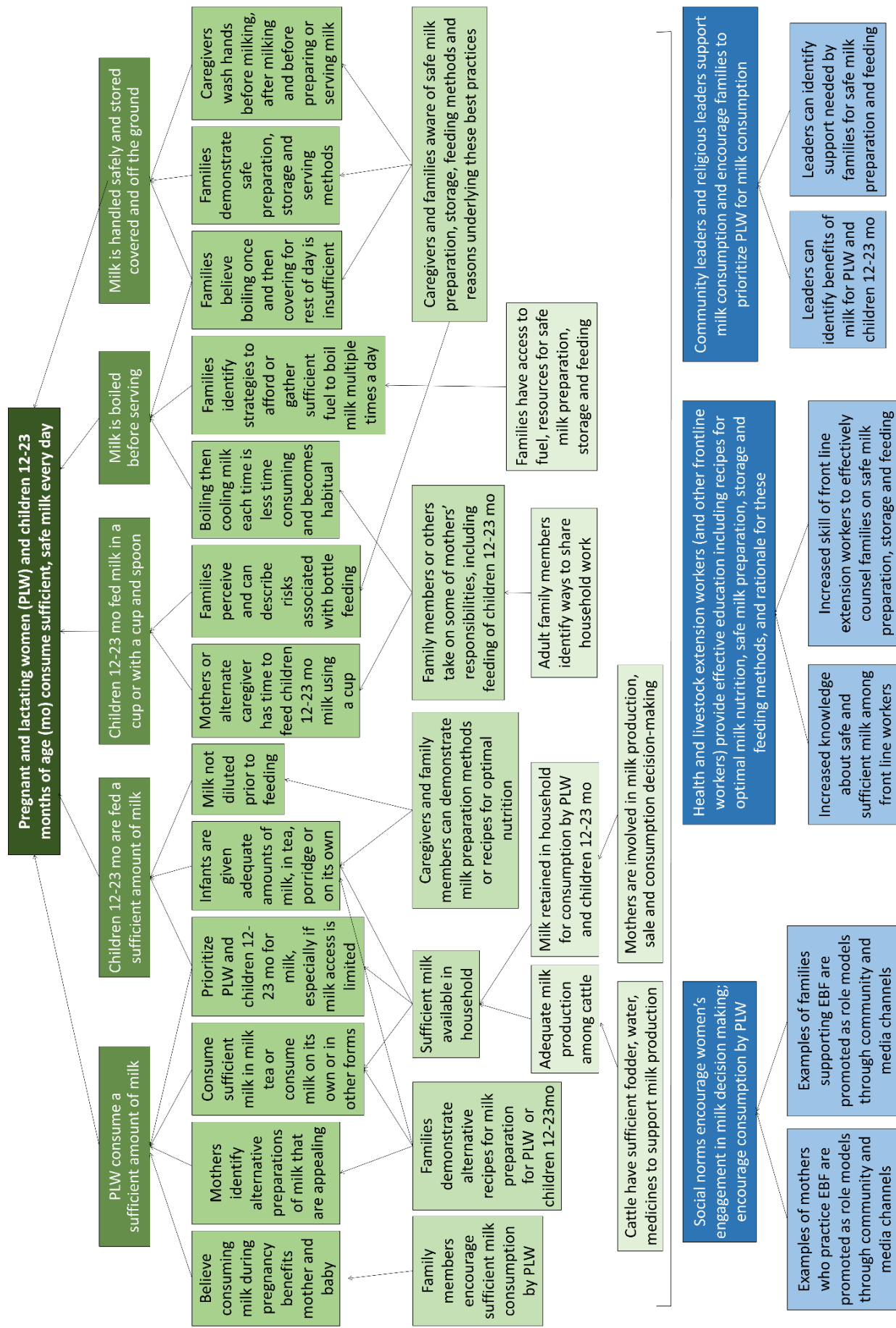
Solution tree: Dietary diversity



Problem tree: Sufficient, safe milk consumption



Solution tree: Sufficient, safe milk consumption



Appendix 3. Priority target audiences for SBCC

Characteristics:	Demographic and geographic†	Socio-cultural*	Behavioral*	Psychographic and ideational*
Primary audiences				
Mothers of children under 2 years of age (CU2)	<ul style="list-style-type: none"> • Married (first marriage at 20 years of age); • Approximately two-thirds (60–70%) completed primary school, with exception of Busia (40%); • Average household size of 4; • Average number of children CU5 is 1.5; • Approximately one third (36%) of households are female-headed; • Majority (70%) listen to radio at least once per week; exception is Kitui, where 40% have no media access; • Just over half are employed outside the home; 40–50% in agriculture. 	<ul style="list-style-type: none"> • Primary Languages: Kiswahili and specific local mother tongues; • Dominant religion is Protestant; larger proportion of Seventh Day Adventist in western counties than in southeastern, with implications for diets; few are Muslim; • Tasks, roles and livelihoods largely limited to those that traditionally fall to women: housework, caring for children, managing small livestock, including poultry and poultry products, small-scale gardening, milking and selling milk and casual labour. 	<ul style="list-style-type: none"> • Primary caregiver for children; responsible for child feeding; • Prepares food for entire family; • Purchases food from market for entire family; • Works in and around home; • In some sites a ‘good mother’ does business/ generates income to support family (e.g. selling prepared foods); • Spends majority of her time with young children; • Visits health post during pregnancy and in early months of her child’s life, e.g. for vaccinations and deworming; • Delivers in health facility; • Responsible for deciding how much milk to sell and how much to retain at home. 	<ul style="list-style-type: none"> • Many demands on her time – a ‘good mother’/ empowered woman is one who stays busy working for her family; • Wants her children to grow up healthy, smart, clean and strong; wants them to do well in school; • Knowledge of nutrition and IYCF comes from CHVs and GMs; • Talks with husband about IYCF and maternal and child health concerns; • Social norms dictate that she listens to her husband and MIL and support their decisions - ‘men are the heads and women the neck’ • Any decisions or actions she takes must be supported by these groups; • Constraints on decision-making limit empowerment; • Ability to feed child well (balanced diet) strongly indicative of being a ‘good mother;’ • ‘Homemaker,’ is meant to make house warm for family and visitors; • Works hard (e.g. through farming) to provide for family; not lazy.

Characteristics:	Demographic and geographic†	Socio-cultural*	Behavioral*	Psychographic and ideational*
Fathers of CU2	<ul style="list-style-type: none"> • Married (first marriage at 25 y) • Majority completed primary school (70–80%), with exception of Busia (53%); • 70–80% employed; agriculture is employment for 33%; • High uptake of radio and other media forms; exception is Kitui, where 27% access no media; • 70–80% of households own land or livestock; • 86% of households have mobile phones. 	<ul style="list-style-type: none"> • Primary language: Kiswahili and specific local mother tongues • Dominant religion is Protestant; larger proportion of Seventh Day Adventists in western counties compared to southeastern with implications for diets; few are Muslim; • Head of household. 	<ul style="list-style-type: none"> • Responsible for providing for his family, especially food ('good father' provides fruits) and ensuring kids are schooled; • Strong influence over family decisions; • Ultimately responsible for decisions about family finances, e.g. how much money is allocated to purchasing food; • Makes decisions about when and what large and medium-sized animals to consume/sell; • Advises his wife to seek care from CHV while she is pregnant or if their children are sick. 	<ul style="list-style-type: none"> • Strong identity as protector and provider for his family – 'men are the heads and women the neck' • Provides advice to family members; • Invested in health and well-being of his family; • Believes his wife is responsible for most child care activities, though increasingly amenable to taking on household tasks to help out; • Surprisingly knowledgeable about nutrition and IYCF recommendations; • Trusts CHVs; • Has respect for his mother.
Influencing audiences (Secondary)				
GM	<ul style="list-style-type: none"> • Elder women; • Commonly low literacy; • Have lived in rural areas for majority of their lives; • Often live close to their children and grandchildren. 	<ul style="list-style-type: none"> • Language – local mother tongues, limited Kiswahili; • Respected members of community and household; • Can dictate what daughters-in-law should do, with regards to maternal nutrition, IYCF, health care seeking; • Passes on traditional knowledge and values based on lived experiences. 	<ul style="list-style-type: none"> • Present in home after birth of a baby to help new mother; • Advise mothers about child feeding, including breastfeeding; • Helps with food preparation, housework and caring for baby after birth. 	<ul style="list-style-type: none"> • Has substantial knowledge gained from experience raising her own children; • Comfortable in her knowledge and in giving advice to her daughter-in-law; • Conflict between program messages and GMs' advice – GM may create discord in family and reduce program participation; • Cultural beliefs may strongly influence her advice to daughter-in-law.

Characteristics:	Demographic and geographic†	Socio-cultural*	Behavioral*	Psychographic and ideational*
Enabling Audiences				
CHVs	<ul style="list-style-type: none"> • Women and men; • All ages but usually older (their children are grown up); • From rural communities; • Literate, at least secondary education in most cases but not all. 	<ul style="list-style-type: none"> • Language: Kiswahili and local mother tongues; some speak English; • Respected members of family and community; • Often viewed by community as ‘village doctor’ and ideally located at community level to offer various services within health sector to different population cohorts; • Multiple roles in community, e.g. some are also volunteers for agricultural projects, which may be an added advantage as they are able to disseminate a wide range of information to community members within same forum. 	<ul style="list-style-type: none"> • Support families through home visits, counselling, support groups and community mobilization to attend clinic; • Encourage EBF to 6 mo and dietary diversity, including milk consumption; • Some convey agricultural messages, e.g. encourage growing nutritious crops and keeping livestock for food (and keep them out of house to prevent disease); • Comfortable leading a group and speaking in front of others • Support vaccinations, deworming, VA supplementation, malnutrition screening activities; • Support national campaigns, e.g. World Breastfeeding Week, Malezi Bora campaigns, national polio campaign, VA campaigns. 	<ul style="list-style-type: none"> • Motivated to help others and improve community; • Willing to learn; • Willing to participate in community programs (i.e. early adopters); • Knowledge of IYCF practices and some agronomic and livestock management basics; • Often overworked and undercompensated; • Provide a link between projects within community and MoH and partners; • Some play multiple roles in community, e.g. some are also volunteers for agricultural projects, which may be an added advantage as they are able to disseminate a wide range of information to community members within same forum.
CHEWs	<ul style="list-style-type: none"> • Women and men; • Diploma in public health, community health or nursery recommended. 	<ul style="list-style-type: none"> • Language: English, Kiswahili and likely speak local language; • Respected within community; • Valued for skills and knowledge; • Seen as extensions of government, trusted by communities. 	<ul style="list-style-type: none"> • Work from health post in collaboration with public health officers; • Support implementation and evaluation of community health programs; • Provide spot checks for county strategy; individualized and group counselling and referrals in area of specialization; • Supervise CHVs. 	<ul style="list-style-type: none"> • Dedicated, motivated to help others and improve community; • Knowledge and expertise come from training and field experience; • Some with basic knowledge of some guidelines, policies and standards related to health and nutrition; • Employed by MoH and report to subcounty community health focal person.

Characteristics:	Demographic and geographic†	Socio-cultural*	Behavioral*	Psychographic and ideational*
Livestock or Agriculture Officers	<ul style="list-style-type: none"> • Typically male; • Diploma or degree in Agriculture, Farm Management, Animal Husbandry or Veterinary services. 	<ul style="list-style-type: none"> • Language: Kiswahili and local mother tongues; some speak English; • Respected members of community; • Valued for skills and knowledge; • Seen as extensions of government, trusted by communities. 	<ul style="list-style-type: none"> • Conduct home visits, field days, community mobilization events; • Liaison between community and MoA; • Comfortable advocating for community's livestock/agricultural development needs; • Liaison between community and non-governmental agencies/ programs • Directly engaged in ministry and non-governmental program implementation and monitoring; • Less comfortable with health topics and maternal and child nutrition. 	<ul style="list-style-type: none"> • Knowledge and expertise come from training and field experience; • Motivated to improve community economic development through livestock and agriculture; • Feels role includes advocacy; • Employed by MoA.
Religious leaders	<ul style="list-style-type: none"> • Mostly male, few females; • Education levels vary by religion. 	<ul style="list-style-type: none"> • Language: local language and may speak Kiswahili, depending on education level; • Respected member of community and leader of congregation; • May do other jobs as well – e.g. livestock-keeping, agriculture; • Valued for spiritual leadership and seen as extension of the church/faith. 	<ul style="list-style-type: none"> • Many feel their role includes advising congregation/families on seeking healthcare, nutrition (e.g. dietary diversity), which crops to grow to support both health and economic development, livestock management – to produce more milk but not overwhelm community (i.e. avoid too many cattle); • ‘According to God’s word, a person needs to be healthy spiritually, physically and mentally;’ • Believe they are natural liaisons between programs and communities and between communities and community leaders 	<ul style="list-style-type: none"> • Motivated to support health and community development of congregation and community; • Willingness to learn and serve as a go-between; • In some cases, some religious leaders may interfere with the promotion of health and nutrition practices, e.g. some advocate for treatment at home for illnesses or advise the congregation against women and children having vaccinations due to their perceived negative consequences.

Characteristics:	Demographic and geographic†	Socio-cultural*	Behavioral*	Psychographic and ideational*
Community chiefs	<ul style="list-style-type: none"> • Mostly men, especially in rural areas; • Married; • Literate with basic education. 	<ul style="list-style-type: none"> • Language: Kiswahili, local mother tongue; in some cases, English; • Respected within community; • Solve community disputes; • Valued for community leadership and guidance; • Officiate ceremonies in community. 	<ul style="list-style-type: none"> • Gatekeepers of their community; • Feel responsible for all activities in community, e.g. health, agriculture, social protection, WASH; • Key influencers of community initiatives. 	<ul style="list-style-type: none"> • In charge of community activities; • Motivated to support activities within community and key role in dissemination of important messages; • Key in creating ownership of initiatives at community level, 'voice of the people.'
Livestock value chain actors/ farmers	<ul style="list-style-type: none"> • Men own livestock; • Women mostly responsible for livestock management; • Literate or semi-literate. 	<ul style="list-style-type: none"> • Language: Kiswahili and local mother tongue; • May own livestock or contribute to livestock productivity by providing fodder and feeds; • Make decisions on sale of livestock, influence decisions on sale of milk; • Livestock as assets. 	<ul style="list-style-type: none"> • Support in the sale of livestock products for income; • For those who own cattle, support in setting aside milk for home consumption. 	<ul style="list-style-type: none"> • Some provide advice on animal husbandry and veterinary services; • Willing to participate in dairy productivity initiatives.

† Source: KNBS et al. (2015)

* Based on formative research in this study

Appendix 4. Example of an audience profile

Lactating woman: Mary N.

Summary:

Mary is 23 years old and her household participates in ILRI's AVCD Dairy Development Project. Her family has achieved an increase in milk production from their dairy cows since they started participating in the project. Mary has two children: one is three years old and the other is four months old. Recently, she started to give porridge and cow's milk to her four-month-old baby because her baby was crying more often. Her husband and MIL insisted the baby was hungry and that her breast milk was no longer enough.

She is a housewife and has completed primary school. She lives in Busia County. Her husband is a farmer and they live with her husband's parents. The family grows maize and sugarcane. They have two hybrid cows, several goats and some indigenous chickens. Mary maintains a kitchen garden, where she grows yellow sweet potatoes, beans, kales and other green leafy vegetables. She buys tomatoes, onion, small dried fish (*omena*), cabbage, tea, oil, sugar and salt from the weekly market.

Daily routine:

Mary does all the household activities, including cooking, washing, collecting water and firewood, caring for the children and gardening. She is busy from before the sun rises until well after it sets. Sometimes her MIL helps Mary with cooking, rearing poultry, or taking care of the children.

Lifestyle:

Mary works hard to carry out all of the household chores, so that her husband and in-laws are pleased. She also works hard for the betterment of her two children. Mary gets very little time to have her meals and only eats after her husband, in-laws and children have done so.

Personal characteristics:

Mary is religious, soft-spoken, a good cook and home keeper. She is proud of how hard she works and how busy she is because for her these are the signs of being a good mother and wife. She goes with neighbours to collect water, firewood and do the washing. This is when she is able to socialise. She and her friends talk mainly about their children, families and the price of food in the markets. Some of her peers have advised her to start introducing complementary foods to her child at approximately four months.

Aspirations:

Mary desires her children to be healthy, well-educated and respectful to visitors and their elders. She wants them to have good jobs when they are adults and not to struggle as hard as she and her husband do. She strives to raise her children with these priorities in mind.

Worries:

One of Mary's biggest worries is that her youngest child will not be healthy and may become sick if not fed enough good food. She also worries about the poor rainfall and the crops failing to produce a good harvest. This has happened in the past.

Determinants of behaviour:

Mary recently started complementary feeding her four-month-old child as she thinks the baby is hungry and does not get enough breast milk. Her in-laws started to give porridge and cow's milk to her child when she cries. Mary does not stop this practice because she does not want to go against her in-laws and depends on their help and support to take care of her child. She also sees that her child calms down and sleeps after taking porridge.

Media habits:

The family does not have a television. Her father-in-law has a radio but Mary does not listen to it. She does not read the newspaper. She does not go far outside her home except to her parents' house and the weekly market in the neighbouring village.

Appendix 5. Desired changes and behavioral bridges to change for priority target audiences

Appendix 5a. Desired changes and behavioral bridges to change for mothers		
Desired change	Behavioral bridge to change	Behaviour change techniques and activities to support behaviour
Mothers consume at least one cup of safe milk each day while pregnant	<ul style="list-style-type: none"> • Mothers set aside milk for household consumption before sale of milk; • Mothers have physical and economic access to milk for home consumption; • Mothers are aware of benefits of milk during pregnancy for them and their child; • Mothers overcome fear of having a big baby if they drink more milk; • Mothers know and try alternative ways to consume milk if do not prefer fresh milk or milk on its own. 	<ul style="list-style-type: none"> • Goal setting; self-monitoring – families set goals for amount of milk to set aside for consumption, dietary diversity and milk consumption and monitor these using home checklists; • Role-playing – mothers role-play negotiating with family for sufficient money to buy milk or nutritious foods; • Environmental opportunity – families experience improvement in own cattle's milk production;
Mothers consume at least one cup of safe milk each day while breastfeeding	<ul style="list-style-type: none"> • Mothers have physical and economic access to milk for home consumption; • Mothers are aware of benefits of taking milk during breastfeeding for them and their child; • Mothers know and try alternative ways to consume milk if do not prefer fresh milk or milk on its own; • Mothers have skills to boil milk and store it safely; • Mothers have resources (e.g. fuel and clean water) necessary to boil milk and store it safely. 	<ul style="list-style-type: none"> • Role-modelling – mothers, fathers, MILs hear audio stories of women like them who consumed milk/diverse diets and delivered healthy babies without complications; • Demonstrations; practice – recipe contests, cooking demonstrations, milk boiling and safe storage; • Social support – husbands participate in household budgeting exercises to support healthy food purchases;
WRA, including PLW, eat a diversity of foods, from at least five groups, every day	<ul style="list-style-type: none"> • WRA/PLW have physical and economic access to sufficient diversity of foods, either through home production or from market; • WRA/PLW know different food groups and their benefits for women, including for PLW; • WRA/PLW can identify nutritious foods and alternative foods when recommended foods are not available or not affordable; • WRA/PLW have skills to select an adequate diversity of foods in different seasons; • WRA/PLW have time and energy to prepare diverse foods, including while pregnant or breastfeeding; • WRA/PLW do not believe taboos associated with consumption of certain nutritious foods during pregnancy and lactation, e.g. eggs, green leafy vegetables, fish; • WRA/PLW are aware of benefits of dietary diversity for themselves and their infant or foetus; • WRA/PLW negotiate with husbands for additional money to purchase nutritious foods; • WRA/PLW set goals to increase variety of foods they consume. 	<ul style="list-style-type: none"> • Social support – husbands and MILs participate in group activities with mothers to learn benefits and ways to support family; • Physical capability – families learn how to make mesh covers to protect milk after boiling, while cooling; • Instruction on how to perform the behaviours provided; information on risks and benefits of behaviours provided to family members; • Cue to action; action planning – household dietary diversity wheel card – reinforces education about food groups, provides resource for planning household shopping, goal-setting and achievement; • Problem-solving – husbands and MILs identify time-saving strategies for women and ways to assist with chores to allow women sufficient time to prepare diverse meals, or husbands and MILs assist with meal preparation.

Appendix 5a. Desired changes and behavioral bridges to change for mothers		
Desired change	Behavioral bridge to change	Behaviour change techniques and activities to support behaviour
Mothers EBF for six months and practise continued breastfeeding for up to two years	<ul style="list-style-type: none"> • Mother knows benefits for herself, infant and community of EBF and continued breastfeeding for two years; • Mother provided time and support for EBF and continued breastfeeding; • Mother is able to express breastmilk in case she is away from child; • Mothers believe they can produce sufficient breastmilk even in periods of stress, food insufficiency. 	<ul style="list-style-type: none"> • Demonstration and practice – mothers are shown and able to practise breast milk expression with a CHEW; • Role modelling – women hear accounts of other women how they managed to EBF for six months in periods of stress; • Problem-solving – mothers identify barriers to EBF/continued breastfeeding and identify solutions to those barriers; • Problem-solving – Husbands and MILs identify things they can do to protect mothers' time so she can EBF as recommended.
Mothers feed children >6 mo a diversity of foods, from at least four groups, every day	<ul style="list-style-type: none"> • Mothers have access to foods from at least 4 food groups every day; • Mothers know food groups and their benefits for children; • Mothers are aware of feeding frequency recommendations (i.e. number of meals) for children at each age; • Mothers know benefits of feeding their children from at least four groups in a day; • Mothers have skills to prepare meals for children that include foods from many food groups; • Mothers set goals to increase variety of foods fed to their child by a certain amount each month; • Mothers negotiate with their husband for additional money for purchasing nutritious food items. 	<ul style="list-style-type: none"> • Goal setting – fathers set a goal of putting aside a set amount of money each week for diverse food purchases; • Cues to action – families have materials that they can use at home with information on e.g. age-appropriate feeding frequency and dietary diversity; • Demonstration – CHEW demonstrate enriched porridge recipes for child feeding; • Practice – families practice making enriched porridges using ingredients from their home farm (<i>shamba</i>); • Goal-setting – families use goal cards to identify foods that can help them achieve diverse diets every day; • Role-playing – mothers practise negotiating with their husband or MIL regarding food purchasing or child feeding.
Mothers give at least one cup of safe milk each day to their child	<ul style="list-style-type: none"> • Mothers have physical and economic access to sufficient milk for their children, either through home production or markets; • Mothers are aware of benefits of milk for their infants; • Mothers understand why to wait until child is 12 mo to introduce cow's milk; • Mothers know and try alternative ways to consume milk if their children do not enjoy fresh milk or milk on its own; • Mothers have skills to boil milk and store it safely; • Mothers have resources (e.g. fuel and clean water) necessary to boil milk and store it safely; • Mothers negotiate with fathers for additional money to be used for milk. 	

Desired change	Behavioral bridge to change
Fathers provide money to purchase necessary quantities and diversity of foods for home consumption	<ul style="list-style-type: none"> Fathers understand links between quantity and diversity of food fed to children and health outcomes; Fathers know costs and importance of nutritious foods; Fathers set goals for ensuring an appropriate quantity and diversity of foods are available at home.
Fathers support in the provision of milk and nutritious foods for WRA, PLW and CU2	<ul style="list-style-type: none"> Fathers understand links between quantity and diversity of food fed to children and health and nutrition outcomes; Fathers can identify nutritious foods in market; Fathers agree to retain these foods from own production for home consumption; Fathers are aware of the need for preparation of safe food; Fathers believe giving these foods shows his love and support for his family.
Fathers support women to follow EBF recommendations	<ul style="list-style-type: none"> Fathers understand that EBF benefits child's health and nutrition; Fathers feel a sense of obligation to support child breastfeeding and child health; <p>Fathers understand that a crying child does not necessarily mean a hungry child and that mothers with crying children may need other support such as extra rest, time to breastfeed or extra food to give themselves energy.</p>
Fathers help women around home so she has time to practice recommendations	<ul style="list-style-type: none"> Fathers identify tasks that they can do to support wives or alternatively seek support from other household members or wider community; Fathers understand time and energy it takes to practise recommendations; Fathers set goals for themselves regarding what they can do to help their wives each week or how their wives can get additional support.

Desired change	Behavioral bridge to change
GMs advise mothers to follow recommended practices	<ul style="list-style-type: none"> GMs understand the benefits of each recommended feeding practice; GMs have a positive attitude towards Health Extension Workers; GMs perceive that other elder women in the community advise their daughters-in-law according to recommended practices; GMs feel valued in their roles of providing social support to their children and grandchildren.
GMs give advice to mothers that reflect appropriate feeding recommendations	<ul style="list-style-type: none"> GMs will have improved knowledge of negative consequences of some traditional feeding practices and positive consequences of recommended feeding practices.
GMs support mothers with household chores, meal preparation and/or child feeding and care	<ul style="list-style-type: none"> GMs value their roles as the supporters or protectors of mothers during pregnancy and lactation and identify ways to minimize mothers' workload.

Desired change	Behavioral bridge to change
CHVs counsel mothers on recommended complementary feeding	<ul style="list-style-type: none"> • CHVs understand WHO guidelines for complementary feeding and are technically capable of providing sound guidance on meal frequency, quantity, consistency, dietary diversity and responsive feeding; • CHVs have knowledge of recipes for energy-dense, age-appropriate complementary foods that include diverse and nutritious foods (e.g. milk and other AFS, orange-fleshed sweet potato (OFSP)); • CHVs have knowledge of food groups and food composition so they can adapt recommendations according to what is available; • CHVs can impart skills on complementary feeding recipes that include nutritious foods (e.g. milk, other ASF, OFSP). • CHVs sensitize farmers on agri-nutrition and are able to link with extension officers and AVCD dairy value chain partners to reach out to farmers during farmer-to-farmer activities; • CHVs are confident counselling and answering questions from mothers, fathers and GMs; • CHVs are able to effectively establish rapport with families; • CHVs are able to inspire families to set goals for meeting child feeding recommendations; • CHVs are able to facilitate discussions with mothers, fathers, GMs and dairy value chain actors.
CHVs conduct individual follow-ups with families	<ul style="list-style-type: none"> • CHVs have time to conduct individual follow-ups with families from their community groups; • CHVs are motivated to conduct individual follow-ups with families from their community groups; • CHVs sensitize value chain actors on importance of consuming milk and diverse diets and linking this to other dairy activities.
CHEWs counsel women on recommended complementary feeding practices	<ul style="list-style-type: none"> • CHEWs are able to support CHVs with capacity building on recommended practices; • CHEWs are confident in their ability to counsel families on IYCF practices at community and facility levels; • CHEWs believe IYCF counselling is an important part of their routine responsibilities.
CHEWs provide supportive supervision to volunteers leading HLCs	<ul style="list-style-type: none"> • CHEWs see CHV as change agents in their community; • CHEWs are motivated to see CHV succeed and provide them support for IYCF education; • CHEWs have skills to provide supportive supervision to CHVs; • CHEWs prioritize supportive supervision of CHVs as part of their job responsibilities; • CHEWs support monitoring activities of CHVs, including reporting; • CHEW link CHVs to ongoing dairy activities so community members can be sensitized on agri-nutrition.
County and subcounty nutrition officers advise community groups on MIYCN	<ul style="list-style-type: none"> • Nutrition officers build capacity of CHVs, CHEWs and extension workers on MIYCN; • Nutrition officers supervise nutrition activities at county and subcounty level; • Nutrition officers provide supportive supervision to CHVs, CHEWs and extension officers; • Nutrition officers provide a strong link with agriculture officers and support in nutrition promotion sessions with farmers.
County and subcounty agriculture officers/ AVCD dairy value chain actors advise farmers on animal husbandry	<ul style="list-style-type: none"> • Agriculture officers support farmers with initiatives to increase productivity (e.g. artificial insemination, improved feeds); • Agriculture officers link increased productivity with increased utilization of milk at household level, especially for women and children; • Agriculture officers support farmers with knowledge on safe animal management techniques to prevent zoonotic diseases and environmental enteropathy.

Appendix 6. Platforms and channels for SBCC strategy delivery

Channel or platform; groups involved	Suggested frequency and timing	Training topics	Form of media	Resources required	Behaviour change techniques employed (see Appendix 5)
Interpersonal Communication					
Family or mother support groups, care groups; targeting mothers, fathers and GMs	Eight monthly sessions of 1–2 hours each	<p>Eight-session curriculum:</p> <p>6. Household dietary diversity</p> <p>7. Maternal diet during pregnancy, including milk consumption</p> <p>8. EBF and maternal diet during lactation, including milk consumption;</p> <p>9. Child dietary diversity from 6 mo, including animal milk from 12 mo</p> <p>10. Safe milk handling, preparation, storage practices</p> <p>11. Animal management (keeping animals contained)</p> <p>12. Hygiene of the compound, including handwashing and disposal of animal and human faeces</p> <p>13. Graduation recipe contest, including recipes prepared with milk (i.e. participants contribute recipes based on training for judging by other participants/training facilitators and local leaders)</p>	<p>Audio</p> <p>edutainment (serial drama recording) for use during sessions</p> <p>Take-home materials (appropriate for low-literacy audience)</p>	<p>Dietary diversity wheel cards;</p> <p>Goal setting cards; cooking demonstration guides, including recipes; safe milk preparation and storage guides; mesh covers for milk storage; Budgeting activities for fathers; guidance documents for participant cooking 'contest;' graduation certificates.</p>	<p>Persuasion</p> <p>Modelling</p> <p>Training</p> <p>Education</p> <p>Environmental restructuring (social opportunity)</p>
<p>IYCF counselling at community and household level;</p> <p>Led by CHV and health facility workers</p> <p>Targeting mothers, fathers and GMs</p>	<p>Integrated into home visits and routine visits to health facilities;</p> <p>Linkage curative and preventive services at local health facilities.</p>	<ul style="list-style-type: none"> Integrate into existing MOH IYCF counselling; Importance of dietary diversity, including cow's milk during first 1,000 days (women and children from 12 mo); Demonstration of recipes including a diverse range of foods, including cow's milk; Safe milk handling, preparation, storage practices Hygiene of the compound. 	Counselling cards	<p>Updated counselling materials;</p> <p>Dietary diversity wheel</p> <p>Guides for cooking demonstrations</p> <p>Safe milk preparation and storage guides</p>	<p>Persuasion</p> <p>Modelling</p> <p>Training</p> <p>Education</p> <p>Environmental restructuring</p>

Channel or platform; groups involved	Suggested frequency and timing	Training topics	Form of media	Resources required	Behaviour change techniques employed (see Appendix 5)
Farmer to farmer groups	Monthly sessions, 1–2 hours	<p>Topics to include are:</p> <ul style="list-style-type: none"> • Household dietary diversity; • Importance of allocating milk for household consumption before sale of milk; • Safe milk handling, preparation, storage practices; • Livestock management; • Hygiene of the compound. 		Dietary diversity wheel; Safe milk preparation and storage guides; Mesh covers for milk storage; Nutritional benefits of milk leaflet?	Persuasion Modelling Training Education Environmental restructuring
Community/social mobilization					
Radio or television series	Weekly	Key topics covered in care groups and farmer to farmer groups	Edutainment scripts or panelists for radio or television spots	Partner with FarmRadio International, Digital Green or Shamba Shape Up	Persuasion Modelling Education Enablement (if addresses social norms)
Chief's barazzas (village meetings)	Quarterly or dependent on frequency of chief's barazzas	<ul style="list-style-type: none"> • Safe milk handling, preparation and storage demonstrations; • Livestock management sessions; • Hygiene of the compound; • Household dietary diversity, with recipe demonstrations. 		Cooking demonstration guides; Safe milk preparation and storage guides; Mesh covers for milk storage.	Education Training
Religious leaders	Up to weekly in sermons or monthly as part of church or mosque gatherings	Linking care of women during pregnancy and lactation and feeding children properly, with religious teachings.		Sermon guides for religious leaders (with quotes from relevant religious texts).	Persuasion Modelling Education Enablement
Agricultural fairs (crops and livestock)	Biannually or as scheduled in communities	<p>Information booths on importance of:</p> <ul style="list-style-type: none"> • Dietary diversity during first 1,000 days; • Safe milk for PLW and children >6 mo; • Safe milk handling, preparation and storage practices (with demonstrations). 	Posters, brochures, information booths	Dietary diversity wheels; Mesh covers for milk storage	Training Education
Maternal and Child Health Week events at regional or county level	Biannually or as scheduled in communities	<p>Information booths on importance of:</p> <ul style="list-style-type: none"> • Dietary diversity during first 1,000 days; • Safe milk for PLW and children >6 mo; • Safe milk handling, preparation and storage practices (with demonstrations); • Family foods as complementary foods (with cooking demonstrations). 	Posters, brochures, demonstration supplies, outlines for skits	Skits on managing a crying child, sustaining EBF to 6 mo; Dietary diversity wheels.	Training Education

Channel or platform; groups involved	Suggested frequency and timing	Training topics	Form of media	Resources required	Behaviour change techniques employed (see Appendix 5)
World Breastfeeding Week activities	Annual (1–7 August)	Information booths on importance of: <ul style="list-style-type: none"> • Dietary diversity during first 1,000 days; • Safe milk for PLW and children >6 mo; • Safe milk handling, preparation and storage practices (with demonstrations). 	Posters, brochures, outlines for skits	Skits on managing a crying child, sustaining EBF to 6 mo; Dietary diversity wheels	Training Education
World Food Day event	Annual (16 October)	Information booths on importance of: <ul style="list-style-type: none"> • Dietary diversity during first 1,000 days; • Safe milk for PLW and children >6 mo; • Safe milk handling, preparation and storage practices (with demonstrations). 	Posters, brochures, demonstration supplies	Cooking demonstration guides Safe milk preparation and storage guides Dietary diversity wheels.	Training Education
Advocacy					
Extension agent training (CHV, livestock extension officer)	Annually; one week long	Integrated training on agri-nutrition: <ul style="list-style-type: none"> • Household dietary diversity • Dietary diversity, including milk in the first 1,000 days (women and children from 12 mo); • Safe milk handling, preparation and storage practices; • Hygienic animal management; • Safe and hygienic collection and disposal of livestock and child faeces. 		Training curriculum; Handbooks Dietary diversity wheel Mesh covers for milk storage	Training Education Modelling Environmental restructuring

Appendix 7. SBCC frameworks for priority practices

I Pregnant and lactating women consume at least one serving of safe dairy products each day, year-round	
SBCC dimension	Details
Practices	PLW consume at least one serving of safe milk each day Milk is made safe through sieving, boiling and covering
Priority group	PLW
Influencers	Husband, MIL
Key messages	<ol style="list-style-type: none"> 1. Take one cup of milk every day to give you energy and strength. 2. There are many enjoyable ways you can take milk: fresh or fermented, on its own or mixed with tea or foods such as porridge. 3. Keep some milk from your cows for home consumption: 'When you milk your cows, don't sell all the milk! Save some for yourself, to give you strength and energy.' 4. Sieve, boil and cover your milk to make it safe. 5. Engage men and link to the values of a good husband: 'Men, show your love for your wives by bringing them a cup of milk.' 6. Engage men in food budgeting exercises: 'Men, support your wives: add shillings to your weekly food budget to buy milk.'

I Pregnant and lactating women consume at least one serving of safe dairy products each day, year-round	
Other points	<ul style="list-style-type: none"> • Educate families on importance of milk consumption during the first 1,000 days. • Include husbands and MILs in counselling sessions. Target them for other activities (e.g. household budgeting). • Include images or stories depicting PLW drinking milk and smiling in communication materials (e.g. counselling cards, posters, videos, skits). • Include counselling on safe milk preparation and consumption during antenatal care visits. • Promote keeping sufficient milk for home consumption in dairy households. • Target men with messages around household food budgets and food costs, with exercises in food purchases and allocating money to purchasing milk (i.e. in households that do not keep dairy cattle or for times when home production is low). • Include safe milk preparation and storage demonstrations during community-level extension activities and during household visits by livestock extension officers to encourage safe milk preparation and storage. • Promote consumption of safe milk by PLW at community-level livestock extension activities and during household visits by livestock extension officers to encourage households to provide more milk to PLW. • Target traditional and religious leaders to increase awareness of importance of safe milk and its benefits for PLW. • Incorporate traditional and religious leaders into activities such as safe milk preparation and storage demonstrations at the community level. • Ensure key influential household members (e.g. husband, MIL) are included in discussions during household visits. • Prioritize dialogue counselling and negotiation with problem-solving during household visits and antenatal care (ANC) based counselling, so families can identify simple steps that allow them to put behaviours into action.

<p>Barriers</p>	<p>Reflective motivation</p> <ul style="list-style-type: none"> • In a few cases, non-doers described a perceived risk that excessive milk consumption would lead to PLW having a large baby and difficult delivery. • Both doers and non-doers cited the potential risk of contracting diseases by consuming milk (e.g. brucellosis, diarrhoea), though more common in children than women. • Some women noted aversion to milk during pregnancy. <p>Physical opportunity</p> <ul style="list-style-type: none"> • Non-doers noted that without their own cows they could not access milk. • Several non-doers noted low milk production limited how often they could consume milk.
<p>Enablers</p>	<p>Reflective motivation</p> <ul style="list-style-type: none"> • Doers and non-doers alike perceived benefits of PLW consuming milk, including increased breast milk production, healthier babies, less illness and more strength and energy. • Consuming cow's milk was considered to lower the likelihood of women having insufficient breast milk for their child. <p>Social opportunity</p> <ul style="list-style-type: none"> • Doers and non-doers alike believed that their husbands, MILs and health workers would support giving extra milk to children. Women considered husbands to be the most critical support person to put this behaviour into action, followed by MILs. • Milk consumption is more normalized in southeastern than in western counties, where milk consumption is desired but less in line with current social norms. SBCC activities will seek to reinforce existing good practice in southeastern counties and normalize the behaviours in western counties. <p>Physical opportunity</p> <ul style="list-style-type: none"> • Doers and non-doers indicated that having one's own cows or having income to buy milk was needed to regularly consume milk.
<p>Non-communication activities</p>	<ul style="list-style-type: none"> • Train cattle-keepers on good feed/forage practices for increasing milk production. • Train farmers on appropriate breeding techniques (e.g. fixed-time artificial insemination) and reproductive management techniques for increased milk production. • Support families to increase their number of cattle through micro-credit, micro-finance or loan programs. • Support extension activities that reduce the risk of disease transmission from animals (e.g. brucellosis, various causes of diarrhoea). • Encourage traders to sell milk at affordable prices, to enable it to be accessed by households with PLW. • Improve the milk value chain to enhance the quality, availability and affordability of milk at the village level year-round.
<p>Comments</p>	<ul style="list-style-type: none"> • May need to develop or adapt existing training guides for the use of communication materials by health and livestock extension workers. • Consult with Kenyan MOH on the possibility of incorporating some of these messages into their IYCF materials. • Consult with other partners, including NGOs such as One Acre Fund, to incorporate messages into their community-based work.

2 Women exclusively breastfeed their child up to six mo	
SBCC dimension	Details
Practices	Women give only breast milk for the first 6 mo of their child's life.
Priority group	PLW with children 0–6 mo.
Influencers	Husbands, MILs, CHVs. Formative research suggests these groups are supportive of EBF for 0-6 mo.
Key messages	<ol style="list-style-type: none"> 1. The only food your baby needs is breast milk, which can meet all their nutritional needs. 2. Even when it's hot and dry, your baby only needs breast milk. Your breastmilk has enough water to keep your baby healthy! 3. A crying baby needs their mother's milk and a patient and loving family, not porridge. Continue to give only breast milk and be comfortable knowing that your child is healthy and growing well. 4. Make sure your baby gets all the nutrition they need. Encourage your baby to empty one breast before switching to the other breast. This will keep the baby full and content for longer. 5. God has made women very strong – even women who are not able to eat what they feel they need will still produce enough milk to satisfy their babies.
Other messages	<ul style="list-style-type: none"> • Encourage husbands to bring home special foods to support LW, especially cow's milk. • Encourage husbands and MILs to support LW in household tasks, so they have time for EBF. • If families are considering giving porridge or cow's milk to a child before 6 mo, encourage them to give that porridge or milk to the child's mother, so she has energy to continue exclusively breastfeeding her child. • Educate mothers and other influential family members on recognizing early hunger cues so the mother can begin breastfeeding before her child cries and becomes irritable. • Identify reasons other than hunger that may cause children to cry (e.g. when the child is wet) and work with family members to identify strategies for managing child crying, without giving other foods. • Train mothers to express and store breast milk. Train family members to feed expressed milk to the child in case the mother must be away from the child. Training should also include cleaning equipment, safely storing and reheating breast milk, keeping in mind that breast milk should not be heated directly to preserve nutrients.

2 Women exclusively breastfeed their child up to six mo	
Barriers	<p>Reflective motivation</p> <ul style="list-style-type: none"> • Women perceived limited food access to be a reason for insufficient breast milk or for being too weak to practise EBF. • Stress (mental, emotional, family) was also believed to reduce breast milk. • Some women believed that warm water and salt are needed to kill intestinal worms or 'build the baby's blood' and that milk or water (even in the first week of life) are needed to clear the stomach. • Giving gripe water to a child was not seen as a violation of EBF. • Male children were believed to be hungrier and to need more than girls. <p>Physical opportunity</p> <ul style="list-style-type: none"> • Limited time to breastfeed on demand and empty the breast. • Separation from the child due to household workload, employment, working in the fields (shamba) or family disputes. <p>Social opportunity</p> <ul style="list-style-type: none"> • Fathers or GMs interpreted crying as a sign of hunger. If children cry after being breastfed, breast milk is considered to be inadequate and other food is needed. • GMs believed children were not able to survive on breast milk alone or that they may not accept foods later on if not introduced at a young age. <p>Psychological capability</p> <ul style="list-style-type: none"> • Mothers and influencers had limited awareness of expressing breast milk. • Mothers did not know how to express and safely store breast milk. • Alternative caregivers did not know how to feed expressed milk to the child.
Enablers	<p>Psychological capability</p> <ul style="list-style-type: none"> • High awareness of EBF recommendations and benefits by mothers, fathers and GMs. <p>Social opportunity</p> <ul style="list-style-type: none"> • Supportive influencers – fathers and GMs appeared to support EBF, with very few negative consequences of EBF described. <p>Reflective motivation</p> <ul style="list-style-type: none"> • All groups have heard or believe that EBF makes babies intelligent, protects against illness, promotes bonding with mother. • Many believed that milk and certain foods help mothers produce more milk. <p>Automatic motivation</p> <ul style="list-style-type: none"> • Mothers/GMs had positive experiences with previous EBF.
Non-communication activities	<ul style="list-style-type: none"> • Promote growing nutritious foods and milk production at household or village levels, especially during the off-season, to make foods more available and accessible.
Comments	<ul style="list-style-type: none"> • Potentially work with livestock extension agents to train them in EBF and discourage giving animal milk to child <6 mo but give to mother instead.

3 Caregivers provide children 12–23 mo with at least one serving of safe dairy products each day, year-round	
SBCC dimension	Details
Practices	Caregivers provide children 12–23 mo with at least one serving of safe dairy products each day, year-round.
Priority group	Mothers and caregivers of children 12–23 mo.
Influencers	Fathers and GMs of children 12–23 mo
Key messages	<ol style="list-style-type: none"> 1. Feed your 12–23 mo child milk every day to make them grow tall and strong. 2. Feed your 12–23 mo child milk every day. You can serve it fresh or fermented, on its own or mixed with porridge. 3. Keep some milk from your cows for home consumption: <i>‘When you milk your cows, don’t sell all the milk! Save enough for your child to make them grow tall and strong.’</i> 4. Sieve, boil and cover your milk to keep it safe 5. Engage men and link to the values of a good father: <i>‘Fathers, show your love for your children by bringing them home milk from the market.’</i> 6. Engage men in food budgeting exercises: <i>‘Fathers, support your children to be smart and healthy, add xx shillings to your weekly food budget to buy milk.’</i>
Other messages	<ul style="list-style-type: none"> • Include husbands, fathers/MILs in counselling sessions. Target them for other activities (e.g. household budgeting) • Include in materials (e.g. counselling cards, videos, radio spots) images/stories depicting healthy young children (12–23 mo) drinking milk and smiling. • Include counselling on safe food and particularly safe milk preparation and consumption during antenatal care visits • Promote keeping sufficient milk for home consumption. • Target men with messages around household food budgets and food costs; with exercises in food purchases and allocating money to milk (if not available from home production) • Include safe milk preparation and storage demonstrations at community level extension activities and during home-based livestock extension visits to encourage households to safely prepare and store milk • Promote consumption of safe milk by children 12–23 mo at community level livestock extension activities and during home-based livestock extension visits to encourage households to provide more milk to children. • Target traditional and religious leaders to increase awareness of the importance of safe milk and its benefits for children and PLW. • Incorporate traditional and religious leaders into activities such as milk preparation and storage demonstrations at the community level. • Ensure key influential household members (e.g. husband, MIL) are included in household visits. • During household visits and ANC-based counselling, prioritize dialogue counselling and negotiation with problem-solving so families can identify simple steps that allow them to put behaviours into action

3 Caregivers provide children 12–23 mo with at least one serving of safe dairy products each day, year-round	
SBCC dimension	Details
Barriers	<p>Reflective motivation</p> <ul style="list-style-type: none"> Both doers and non-doers perceived risks related to the child contracting diseases from livestock, such as brucellosis and diarrhoea; however, only a few raised these risks (<20% of respondents) <p>Environmental opportunity</p> <ul style="list-style-type: none"> Non-doers noted that without their own cows they could not access milk. Several noted that low milk production of their cows limited how often they could give milk
Enablers	<p>Perceived positive consequences: Doers and non-doers alike perceived benefits of milk for children related to better health, improved nutrition and glowing skin; some noted stronger bones.</p> <p>Perceived social support: Doers and non-doers alike believed that husbands, GMs and health workers would support giving extra milk to children; fathers, followed by GMs, were considered the most critical support persons needed to put this behaviour into action.</p> <p>Access: Doers and non-doers indicated that having one's own cows or having income was key to regularly consuming milk.</p>
Non-communication activities	<ul style="list-style-type: none"> Train cattle-keepers on good feed/forage practices for increasing milk production. Train farmers on appropriate breeding techniques for breeds with increased milk production. Support families to increase the number of cattle they have through micro-credit/micro-finance or loan programs. Support extension activities that reduce risks of animal diseases (e.g. Brucellosis). Encourage traders to sell affordable milk to enable families with young children to purchase. Improve the value chain for milk to enhance quality, availability and affordability at the village level year-round.
Comments	<ul style="list-style-type: none"> Will need to develop training guides for the use of materials developed for both health and livestock extension sector. Consult with Kenyan MOH and MOA and review IYCF materials. Consult with other partners in nutrition, health and agriculture to incorporate messages into their community work.

4 Caregivers feed children 6–23 months old feed children a diversity of foods every day	
SBCC dimension	Details
Practices	Mothers and caregivers of children 6–23 mo feed them at least four different food groups each day.
Priority group	Mothers and caregivers of children 6–23 mo.
Influencers	Fathers and grandparents of children 6–23 mo, health workers.

4 Caregivers feed children 6–23 months old feed children a diversity of foods every day	
SBCC dimension	Details
Key messages	<ol style="list-style-type: none"> 1. From 6 mo, breast milk alone does not meet the nutritional requirements for children and children need to be introduced to other nutritious and diverse foods such as eggs, fruits, vegetables and meats. 2. Milk can be added to foods such as mashed beans, avocado or boiled eggs to enrich these foods. These make great first foods for babies, beginning at 6 mo. 3. From 6 mo, boost your baby's brain by feeding fish, liver or eggs every day. This helps baby grow and develop well and achieve milestones. 4. Colourful foods fight disease. From 6 mo, feed your child orange and yellow fruits and vegetables every day. These foods make children strong and able to fight infections. 5. From 6 mo, introduce new fruits and vegetables patiently and a little at a time until your child becomes used to them.
Other messages	<ul style="list-style-type: none"> • Educate mothers through Mother Support Groups and other platforms about safe preparation of family foods for children beginning at 6 mo. • Use demonstrations and taste testing so women can see family foods prepared for infants and infants eating those foods without problems. • Create exercises in managing food purchases and allocating money to more nutritious foods like fish, eggs, VA-rich fruits and vegetables. Target fathers for these exercises, as well as mothers. • Include in materials (e.g. counselling cards, videos, radio spots) images and stories showing healthy children happily eating recommended complementary foods and well-fed children playing nicely. • Educate families to use the dietary diversity wheel to set goals for family and individual dietary diversity and track accomplishments. • Incorporate traditional and religious leaders into activities such as food demonstrations at the community level, Mother and Father Support Groups and six-month contact points at clinics to demonstrate their support of proper complementary feeding for children 6–23 mo. • Target traditional leaders with counselling and SBCC materials to increase awareness of the importance of dietary diversity and its benefits for small children. • Include husbands and MILs in counselling sessions and target them for other activities. • Ensure household level visits with key decision-makers (e.g. husband, MIL) are included. As much as possible, prioritize dialogue and counselling over simply telling. • Include hands-on food demonstrations and household budgeting activities as part of activities for Men's Groups. • Capitalize on social norms relating to good fathers providing food. Encourage fathers to show their love by bringing home nutritious foods from the market for children 6–23 mo.

4 Caregivers feed children 6–23 months old feed children a diversity of foods every day	
SBCC dimension	Details
Barriers	<p>Physical opportunity</p> <ul style="list-style-type: none"> • 'Economic problems' make it difficult for families to feed diverse foods to their children, especially meat. • Families that do not produce their own food or a diverse range of foods, had more challenges in providing diverse diets. <p>Reflective motivation</p> <ul style="list-style-type: none"> • Women prefer to leave their eggs to hatch rather than eating or selling, to build the flock. • Families did not believe young infants' (i.e. 6–8 mo) intestines could manage 'hard foods' (e.g. beans, nuts, meat, fish). • Many believed providing eggs too early (i.e. before 12 mo) would cause delays in speech development. <p>Automatic motivation</p> <ul style="list-style-type: none"> • Families feared young infants (i.e. 6–8 mo) are not able to consume family foods (e.g. beans, meat) for fear of choking.
Enablers	<p>Reflective motivation</p> <ul style="list-style-type: none"> • Benefits of diverse diet are well known and understood. <p>Physical opportunity</p> <ul style="list-style-type: none"> • Growing some of the foods within the households for easier access. • Money/income to purchase the foods. • Access to land to grow vegetables and keep animals, especially dairy animals or poultry.
Non-communication activities	<ul style="list-style-type: none"> • Train families on strategies to make poultry-keeping more productive, including accessing vaccination services where these are available, providing supplementary feed to scavenging chickens and protecting chickens from predators with appropriate housing. • Encourage traders to sell good quality fish, meat/offal, eggs and milk at affordable prices, so mothers can purchase these nutritious foods for their children. • Encourage mothers to set aside milk for home consumption, especially for women and children 6–23 mo. • Increase participation in Mother Support Groups, at six-month contact points at health clinics to educate mothers on proper feeding for young children and build support systems at the community level. • Develop market for preservers and traders to produce fish powder close to source and sell at village level.
Comments	<ul style="list-style-type: none"> • Will need to develop a lesson plan or brief training guide for the use of each material developed. • Consult with Ministry on the possibility of incorporating some of these messages into existing IYCF counselling materials.

5 Members of households with a child 0–23 mo must regularly collect human and animal faeces on the ground and dispose of it immediately in a latrine or pit or bury it far from house to keep the child from having contact with faeces and other contaminants	
SBCC dimension	Details
Practices	Collect faeces on the ground and dispose of it immediately in latrine or pit or bury it far from house.
Priority group	Mothers, GMs and older siblings of children 0–23 mo.
Influencers	Fathers of children 0–23 mo.
Key messages	<ol style="list-style-type: none"> 1. Faeces are dangerous to your child. Small children can play with and put in their mouth whatever is around them, especially once they start to crawl. Eliminating dangerous objects like animal and human faeces can help to keep your child safe and healthy. As a mother, you can limit your child's contact with animal and human faeces by collecting it, properly disposing of it and washing your hands with soap afterwards. 2. Maintaining a clean environment free of faeces enables your family, especially your young children, to be healthier and become ill less often. Your family will be happier without the smell of poo in your house! 3. Consuming faeces may cause your child to develop diarrhoea; it has detrimental effects on their growth and health. This undermines all your efforts and expense to provide and prepare good food for them. 4. Mothers, you can reduce contact with faeces by fencing animals, leashing goats to trees or posts and chasing chickens out of the house. 5. The frequent trips to the latrine or to the bush to bury the faeces with ash are worth the time and energy because you are making your children less exposed to risky material. Also, your neighbours will notice your clean, nice-looking yard and be happy to carry your child while you do other household chores. 6. Your MIL and other members of household approve of you taking the time to properly dispose of waste in a latrine or by burying it with ash and to keep a clean house. 7. (To all members of household): Small cleaning activities every day can contribute to a healthier home.
Other messages	<ul style="list-style-type: none"> • Reach mothers through counselling to prioritize maintaining a clean environment. Counsel mothers on the benefits of keeping a clean environment free of faeces, specifically that preventing sickness can eliminate the expense and loss of work for treatment and clinic visits. • Include MILs in counselling sessions. Target them for other activities. • Educate children through school programs on the importance of hygiene, including a clean environment at home and encourage their participation at both the school and their house. • Create a video showing a mother sweeping and collecting animal and human faeces and burying it with ash; then show the mother smiling as she allows her healthy-looking young child to sit down and happily play in the cleaned area. • Create a video with neighbours complimenting a mother on her clean house, coming over to play with her healthy, happy baby and then going home to clean their own homes. • Ensure household-level visits with key decision-makers (husband, MIL) are included. As much as possible, prioritize dialogue and counselling over simply 'telling.'

5 Members of households with a child 0–23 mo must regularly collect human and animal faeces on the ground and dispose of it immediately in a latrine or pit or bury it far from house to keep the child from having contact with faeces and other contaminants	
SBCC dimension	Details
Barriers	<p>Physical opportunity</p> <ul style="list-style-type: none"> • Cleaning represents extra work and may increase the burden on women's time and energy. This task may be particularly time-consuming when animals roam freely. It can divert time from other important caregiving tasks. • Lack of materials – no shovel for collecting and disposing of faeces. • Lack of enclosure to keep livestock safe and confined at night (e.g. chicken house). <p>Reflective motivation</p> <ul style="list-style-type: none"> • Concern about predation or theft leads some households to keep animals inside their homes at night.
Enablers	<p>Social opportunity</p> <p>Many mothers perceive this as an easy task that is normally part of their routine. Task is sometimes shared with older children or MILs.</p> <p>Husbands, GMs, grandfathers approve ('... yes, my mother-in-law told me to be sweeping faeces around to help avert sickness for my child.')</p> <p>Reflective motivation</p> <ul style="list-style-type: none"> • Sweeping faeces reduces bad odours and improves the appearance of the homestead. Exposure to bad odours is associated by many with illness and cleanliness is valued in the community. • Mothers and family members know that cleaning up faeces makes their home and environment healthier and reduces disease.
Non-communication activities	<ul style="list-style-type: none"> • Work with agricultural extension agents and others to encourage animals being confined in pens or chicken coops, both to improve production and to improve hygiene in households with young children. • Promote community-led total sanitation efforts to increase ownership and pride in those who contribute to and prioritize hygiene in the community. • Support Mother Care Groups to encourage dialogue and sharing of resources (i.e. a poop scooper) among mothers. • Encourage local merchants to stock tools at affordable prices. • Address any problems with latrines, to ensure all are functioning and accessible, to allow mothers and others to use and dispose of child faeces.
Comments	<ul style="list-style-type: none"> • Important to work with agricultural actors to encourage confining animals within pens, coops or chicken houses. This could be an important nutrition-sensitive agricultural practice that improves production, as well as improving nutrition status of children.

Appendix 8. Monitoring and evaluation for behaviour change

Note: The following should be consistent with the final SBCC strategy and ongoing monitoring and evaluation activities for the project.

Priority nutrition-sensitive agriculture categories of practices	Proposed indicators
1. Promote appropriate breastfeeding from birth to at least 24 mo	<ul style="list-style-type: none"> • % of infants 0–6 mo exclusively breastfed in the previous 24 hours • % of infants 0–6 mo exclusively breastfed in the previous 7 days • % of mothers with increased self-efficacy to exclusively breastfeed to 6 mo • % of mothers with children 6–23 mo still breastfeeding
2. Promote the production/purchase and consumption of safe milk by households and specifically PLW, WRA and children 12–23 mo	<ul style="list-style-type: none"> • Total quantity and proportion of milk produced by direct beneficiaries that is set aside for home consumption • Total expenditures and proportion of the food expenditure allocated to milk purchases • % of households consuming milk/dairy products in previous 24 hours • % of PLW and WRA consuming milk in previous 24 hours • % of children 12–23 mo consuming milk in previous 24 hours • Amount of milk consumed in previous 24 hours by the household • Amount of milk consumed in previous 24 hours by the PLW and WRA • Amount of milk consumed in previous 24 hours by children 12–23 mo • Number of days in previous 7 days that milk was consumed in the household • Number of days in previous 7 days that PLW and WRA consumed milk • Number of days in previous 7 that children 12–24 mo consumed milk • % of households reporting they boiled milk prior to use • % of households reporting they did not dilute milk with water or add anything to the milk prior to feeding to children 12–23 mo

Priority nutrition-sensitive agriculture categories of practices	Proposed indicators
3. Promote improved and diverse diets for PLW/WRA and children 6–23 mo	<ul style="list-style-type: none"> • Dietary diversity scores of women in previous 24 hours • % of women consuming ASF (eggs, dairy, meat/fish) in previous 7 days • Number of days in previous 7 days that PLW and WRA consumed ASF • % of women consuming VA rich fruits and vegetables in previous 7 days • Number of days in previous 7 days that PLW/WRA consumed VA rich fruits and vegetables • Dietary diversity scores of children 6–23 mo in previous 24 hours • % of children 6–23 mo achieving minimum acceptable diet in previous 24 hours • % of children 6–23 mo consuming ASF (eggs, dairy, meat/fish) in previous 7 days • Number of days in previous 7 days that children 6–23 mo consumed ASF • % of children 6–23 mo consuming VA rich fruits and vegetables in previous 7 days • Number of days in previous 7 days that children 6–23 mo consumed VA rich fruits and vegetables
4. Promote hygienic animal management practices	<ul style="list-style-type: none"> • % of households reporting that livestock are kept outside of the house at all times, including at night • % of households collect and dispose of animal faeces in a safe and hygienic way
5. Promote integration of health, nutrition and agriculture	<p>Number of extension agents in agriculture who have received integrated health and livestock training</p> <p>Number of extension agents in health who have received integrated health and livestock training</p> <p>Number of people reached with nutrition education sessions</p> <p>Number of children reached with nutrition messages (through their caregiver)</p>

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