SYNTHESIS REPORT

STUDY TO IDENTIFY VIABLE BUSINESS PROPOSITIONS FOR THE DAIRY INDUSTRY TARGETING LOWER INCOME CONSUMERS

CONTENTS

TABLES, FIGURES AND APPENDICES

1 INTRODUCTION

1.1 BACKGROUND AND CONTEXT

In the context of the Kenya Market-led Development Programme (KMDP), SNV contracted Research Solutions Africa (RSA) to prepare a study on current and potential business models for sales and distribution of milk and milk products, to urban lower income consumers. The study also looks at Base of the Pyramid (BoP) models or concepts for enhanced access to safe processed milk (-products), including fortified or enriched products.

The overall goal of KMDP is to contribute to the development of a vibrant dairy sector with beneficiaries across the value chain. The programme aims to work with all value chain actors to enhance growth and efficiency that will eventually lead to increase in production, incomes and employment across the chain.

KMDP has two pillars also termed as project objectives:

- Objective 1: Stronger more efficient, effective and inclusive value chains in the private sector both vertically and horizontally.
- Objective 2: Private and public stakeholders in the dairy industry are enabled to address systemic issues that hamper growth in the sector. This includes enhanced access of (urban) low income earners to safe and nutritious milk and milk products.

This study was contracted as part of KMDP's Inception Phase.

1.2 STUDY OBJECTIVES

The overall objectives of this consultancy are to:

- Get a deep insight and understanding of the Kenyan milk market (formal and informal) and the business models that supply the lower income groups.
- Benchmark this with BoP models in other sub-sectors in the Kenyan food and beverage industry for learning and borrowing.
- Benchmark this with successful BoP models and products in international dairy markets for learning and borrowing.
- Identify viable business propositions for dairy reaching the lower income groups.
- Give recommendations for sector and project support under KMDP for the development of conducive policies and business propositions.

1.3 PROJECT ACTIVITIES AND DELIVERABLES

The specific activities to be undertaken for this report are outlined in greater detail in the Terms of Reference (ToR) for the project (Appendix 1 to this document). The activities include questions in the domains of policies (5.1), supply side (5.2), consumer side/market (5.3), BoP and other sectors (5.4) and international benchmarking (5.5).

Specifically, Research Solutions Africa conducted the following activities and provided the listed deliverables to satisfy the objectives of the project:

Section/Activity as outlined in the Terms of Reference (ToR)	**Sub-section in the ToR**	**Activities and ddeliverabless**
5.1 Policy Development	5.1.a – 5.1.g	A brief based on desk research and in-depth interviews covering the policy environment as outlined in the terms of reference and structured along the same lines.
5.2 Supply side	5.2a-c	An overview based on desk research and in-depth interviews of the supply side as out-lined in the ToR and structured along the same lines.
5.3 Consumer/market	5.3a	A brief on existing consumer market insights based on desk research.
	5.3a-5.3c	A brief on the findings and insights from a survey among 300 households and 30 institutional consumers.
5.4 BoP models in Kenya	5.4a -5.4b	A note with examples of successful BoP business models in Kenya in the non-dairy food and beverage sector based on desk research and interviews.
5.5 International benchmark	5.5a-5.5c	A report on issues identified as relevant for the studies at hand in report format based on desk research and interviews.
	5.5d	A nine country Pan African inventory of processed milk and milk products (pictures and listings).
End report/Recommendations as per ToR	6.0	A report collated of the above and completed with sections on synergetic results (using the business model canvas as a structuring tool), opportunities in general, opportunities for KMDP and recommendations on the way forward (this document).

Given the wide scope of the study, not all points were addressed in equal depth. The policy and supply side sub-studies (5.1 and 5.2 above) are the most detailed ones. The consumer market related sub-studies (5.3) are relatively more superficial and based on small sample sizes. SNV and RSA felt that there already was a lot of well documented information available on the consumer markets.

The study delivers no further insights on BoP models of non-dairy related food and beverage industries in Kenya (5.4). A superficial analysis yielded little transferable knowledge from other sectors to the dairy sector that was not already covered under the international benchmarking section. Non-dairy food & beverage companies deal with similar issues as the dairy companies, such as ensuring quality standards, achieving micro-distribution and marketing at the BoP. The scope of the survey did not allow for an in-depth analysis of such business models to benchmark.

The international benchmarking section (5.5) is detailed on specific issues, but not comprehensively so. The sub-study focused on a limited number of specific issues identified during the research process. The additional product scan was limited to an inventory of dairy products available in nine African countries. The inventory is probably the largest image database of dairy products in Africa with more than 1,000 entries.

2 POLICY DEVELOPMENT

2.1 POLICY RESEARCH BACKGROUND

This section of the research was handled by a marketing manager in a dairy related industry, whose report on the policy context of the dairy sector is included as Appendix 2 to this document. The report contains significant additional detail on the policy side. The author has taken leave to conduct the research for this study. There is potential for a conflict of interest. Such a conflict of interest is unavoidable in a market-led dairy programme that aims to closely involve the commercial stakeholders in the sector and tap into their knowledge and expertise. The specific research objectives for this section are outlined in the ToR as follows:

a) Assess to what extent government policies – fiscal and regulatory - offer incentives or disincentives for industry investments in processed milk (-products) targeting the BoP.
b) Identify/assess to which extent (if and how) the Ministry of Health pro-actively promotes awareness of nutrition and food safety amongst the BoP target group, in particular related to dairy products.
c) Describe and analyze what are the policies related to food and milk fortification, both fiscal (VAT or zero rated) and regulatory.
d) Describe and assess the policies and strategies of the Kenya Dairy Board to enhance access to safe milk products for the lower incomes groups or BoP.
e) Describe and analyze the policies, strategies and initiatives of the Kenya Dairy Processors Association to expand the market for processed milk and milk products towards the BoP, including the generic milk campaign.
f) Give inspirational examples of conducive government policies for dairy BoP models in other countries or in other food and beverage sectors.
g) Make recommendations for policy changes/support.

2.2 POLICY RESEARCH ACTIVITIES

The following activities were undertaken to respond to the objectives.

Desk research:

- Collection and review of the relevant materials on existing policies both fiscal and regulatory. Assess to what extent these policies offer incentives or disincentives for industry investments in processed milk (products) targeting the BoP
- Assess and identify what impact these policies have for industry investments in processed milk (products) targeting the BoP
- Identify the relevance, strengths and weaknesses of the policies for industry investment in processed milk (products) targeting the BoP Identify/assess to which extent (if and how) the Ministry of Health pro-actively promotes awareness of nutrition and food safety amongst the BoP target group, in particular related to dairy products

- Describe and analyze what are the policies related to food fortification, both fiscal (VAT or zero rated) and regulatory
- Identify and describe the mandate and effectiveness of national forums that advice government on food fortification

Key Informant Interviews were conducted with the following Government policy makers and dairy stakeholders:

- Kenya Dairy Board (KDB)
- Kenya Dairy Processors Association (KDPA)
- Dairy Traders Association (DTA)
- Ministry of Health (MOH)
- Processors: NKCC and Githunguri

2.3 POLICY RESEARCH HIGHLIGHTS

2.3.1 GOVERNMENT POLICIES

The policy report highlights three policy documents with relevance for industry investments in processed milk (-products) targeting the BoP:

The Kenya Dairy Master Plan, 2010 (DMP)

The Kenya Dairy Master Plan (DMP) (2010) is a document showing how the government wants to reverse the poverty, hunger and unemployment problems through transformation and revitalization of the dairy subsector. Although it was first developed in 1991/1992, it was never implemented following the changing economic environment particularly the liberalization of milk marketing in May 1992. At that time there was only one main processor, the KCC.

The policy report highlights a total of 42 policies included in the DMP that are of relevance to the objectives of this study, but more indirectly as they address generic issues and bottleneck in the dairy value chain that are related to efficiency of operations and milk quality . For each of these policies, the implementing stakeholders are identified.

The policies are targeted at improving each of the following: the competitiveness of the milk value chain; the efficiency of milk collection and transportation; post-harvest losses and investment in milk processing; milk value addition and processing; domestic milk consumption; milk processing for regional and global markets; reviews, harmonization and design of policies, regulation and control; security of investments. The stakeholders include a wide range of Ministries, the Kenya Dairy Board (KDB), KEBS, farmer groups and co-operatives, processors, universities, colleges and NGOs

The DMP addresses general issues in the dairy value chain in a generic manner. Specific actions for implementation are not defined in the document. While many of the addressed issues are relevant for the BoP segment, the DMP includes no specific policies targeted at the BoP market. The key value of the document for the KMDP programme lies in the fact that it provides a long-list for potential interventions. This long list can be found in tables 1-8 of Appendix 2 of the DMP. Any activity undertaken

within the broad scope of the DMP can be legitimised on the basis that it contributes to the goals of the Government of Kenya.

The Dairy Policy, 2006

The Dairy Policy 2006 lists much more specific recommendations for key issues relating to quality control and standards, consumer safety, consumption, promotion of local dairy products and exports.
The policy is a culmination of various consultations among stakeholders convened to review the dairy policy launched in 1993. It addresses the challenges and shortcomings arising from the liberalization policies affected by the government in the 1990s. Specific objectives relevant to BoP include:

- To increase domestic consumption of milk and milk products
- To contribute to food and nutrition security
- To improve the productivity and competitiveness of Kenya's dairy and dairy products
- To re-orient milk processing toward long life dairy products

The Dairy Policy 2006 identifies 5 key areas of policy intervention:

- The Dairy Policy (2006) identifies milk marketing and value addition as a key policy issue that requires attention. Proposed actions include speeding up of rural electrification programmes in milk producing enclaves; exploration of viability of alternative sources of energy; reduction of electricity tariffs for reduced cost of milk cooling; and promotion of investment in cold chain infrastructure by marketing cooperatives and private investors through provision of incentive.
- The Dairy Policy (2006) observes that milk processing is bedeviled by low demand of pasteurised products, and low production of long-life products. It therefore proposes tax incentives on new investments: viz. VAT zero rating of farm inputs and equipment for milk processing, support to investment in long-life milk products and cost effective processing and packaging methods.
- The Dairy Policy (2006) identifies the problem of discrepancies in milk consumption between rural and urban populations across different income groups. This, it suggests can be alleviated by promotion of whole milk consumption, increased awareness of nutritional and health benefits of milk consumption and encouraging the production of a diversified range of milk and milk products that meet a wide range of consumer tastes and preferences.
- The Dairy Policy (2006) identifies milk testing and quality control as an essential component for the successful development of a competitive dairy industry value chain. It points out the fact that hygiene and quality standards assurance for dairy products handled through the informal marketing channels has been elusive.
- The informal market handles about 60-70% of marketed milk. Most of the consumers are in the BoP segment mostly in urban areas. The Dairy Act's proposals include a transition of informal milk trade towards the formalization of the small enterprise sub-sector in the industry; the development of low cost and appropriate technologies for small investors; investments in and support training programmes on safe milk handling; working with stakeholders to improve the standards of milk processing in the informal sector; and the establishment of a supportive milk dealer certification system.

The KMDP project seems to be very much aligned with these policies and could benefit from this overlap. As we will document throughout this report, the issues outlined above are still largely unresolved and any impetus for improvements would be beneficial.

The Dairy Industry Act

The most concrete piece of regulation is the Dairy Industry Act (2012): Cap 336, Laws of Kenya. It is an Act of Parliament to provide for the improvement and control of the dairy industry and its products. Section 17, Subsection 1(a) stipulates that the functions of the Kenya Dairy Board (KDB) are to organise, regulate and develop the efficient production, marketing, distribution and supply of dairy produce, having regard to the various types of dairy produce required by different classes of consumers. Subsection 1(e) states that KDB shall permit the greatest possible degree of private enterprise in the production, processing and sale of dairy produce, consistent with the efficiency of the producer and the interest of other producers and of consumers.

Generally, the Act mandates KDB to regulate the dairy industry and provides for prospective dealers to seek licenses for dealing in milk and milk products. Once dealers have the required licenses, then they are free to operate (buy, sell, process, import, export, transport) or transact in any dairy produce business. Despite these provisions, KDB is perceived by the industry stakeholders as failing to push accessibility of processed milk to the Base of the Pyramid (BoP). KDB is not seen to be enforcing the existing legislation which prohibits sale of unprocessed milk in the main urban centres. The licensing of milk bars without enforcing milk quality standards, compromises food safety and is seen to be promoting consumption of unprocessed milk amongst the BoP consumers.

Kenya Dairy Board

In order to address the strategic concerns for the dairy industry, Kenya Dairy Board in its current strategic plan (2012 – 2017) has established the following objectives for the plan period:

- Improve the quality of Kenyan dairy produce
- Open up dairying in non-traditional areas.
- Develop the capacity for service delivery and stakeholder support
- Provision of timely and accurate dairy information
- Improve the financial sustainability of the Board
- Enhance consumption of milk and milk products
- Stabilise milk production and
- Enhance the corporate image of the Board

The strategic plan also highlights a range of strategic concerns that the Board is addressing in the period under review, as well as internal and external challenges that hinder KDB in realizing the strategic objectives. The full lists of these rather generic issues are included in Appendix 2, pp. 19-20 and are worthwhile to discuss from a KMDP perspective. With a range of issues, KMDP might be able to assists and thus reduce the challenges for KDB in achieving its strategic objectives. It would be the role of KMDP

to identify within those lists their own priorities since the strategic plan does not explicitly address any issues aimed at BoP related issues.

Such a priority could be to support KDB to efficiently enforce existing legislation, for example on milk quality standards, if an efficient collaboration can be established. KMDP could also support efforts to raise awareness on food safety issues for the benefit of public health. Finally, KMDP could position itself as a player supporting a neutral playing field between the different stakeholders for the benefit of the overall milk sector, especially closer to the BoP, where formal and informal actors are facing a set of very diverse constraints.

2.3.2. Other stakeholders and policy issues

A range of other actors and policies influence the Kenya dairy market landscape.

Ministry of Public Health and Sanitation (MoPHS) policies on nutrition and food safety

MoPHS has influenced or drafted key elements of legislation related to nutrition and food safety. It's Draft Sessional Paper (2011) on Food and Nutrition Security Policy (FNSP) outlines a range of challenges for the sector. Among these is an outline of the various government bodies responsible for drafting and enforcing appropriate guidelines, standards and a regulatory framework, as well as an overview of the 20+ legislative acts related to food quality and safety. Some of the most essential pieces of regulation have been legal notice number 62 of 2012 and regulations 249, 253 and 258 outlined below.

Through the legal notice number 62 of 2012 (Food, Drugs and Chemical Substances-Food Labelling, Additives and Standards), the Minister for the MoPHS made regulations on food labelling, additives and standards in 2012. In this notice, "food fortification" means addition of nutrients to bridge the dietary deficiency in a food article. "Food enrichment" means addition of nutrients to replace nutrients lost during processing or addition of nutrients to enhance existing nutrients in a food article.

Regulations 249, 253 and 258 were amended to provide for the quantities of nutrients in fortified wheat flour, dry milled maize, vegetable fats and oils. However, these did not cater for fortified milk and milk products. Thus, the regulation states that where no specifications are set, the specifications of the Codex Alimentarius Commission shall apply. These are jointly established by the Food and Agriculture Organisation (FAO) and the World Health Organisation (WHO).

Kenya Dairy Processors Association (KDPA)

KDPA was registered in 1992 as a limited liability company in 1996 and the principal objective is to act as a forum for the development and promotion of an efficient, organised and professionally managed dairy industry in Kenya. The association is open to all parties involved in the processing and marketing of dairy products in Kenya. Currently there are seven active members, New KCC, Brookside, Githunguri, Happy Cow, Buzeki, Sameer and Meru Central. The association also works in partnership with Tetra Pak, Land O' Lakes and ESADA.

The specific objectives include, among others, being a forum for dialogue and collaboration between the stakeholders, lobbying activities, capacity building, awareness raising and research. A full list is included in Appendix 2, p. 21. A flagship activity of KDPA is the Generic Milk Consumption Campaign it launched

in 2012. It is meant to create public awareness on the importance of increased consumption of milk and other dairy products. The event was organised by the Kenya Dairy Processor Association (KDPA) with co-funding from by Land O' Lakes.

In order to make milk more affordable for BoP consumers, the processors have also invested in dairy technologies and cheaper (packaging) materials with a view to making processed milk and milk products more affordable. They have also invested in the distribution resources and infrastructure to reach the lower end of the market, like in the slums. However, the consumption of processed milk is still quite low, estimated at about 20%, more needs to be done to penetrate the untapped BoP segment.

KDPA members say that they still face a range of challenges in serving BoP and other markets:

- Accessibility to raw milk is still a challenge, for example in Q1 & 2 of 2012, some of the members experienced a milk intake drop of up to 50%
- Selling of raw milk, esp. in the big cities like Nairobi, is impacting the demand for processed milk
- VAT introduction especially on value added products hinders growth
- Poor infrastructure affecting collection of milk from the small scale farmers
- Cost of inputs for the farmers affecting production volumes and costs
- Undeveloped cooling facilities affecting the quality of the raw milk
- Poor enforcement of legislation by KDB and the government for example on milk hawking.
- Insufficient market for processed dairy products

KMDP can support KDPA in reducing a number of these challenges, ranging from practical support to increase the access of small scale farmers to processing capacity (production and logistical infrastructure), through promoting milk and related products to monitoring the sale of raw milk in BoP areas.

Dairy Traders Association

The Dairy Traders Association (DTA) was registered in March 2008 and represents the interests of milk producers and traders. At the time of the study, the membership was claimed to be 4,500 with a target of 15,000 by the end of 2013. The membership is composed of both farmers and traders but some play a multi-role along the milk value chain. The DTA is probably the association in this list with the most affinity to BoP issues as the organisation was established to support small milk traders and producers in promotion of milk consumption and reduce poverty in Kenya.

An estimated eighty per cent (80%) of producers are small scale farmers. It is further estimated that 50% of total milk production is marketed of which 60% through the informal channels (door to door deliveries, milk bars and milk shops). Members are licensed by KDB and expected to conform to laid down regulations for the premises, code of conduct, defined standards for containers and preservation, they must undergo training on hygiene and milk handling across the value chain, must have the required licensing and certification and more and more emphasis on value addition, ghee, yoghurt and mala.

The association has plans to establish a *Maziwa* SACCO where members can save to enable them raise capital for improvement, modernization and expansion of their milk businesses, among other benefits to

the members. Although there were ten branches countrywide at the time of the survey (South Rift, Kisumu, Naivasha, Nairobi West, Nairobi Central, Nairobi North, Eldoret, Nakuru, Kirinyaga and Embu), ten more branches are in the pipeline.

The duties and levies that the DTA pays includes a monthly cess of 20 cents per litre and annual costs that include movement permit (KShs. 1,000/= paid to KDB & City Council), licensing fee of KShs. 4,000 and Public Health permit of KShs. 3,000. The strategies and future plans of DTA include capacity building, awareness raising and the establishment of localised and affordable cooling and pasteurization units.

DTA is aware of the fiscal and regulatory policies for the raw milk market, but implementation of these policies remains a challenge. KDB does not have the capacity to implement these policies because there are too few inspectors on the ground. On the other hand strict implementation also is political sensitive, as it is not immediately of benefit to the many smallholder and traders that market their (raw) milk through this channel, and to the BoP consumers that are not able to buy processed milk at the current price level.

DTA believes that their current milk marketing strategies are already geared towards BoP, by selling affordable raw milk in the slums of Nairobi. They are open to discussions of converting their members to sell processed milk but the key success factor still remains affordability. Its mission and activities make the DTA an interesting partner for milk related activities at the BoP. The membership of the organisation is closer to the BoP than that of other stakeholders and they have a vested interest to promote the consumption of milk at the BoP. At the same time, DTA will be averse to the strong implementation of existing and future legislation as demanded by the larger stakeholders, notably the processors.

Food Fortification

The Government of Kenya defines food fortification as the addition of specific micronutrients (vitamins and minerals) to commonly consumed foods during processing. The vitamins and minerals include vitamins A, B, C, D, E and K while minerals include Iron, Iodine and Zinc. In Kenya, the fortified foods include maize flour, wheat flour, vegetable oil, sugar and salt. Food fortification standards have been developed by the Kenya Bureau of Standards (KEBS); these will be used by all industries (http://www.publichealth.go.ke/food-fortification).

The Kenya MoPHS, Population Services International (PSI) and the Global Alliance for Improved Nutrition (GAIN) have launched a 5-year partnership with industry that will reach 27 million Kenyans with nutritionally fortified wheat flour, vegetable oil and maize meal. This followed the passing of mandatory food fortification legislation in Kenya (http://www.psikenya.org). An additional stakeholder in food fortification is the Ministry of Agriculture, Livestock and Fisheries (MoALF).

While fortification of maize and wheat is in some cases mandatory, or at least initiated, other products are not yet covered. Most notably in the context of this study, milk fortification is not stimulated. To the contrary, fortified milk might very well not qualify for the status of a basic commodity and therefore face a higher VAT rate. The exact tax implications of food fortification of liquid milk, pasteurised milk and long life milk are unclear at this stage.

Fiscal Regulation

The issue of food fortification raises the question whether a fortified product would attract VAT on the total product or only on the minerals/vitamins or no VAT whatsoever would apply. It is worth noting that at the time of this study, Sameer under the Daima brand has already launched fortified whole and low fat milk and according to them, they are not paying VAT on it.

However, these issues are currently less urgent since the Government of Kenya is now discussing a new VAT bill, which would make most, if not all, basic commodities fully VAT-able at a rate of 16%. The motivation to do so is to increase the tax revenues for the Government without a direct relation to health or poverty aspects. To the contrary, the VAT will have a number of adverse effects from a BoP perspective:

- Processed milk and milk products will become more expensive
- It will aggravate an already distorted market as the raw milk sector does not pay income tax, cess, levies and other costs that are imposed on the formal sector
- It will encourage the value chain actors to channel milk through the informal (unprocessed milk) sector.

2.4 CONCLUSIONS AND RECOMMENDATIONS ON THE POLICY ASPECTS

Generally, Kenya Government policies attempt to provide a conducive environment for the production of safe milk and milk products by emphasizing amongst others on GMP, provision of electricity, improving the road network, zero rating of dairy equipment, re-orientation of milk processing towards long life and value added products, and so on.

The policies, however, do not address the differences in the business environment between formal and informal stakeholders. The formal stakeholders do feel disadvantaged by having to comply with taxes, levies and other regulation that is largely ignored in the informal sector. This will be compounded by the introduction of VAT on processed pasteurised milk and fortified milk products.

In addition, the policies lack in providing incentives for investment in processed milk and milk products for the BoP. For example VAT exemption on all extended shelf-life products like yoghurts, mala and cheese would benefit the BoP as they usually cannot cool the products. VAT exemption (or reduction) for small units (200 ml and below) and fortified milk (-products) could also be an option to facilitate reaching the BoP and trigger investments.

Although policy and regulatory guidelines on food fortification are at their infancy, there are standards for fortification of maize flour, wheat flour, vegetable oil, sugar and salt. Consequently, there are no guidelines for fortification of milk and milk products. This delays or withholds investment of the industry in enriched and fortified milk products.

From the foregoing and with special reference to targeting the BoP, the following are the proposed recommendations, several of which KMDP could help facilitate and implement.

1. The availability and quality of data hinders efficient planning. To allow for proper and effective planning and implementation of the policies, the industry must invest in keeping the right data which is then updated on a regular basis.
2. In order to reach the BoP segment, the products must be affordable at a good price point. To achieve this, the costs across the value chain must be reduced and the benefit of this passed onto the final consumer. There are many ways to achieving this as listed below:
    - Providing incentives to all investments across the value chain (including marketing and distribution) through zero rating all the inputs in dairy and dairy products will help to bring down the costs. Zero rating value added products would make those more affordable, though it remains to be seen whether it makes them affordable enough to reach far down to the BoP.
    - The cold chain distribution of pasteurised dairy products is expensive, unreliable and limits the industry from capturing the full BoP potential. The government could promote and incentivise investments in the UHT products and reduce or nullify VAT on UHT.
    - The government through the Ministry of Health should support the generic milk campaign initiated by the industry.
    - Availability of raw material (milk) has an impact on all the dynamics across the value. There is need to have a strategic plan for managing seasonality in the industry.
3. Harmonization of the regulatory and institutional framework is essential. Consider setting up a body or Trust Fund (see e.g. the Tourism Trust Fund) to oversee the implementation of and compliance with all the legislation in the industry.
4. Hawking of raw milk should be limited to the rural areas only, and banned from the urban areas:
    - Enforce quality standards on the hawkers and milk bars and tax them like the formal processors
    - Enforce the legislation against raw milk hawking in the urban areas
    - Support distribution of affordable milk dispensing equipment for pasteurised and UHT/ESL milk and milk products in institutions, HORECA, and franchise models for milk bars for branded processed products.
5. The industry together with the Ministry of Health should educate the public against the consumption of unprocessed milk.
6. Distribution is another area that requires innovation and investment to be able to reach the BoP. Today the route to market for dairy products in Kenya is quite long and expensive. By reducing this, the margins will be reduced and the products will be more affordable.
7. Coupled with the above, the government, through the Kenya Bureau of Standards (KEBS) should provide more guidelines on fortification of milk and milk products so that these can guide prospective processors to produce innovative products for the BoP.

The full policy report included as Appendix 2 lists a range of further recommendations which apply to the policy environment and the structure of the dairy sector and the dairy value chain.

3 SUPPLY SIDE

This section of the research was largely handled by an independent dairy consultant. His full report is attached as Appendix 3 to this document and contains significant additional detail. The consultant has in the past worked with a range of processors.

In addition, Research Solutions Africa conducted a retail outlet mapping of more than 100 outlets in three low income areas in Nairobi. The mapping and the consultant's research combined, cover the supply related objectives. The specific research objectives for this section are outlined in the ToR as follows:

a. Determine on basis of clearly described sampling techniques and methods, the approximate size of the raw milk market in Nairobi, Nakuru and Kisumu (volumes).
b. Do an inventory of the different suppliers of raw and processed milk (-products) in selected sampling areas in Nairobi, and describe outlets, products, volumes, packaging, prices and competition strategies.
c. Make an inventory of processors that have targeted products and business models to reach the BoP and describe the specific products, technologies and models.
d. Inventorise and analyze trends in business models and technologies on the supply side, which point at moving from raw milk to pasteurised milk, whether packed or unpacked (e.g. batch pasteurisers, pasteurizing services, dispensing technologies and different business models around it).

In the interest of the flow of the argument, this report does not handle these points in the same order. The scope of (a) was limited to Nairobi. Nakuru and Kisumu were not covered as secondary research yielded no reliable data and no primary research was conducted in these locations.

3.1 SUPPLY SIDE BACKGROUND

The Kenya dairy industry is the single largest agricultural sub-sector, larger than tea. It contributes to some 14 % of the agricultural Gross Domestic Product (GDP) and 3.5 % of the GDP. Estimated total annual production of milk ranges between 5.1 and 3.7 billion depending on the source (Kenya Dairy Board (KDB) or Kenya National Bureau of Statistics) and 80% of this is produced by smallholders.

About half of this is commercially marketed, most of it (60-70%) as raw milk through informal channels to the larger urban centres. The other 30-40% of marketed milk is processed. The total volume of processed milk increased from 406 million litres in 2009 to 555 million in 2011 (KDB). The above processed milk output is low when compared to the total raw milk produced and marketed in the country.

3.2 MAPPING OF MILK RETAIL OUTLETS

In order to improve our understanding of the BoP milk retail outlets, Research Solutions Africa conducted a mapping of retail outlets in three low income areas in Nairobi: Kawamgware, Embakasi and

Kayole. A detailed report of the mapping is included as Appendix 4 of the study. We collected the following information:

- Customer profile (name)
- Classification (location/GPS, outlet type: supermarket, duka/local shop, kiosk, vendor/hawker)
- Contacts (owner, contact persons)
- Merchandising (POP materials) & visibility
- Milk and milk products sold
- Supplier information (distributor, stockist, etc.)
- Store turnover per day (estimate)

This information was summarised by area and channel to estimate the volumes sold through different outlet types per day. Due to the setup of the study, the mobile vendors and hawkers were not captured. The sample size was relatively small, so that all conclusions from this part of the study should be handled with care.

Out of the 102 outlets we visited, 85% handled milk and/or other dairy products. Kiosks handle the smallest range of products: milk, yoghurt, sour milk (mala) and – incidentally - ice cream. Dukas and supermarkets handle almost the same variety of products, though supermarkets handle more brands per product type. All types of outlets or channels sell raw and processed milk, although not each individual outlet. 80% of kiosks sold raw milk and 13% sold processed milk. This was 43% raw milk versus 53% processed milk for dukas and 37% versus 53% for supermarkets.

High value added products, such as cream, powdered milk and ice cream are mostly sold in supermarkets. Per outlet supermarkets sell about the same quantity of sour milk (mala) as dukas, but for most other commodities, they sell a multiple of the duka, for example 1.5 times as much milk and 4 times as much yoghurt. However, as the total number of dukas (and kiosks) in the high density settlements of Nairobi is a multitude of the number of supermarkets, they form a powerful marketing and distribution network.

The role of middlemen appeared to be important. Most of the dairy products are sourced from middlemen, who broker between processors and individual retail outlets. Not surprisingly, availability, price/profit margin and demand were the major motivations to stock a product.

Some of the main barriers for dukas and kiosks to stock and sell fresh processed packed milk are the low quality and shelf life (expiry before the expiry date on the label) of the milk supplied and the small profit margins on (especially) packed milk. As the issue of limited shelf life appeared to rank high as deterrence to increased sales, there seems to be a strong case for extended shelf-life dairy products.

For value added dairy products, 80% of the respondents cited low demand as the main obstacle to stocking the product. This is a strong indicator that any programme addressing issues of dairy products at the BoP must address the raw milk market or be willing to invest significant resources into the introduction of new products.

3.3 MILK SUPPLY STAKEHOLDERS (INFORMAL)

Milk is supplied through a range of different informal or semi-formal channels. Each of the stakeholders in these channels has its own business model with the associated advantaged and disadvantages. A full description of these stakeholders is included in Appendix 3 of this study which contains the full report on the Supply Side. The table below just presents a short summary.

Actor	Target market	Means of transport	Main selling point	Comment
Milk Co-operative Societies (unprocessed)	Hawked in low-income residential estates and through milk bars	4-ton trucks and pick ups	Price	There has been an effort to gradually improve on milk quality through carrying out basic milk quality tests
Middle-men / Milk brokers (unprocessed)	Hawked in low-income residential estates and through milk bars	20 litre and 50 litre plastic containers, motor-bike and bicycle riders	Price and in some cases accessibility (own milk bars)	Often heavily contaminated due to poor hygiene and handling practices
Larger individual dairy farmers (unprocessed)	Direct to consumers, HORECAS and institutions	1 ton trucks	Quality	Most of these farmers practice zero grazing within the Greater Nairobi regions of Ngong, Kiambu, Githunguri
Cottage industries (unprocessed)	Consumers and brokers	Several	Excess capacity	This concerns excess volumes of milk collected that goes unprocessed
Cottage industries (processed)	Consumers	Plastic pouches plastic jerry cans, aluminum cans	Quality	Low compliance with recommended retail prices make products less affordable at the BoP
Milk bars (processed and unprocessed)	Consumers	Over the counter sales	Access, small portions, price, quality suppliers	Quality depends entirely on the source. Some sell value added products, such as yoghurt and mala.

TABLE 1: MILK SUPPLY STAKEHOLDERS

3.4 FORMAL PROCESSORS

Kenya has about 42 registered formal milk processors (for a full list of all processors see Appendix 3 of this study). Over 80 % of all processed milk in the country is handled by the top 5 milk processors in the country: Brookside Dairy Ltd, New KCC, Githunguri Dairy, Buzeki Dairy and New Sameer Agriculture Ltd. Some of the 42 processors are completely inactive while others operate seasonally especially when there is raw milk surplus or glut. The seasonal operators benefit from low raw milk prices that prevail at the supplier level and stable prices at the consumer level.

In the recent past, a number of medium-sized milk processors with under-utilised installed processing and packaging capacity, have resorted to what is commonly known as processed milk 'Contract

Packaging' (Co-packing) of various pouch milk brands, that do not have their own processing facilities, to augment their revenue base and profits.

Products of formal processors targeted at or at least reaching the BoP, include raw milk (excess volumes), pasteurised bulk milk (5-20 litre plastic jerry cans), fresh pasteurised milk pouches (150 ml – 500 ml), ESL/UHT milk pouches, plastic bottle yoghurt, thick yoghurts, mala and others. These products are the most likely to benefit from KMDP activities on a large scale, in addition to future innovations of other products.

Sameer was the first to launch the ESL 500ml pouch labelled as *"Farm Fresh - aseptically packed - three layer pouch, no refrigeration required"* (its guaranteed shelf life before opening is 4 weeks). The pack was aimed at controlling returns and the issue of refrigeration at the distributor and retail levels. When it was launched, it was sold at the same price as the Daima fresh and most people did not know the difference. From the supermarkets and competing processors that were interviewed in a separate study by an international marketer in May this year, it was found that this ESL pouch is doing well and is recognised as the next big thing in dairy. Due to the extended shelf life and the lack of refrigeration purchase it is being driven by shop owners in the low income and rural areas who do not have fridges.

3.5 PRODUCTS FOR THE BOP

The table below lists products and business models for the main formal processors that have explicitly targeted the BoP.

PROCESSOR DETAILS	PRODUCTS/ BRANDS SOLD	UNIQUE VALUE PROPOSITION	DISTRIBUTION CHANNEL USED TO SELL PRODUCT	MARKETING ACTIVITIES EMPLOYED	WHY THE PRODUCT HAS SUCCEEDED/ FAILED
Sameer Agric. Ltd **Daima brand**	-Daima – Fresh milk, - Extended Shelf Life (ESL) Milk, Long Life milk – UHT- Tetra Fino and Tetra Classic -Aseptic (TCA) pouched milk, yoghurt, fermented milk (mala)	-Product packed in small pack sizes- from 150ml, 250ml and 500ml, prices as low as Ksh.20/- -ESL due to lack of cold chain in BoP areas. -Affordable thick yoghurt in 150 ml cups. Fresh milk pouches are priced from Kshs.42/- per 500 ml.	-Through appointed distributors who resell to retail outlets- kiosks, dukas. -Direct delivery to key retail outlets – key supermarkets. -Route selling using company vans into virgin markets creating awareness and demand. -The value added products like yoghurts/mala require refrigerated delivery trucks for re-distribution.	-The top 5 processors listed above have a heavy spend on Above the Line (ATL) advertising on Radio, TV and print press media- to create product awareness. -Below the Line (BTL) advertising support - includes consumer promotions, wet sampling of new products, Road Shows, Buy One Get One Free (BOGO) consumer promotions. -Effective and efficient route to market model- of strong aggressive distributors and bicycle riders to deliver products to retailers. -Investment in strong well trained and equipped field sales staff.	Daima – successful due to embracing innovation and product differentiation; ESL milk – with longer shelf life, thick yoghurt in 150 ml , 250 ml at affordable prices and strong margins for the trade channel, 200 ml UHT pack that sells at Kshs.20/- per packet.
Githunguri Dairy Processor **Fresha & Zito brands**	-Fresha and Zito pouch fresh milk- 200 ml and 500 ml -Fresha Lala 250 ml and 500 ml. -Yoghurts cups and bottles- 150 ml, 250 ml, 500ml -Bulk milk in 50 litre cans – pasteurised	-Their pouch milk consumer prices range from kshs.38/- to 40/- per a 500 ml whole milk –full cream packet. - Hygienic and convenient packaging -The Swahili name 'Zito" actually means 'heavy' in English - objective being to endear the brand to the BoP consumers whose believe is that Full Cream	Selling through appointed distributors within the BoP.	-Fresha field staff creates demand and awareness at the retail level through actual kiosks and retail outlet visits. -Fresha brand is also a heavy spender on Above The Line (ATL) and Below The Line (BTL) marketing support programmes. -Fresha has grown volumes through numerous consumer promotions that include the 'Buy One Get One (BOGO) Free –where consumers buy one packet and	-Fresha and Zito are successful fresh milk brands within the BoP. -Their success is historical since Githunguri Dairy started off business by selling raw chilled milk to the low end markets in and around Nairobi. - Consumers noted the quality consistence of the raw chilled milk that gave them the confidence that

		Whole milk is healthier and has value for money		gets one free. -They have also been running the 'Extra Free Milk' to consumers offering 550 ml and 220 ml at the price of 500 ml and 200 ml pouch milk price respectively.	even the Fresha/Zito processed milk was of superior quality at a competitive price.
Brookside **Brookside dairy brands** **Tuzo and Ilara brands**	-200 ml and 500 ml pouch fresh milk. -Yoghurts in bottles and cups. -Flavoured milk (UHT) in 250 ml Packs -Tetra Classic Aseptic (TCA)	-Consumer Prices of Kshs.42/- to 45/-per 500 ml packet, Kshs.20/- for 200 ml packet. -Other value propositions as per other brands above.	Brookside has targeted export markets on the UHT white milk, UHT flavoured milk and Value Added Products- Ghee and Yoghurts.	-Brookside brands that are targe-ted at the BoP are Tuzo and Ilara brands. - The Tuzo and Ilara brands currently contribute to 70 % of the total revenue mostly through BoP. -Brookside marketing spend is the largest in the industry estimated at about Kshs 100 million per year-mostly Above the Line advertising and consumer promotions. BS has endeared itself to the masses through football sponsorship by its brands Tuzo and Brookside.	-It attempted to sell its Ilara pouch brands directly to households and faced massive resistance from the retailers who were being denied the source of income.
Buzeki **Molo Milk brand**	-Same as above -Buzeki also introduced flavoured milk- with Extended Shelf Life (ESL) -Chocolate flavour packed in pouches	As above	-Buzeki has the generic distribution model of distribution agents, who service retail outlets that subsequently sell milk to the consumers.	-Buzeki –Molo Milk invested heavily in an Above the Line marketing campaign for 6 months that yielded great volume growth results. -The pouch milk and yoghurts volumes have grown 3 fold.	Buzeki flavoured milk project failed due to various factors:- Price point and product positioning done wrongly. Consumer awareness on product attributes lacking.
New KCC	-NKCC has targeted its pouch brands to the BoP –that includes the Gold Crown, KCC Fresh Green packets.	As above	-KCC has lost market share and volumes due to de-motivated distribution agents. - Their frequent price fluctuations' and stock outs especially during the dry spell have contributed to this drop.	-KCC has been running consumer promotions especially during the glut season. -The brands have in the past sponsored the Kenya National Athletics Team –hence creating awareness countywide.	KCC Brands have not exploited their full potential in the market due to distribution Route to Market issues, quality issues and product stock outs.
Kinangop Dairy Ltd (KDL) **Kinangop and Jamaa brands**	-Production of pouch milk 200 ml and 500 ml, mala and yoghurts packed plastic bottles- 250 ml and 500 ml	-Price differentiation based on butter fat content of the fresh milk. Low fat milk competitively priced than Whole milk - hence affordable.	KDL – field sales staff assigned to distributors with daily targets to sell and retail outlets to visit and create demand.	-Kinangop brands –Jamaa Fresh and Kinangop Fresh have grown organically with no marketing support. -The distribution agents have also been aggressive within the BoP – availing the Jamaa and Kinangop brands at arm's length availability at the kiosk level.	-KDL has grown its volumes organically in the last 18 months due to consistence in quality, on time deliveries into the market at before 4.00 am in the morning.
<u>Afrodane, Aspendos, Kinyagi Foods, Palmside Dairies</u>	The 4 Processors represent most of the medium-sized milk processors who sell over 80 % of their pasteurised milk into the low end –BoP Markets. Their key product being pouch milk packed in 200 ml and 500 ml and raw Bulk milk and pasteurised bulk milk.	Out of the 4 'P's of marketing namely:- Price, Product, Place and Placement-distribution, these medium-sized processors only focus on price and distribution to drive their milk volumes. The examples being their 500 ml pouch milk that as at Jan 2013 is being retailed at between Kshs.32/- to kshs.34/- per a packet or kshs.64/- to kshs.68/- per litre. They sell their raw milk to milk bars at average price of kshs.55/- per litre and kshs.60/- per 1 litre of	-They have a similar distri-bution chain –whereby milk distribution agents are appointed in different parts of the market in and around the Nairobi region and Greater Nairobi –with a radius of about 80 kms. -The milk is dropped to the agents from 8.00 pm to about 5 am for distribution into retail outlets using bicycles, wheel barrows and hand carts depending on the terrain. The retailers then sell to the consumers. -The companies deliver the bulk milk directly to the milk bars.	-Very low marketing support activities are carried out by this category of processors. -They mostly play the price game as an incentive to the BoP to purchase their product –through lowering the prices. -They also create many milk drops off points in the BoP locations to achieve an arm's length milk availability for the consumers.	-These brands succeeded within the BoP due to the strong partnership with their respective distribution agents and retailers. -The competitive margins paid out to the agents and retailers in a market that brand loyalty does not count has motivated them to stock the brands at the cost of 'superior' brands. -Timely deliveries into the market – early high consumption morning and evening deliveries have also contributed positively. -'Hawking' of milk in the evening has also moved

		pasteurised milk.	-Most of their milk delivery fleet is not refrigerated hence do not achieve the cold chain and have frequent cases of milk spoilage and subsequent losses.		their volumes- this entails displaying the packets on the roadside in the BoP residential high human traffic areas –where the consumers buy the pouches as they 'walk' home.

TABLE 2: PROCESSORS AND THEIR BOP PRODUCTS

3.6 INVENTORY OF TECHNOLOGIES AND SUPPLIERS

Easy access to state of the art equipment and technological innovation can potentially improve the affordability and quality of milk at the BoP and might become a lever for KMDP. Throughout the value chain a number of technologies are used:

- On farm dairy and other farming equipment (incl. milking machines, forage harvesters etc.)
- Bulking and cold storage across the chain (from farmer- to dairy society-transporter-processor and to retailer)
- Milk reception and transportation
- Milk processing, product packing and distribution
- Support equipment: Cleaning in Process (CiP) technology, steam and compressed air generation
- Provision of water and electricity.

The majority of these technologies are supplied by few multinational companies that have their head offices in Europe, USA, Israel, India, China and South Africa. Some have regional offices or agents in Kenya. A list of these suppliers and the key equipment they supply is included in Appendix 3. These technology suppliers might well become valuable partners for KMDP as they market their products worldwide, increasing the impact of any innovative technologies significantly (scale up).

Next to these established suppliers of "proven-technology", there are "innovators" who are engaged in piloting new technologies and concepts in areas where the former have not yet reached. This includes R&D and pilot-testing of easy to clean plastic milking containers sponsored by the BMG Foundation, milk containers (280-320 litres) that are chilled by solar energy and biogas, ICT solutions to bring efficiency and transparency in the milk supply chain, and so on. These are shortly summarised in Appendix 3.

The top 15 processors in Kenya have all invested in production equipment and technology to process, pack and distribute dairy products targeted at the BoP, in addition to targeting the middle to high-end dairy products consumers within their wide product portfolio. A number of specific technologies – especially in packaging and dispensing - have already had an impact on the Kenyan BoP market (for further details, see Appendix 3).

The installation of High Speed Pouch-Sachets fresh pasteurised milk filling lines illustrates this. Some have gone a step further by investing in the extended shelf life (ESL) pouch machines, UHT lines, yoghurt cup filling machines and plastic bottles packing lines. The ESL pouched milk pack of Daima is to some in the industry the next big thing in dairy, driving processed milk deeper into the pyramid.

Technology	Main advantages	Main disadvantages	Maturity
Plastic pouches	Low investment, cheap to produce, locally produced	Relies on cold chain, which limits distribution	Proven technology widely spread in the market. 500ml pouches are most popular, but smaller packages gaining traction. In Asia milk pouches as small as 70ml have been introduced.
Aseptic plastic pouch	Can package long life / UHT milk, no reliance on the cool chain	More expensive machinery, internationally sourced	Daima first to enter the market, 4 new entrants expected.
Milk dispensing units	Reduces cost for packaging and consumer price, has inbuilt cooling system	Large investment (7K-21K USD in Kenya), requires continuous power supply,	Gaining traction quickly in supermarkets and established dukas, taking away market share from pouches and milk bars due to lower price/higher quality.

TABLE 3: TECHNOLOGIES WITH AN IMPACT ON THE BOP MARKET

However, technology is not the only avenue for innovation. In the course of this research, we have encountered a range of organisational, logistic and product innovations. Not all of these were researched in depth, but we do want to at least mention them here to keep in mind.

Partnership innovation: Since most of the milk reaching the BoP is raw milk, much could be gained by a partnership of milk traders and processors on pasteurization. Relatively small levies and a reduction in margins for the formal processors and the use of the available excess processing capacity, would provide enough financial space to resell pasteurised milk to informal traders at affordable prices while enforcing quality and hygiene regulations in the informal sector, de facto formalizing the sector.

Product innovation: In Kenya 64% of all milk is consumed added to tea. Value added products can be made affordable by combining dairy with other fats and ingredients. In Pakistan an affordable and popular tea creamer includes vegetable fats to reduce price. Similarly, long life yoghurts, custards, flavoured milk, cereal-based packed dairy drink-meals, and even fortified products can be developed.

Distribution innovation: The length of the distribution chain increases prices. Reducing the number of links in the chain or reducing the margin of a link reduces consumer prices. In Brazil and India formal milk retailers hire housewives to sell milk door to door. In Kenya, short distribution chains prevail in the informal sector. Another scenario to look into would be for processors to set up a franchise of branded milk bars in combination with chilled milk dispensing systems.

4 CONSUMER MARKET

4.1 INDIVIDUAL CONSUMERS

Kenyans consume more milk than almost anyone else in Sub Sahara Africa and parts of Asia. On average, each Kenyan drinks about 115 litres of milk per year (DMP, 2011). A range of surveys have explored the usages and habits of dairy consumers in Kenya. We found the following studies to be of interest:

- Usership and Attitude study by Tetra Pak
- The Tetra Pak 2012 Dairy Index report on Deeper in the Pyramid
- Gain/DSM quantitative study on milk fortification
- Cases on food fortification by BoP Inc.
- Access to food and improved nutrition at the bottom of the pyramid by BoP Inc.

Not all of these studies are publicly available. Where our non-disclosure agreements allowed it, we have included findings from these reports in our overview. While the reports do provide worthwhile insights into Kenyan consumers in general, BoP consumers and perceptions on specific issues - such as fortification - we identified a lack on the choice-motivators deciding between raw milk and processed milk (pasteurised or UHT). We were aware of the fact that it is quite common for consumers at the BoP to consume both, but did not understand how that choice was made.

We therefore conducted a survey among low income households, which had recently (previous 4 weeks) consumed both, raw and processed milk. We studied preferences and buying habits for Kenya's urban lower income groups and identified main drivers for consuming raw milk, processed milk and value added milk products. The full report on this survey is attached as Appendix 5 to this report.

The survey covered 304 households in the eight counties of Nairobi: Madaraka, Embakasi, Westlands, Kamukunji, Starehe, Kasarani, Langata and Dagoretti. Our respondents spent close to 40% of their income on food eaten at home, followed by 23% for house rent. This 40% amounted to about 4,300 Kshs - close to 40 Euro per month. Of the money spent on food at home, about 20% was spent on dairy products, followed by vegetables & fruit, wheat and maize.

Our respondents consumed significantly less milk than the average 115 litres found in other surveys for the general population. Our BoP consumers used 1-2 litres of milk per week per household. The discrepancy might have many reasons (e.g. poorer respondents, urban dominance, underreporting, affordability/income).

Dairy products are, however, among the most relevant products for aspirational consumers. Spending on both raw milk and on processed milk and value added dairy products, grows more than proportionally with increases in socio-economic class (SEC). Raw milk volumes consumed decrease with increasing SEC.

More than 71% of our respondents drank milk only once a day, mostly in the morning. A further 23% consumed milk twice a day, adding an evening cup of whitened tea. More frequent consumption was very rare. 54% of our respondents consumed the milk in the form of tea whitener in their tea with no significant difference between pasteurised or raw milk. 27% drank the milk pure. When milk was used for cooking, raw milk was prevalent, when used in beverages other than tea, pasteurised milk dominated. Guests were a welcome opportunity to add milk to the diet. 26% of our respondents stated that they consumed milk when they had visitors.

They main reason to drink milk was for its nutritional value. Unfortunately, questions about why milk was being consumed did not provide significant insights into the separation between raw milk and pasteurised milk consumption.

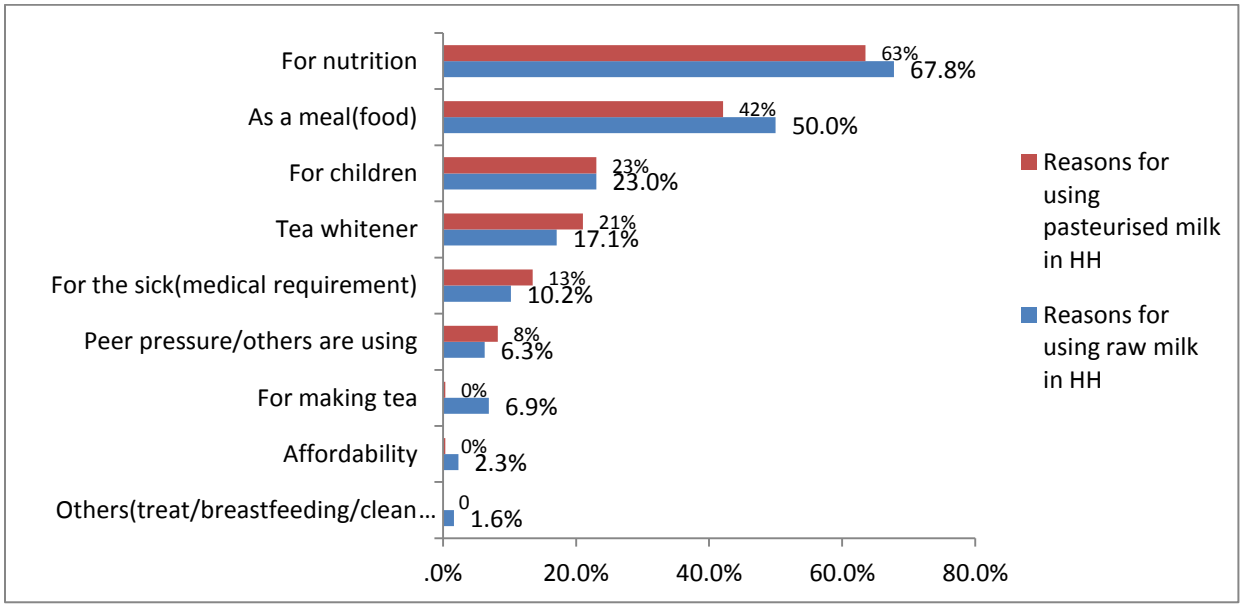

FIGURE 1: MOTIVATORS FOR CONSUMING MILK (RAW VS PASTEURISED)

Considerations for purchase	Raw milk	Processed milk
Price	84%	51%
Quality	65%	44%
Access	58%	35%
Quantity	49%	6%
Trusted source	48%	18%
Brands	-	44%
Package	-	32%
Convenience	33%	21%
Intended use	25%	19%
Occasions	14%	10%
As a treat	12%	11%
Peer pressure	9%	6%

TABLE 4: CONSIDERADTIONS WHEN BUYING RAW MILK VS PROCESSED MILK

The differentiation between raw and pasteurised milk consumption became a lot clearer when we asked about the motivators to buy one or the other. Price is a much more important driver for raw milk purchases, followed by quality, access, quantities available and trust. Convenience ranks surprisingly low. For processed milk, brands and packaging are important selling points in addition to price, quality and access. The main reasons not to consume milk were very straightforward:

- Affordability and budgetary constraints (ranked by far the highest)
- Members of the family not being at home (suggesting a 'social pressure' to consume milk)
- Some family members being allergic to milk
- Preference for other drinks and heavier/solid meals

The preferred sources of pasteurised milk were supermarkets (51%) and dukas (34%). Raw milk sources were more diverse: vendors (34%), milk bars (28%), dukas (22%) and kiosks (12%). The popularity of the vendors is explained by the convenience of door-to-door delivery, as well as the fact that the vendor builds a reputation for a given quality and quickly disappears from the market when the quality is below standard. 36% of our respondents consumed milk outside their homes. Lack of affordability (71%) and lack of hygiene (42%) were quoted as main barriers to consume milk outside the home.

The price levels identified in the survey are slightly above those identified in other parts of this research. The average price of raw milk per litre ranged from Ksh.40-Ksh.52 while the average price of processed milk per litre ranged from Ksh.73-Ksh.80.

Reason for consideration in future	Sour milk	Flavoured yoghurt	Cheese	Unflavoured yoghurt	Cream	Ghee
Can be consumed as a meal	96%	3%	-	9%	-	-
It is a healthy with medical value	23%	14%	-	12%	-	3%
It is nutritious	22%	-	-	29%	2%	-
Can be made at home/easy to make	21%	-	-	-	2%	6%
Complements/cooking other meals	17%	-	-	-	25%	38%
Supplement for other meals	14%	-	7%	-	-	-
Available in local shops	9%	-	-	-	-	-
Helps in digestion	7%	-	-	-	-	-
Affordable	7%	2%	-	-	-	-
Has good taste/it is sweet	6%	33%	-	-	4%	6%
Gives body energy	5%	3%	-	-	-	-
For children	-	5%	2%	-	16%	-
Curiosity	-	-	37%	22%	4%	14%
Only if offered by friends/when I visit others	-	-	14%	2%	-	3%
Food softener	-	-	-	-	-	3%

TABLE 5: MOTIVATIONS FOR FUTURE USE OF VALUE ADDED MILK PRODUCTS

The awareness for value added milk products is very low. Unprompted awareness of ice cream, yoghurt and sour milk (mala) ranges from 15-20%. All other value added products scored less than 10% on unprompted awareness. A closer look at current use versus past use shows a strong decline in the use of value added products over the 12 months preceding our study. All value added products with the

exception of sour milk and yoghurt have recorded reduced usage. Ice cream, ghee, cream and cheese have shown sharp declines by more than 50%, showing that these are considered non-essential food products. Nevertheless, there is potential in value added products as the table above outlines.

Especially sour milk (mala) has a large potential as it is often used to substitute for meals or part thereof. Flavoured yoghurt has a good taste, cheese raises aspirational curiosity, unflavoured yoghurt is nutritious, cream and ghee can supplement a meal. However, this potential can only materialise if price, availability and quality conditions are met and demand can be generated to convince sellers to stock.

The notion that the popularity of mala is to a large part due to the fact that it is perceived and used as a meal or part of a meal, gives scope for processors to develop and introduce other products that give the same sensation to the low income consumers. One example mentioned in our discussions by SNV is a cereal-based ready-to-drink packed dairy product (either fortified or not) that has both aspirational value and is viewed as healthy, nutritious and convenient.

In order to explore future product opportunities, we did query our respondents on a few innovations:

- Milk dispensing units
- Tea whitener with a high vegetable fat content
- Whey based products

Only 12% of our respondents were aware of milk dispensing units – too few to deduce insights about the perceptions. However, again during discussions with SNV, it was suggested by SNV that the introduction of cheaper manually operated milk dispensing units for institutions, schools, HORECA and other suppliers of pasteurised milk – including a franchise model of milk bars – seems worth looking at by the industry. SNV based itself on models that are used by Friesland Campina in the Netherlands and other parts of the world. This is also reported in Appendix 3 the Supply Side.

The idea of a tea whitener based on milk plus vegetable fats was quite popular. 46% of respondents thought the idea is good or very good. 21% thought the idea of a tea whitener isn't good at all, even though the idea is largely accepted, a lot of work would have to be done in terms of convincing the 33 % who thought the idea of a tea whitener is neither good nor bad this coupled with 21% who are thinking the idea is not good, basically means more efforts in selling such an idea. Once made available, 57% respondents said that they would buy such a product.

Conclusions from the individual consumer survey

Appendix 5 of the study gives a more detailed report of the consumer survey findings, but the main conclusions are as follows:

- Dairy products are among the most relevant products for aspirational consumers. The average consumer consumes about 2 litres of raw milk and 1.3 litres of processed milk per week, which is far below the Kenya average of 115 litres per year. However, spending on processed milk and value added dairy products, grows more than proportionally with increases in socio-economic class (SEC). Raw milk volumes consumed decrease with increasing SEC.

- Our respondents spend about 40% of their income on food, of which 20% on dairy products (less for lower incomes, more for higher incomes). In other words, 8% of all expenditures by our respondents are dairy-related.
- Virtually all respondents take milk with high regularity as a tea whitener. Other modes of consumption are less frequent, but increase with increasing SEC. Milk consumption also increases when visitors are around or during special occasions, such as birthdays and other group meetings.
- As for pouched milk, 500ml packs are strongest in the market, followed by 200ml packets (many for school children). Gatherings prefer multiple packs of 1 or 2 litres, rather than large bulk to avoid waste, since storage of a closed pack is more common than storage of an opened pack.
- Marketing channels for dairy products are clearly defined. Hawkers are the dominant source of raw milk with 34.4% purchase share among the sampled households. For the processed milk, dukas are the dominant point of purchase with 50.9% market share.
- However, it is worth noting that the dukas' biggest competitors are hawkers/vendors. Hawkers with known clients are able to extend credit and the quality control (organoleptic) with a regular hawker is immediate. Hawkers are popular across SECs. With respect to their strengths, the convenience of doorstep delivery is appreciated, but since raw milk is mostly purchased for immediate consumption, a 'just in time' delivery system (call a milk?) could compete with the current model.
- Facilities such as milk bars have become important channels for the distribution of raw milk. Milk bars have penetrated in all areas of the study for the different social classes.
- The key reasons for purchase of milk are: (i) make tea tasty (42%); (ii) add nutrients (41%); (iii) add quality (12%). Price, trust and proximity/convenience are the main drivers for choosing raw milk over processed milk.
- On the quality of processed milk we found mixed messages. Respondents experience sub-standard packaging, broken cool chains and impossible returns of spoilt milk. Nevertheless, quality is a key driver to choose for processed milk. 30% of households interviewed in this survey are concerned about the standard and quality of processed milk.
- There is a thin line between milk quality and safety and it is difficult to separate the two. The low income consumer perceives raw milk as of good quality being high in nutritional value. As long as it is obtained from a trusted source (and/or boiled), the safety risk is considered to be low. Some of the respondents (19%) think that processing, on the other hand, takes away nutrients in milk.
- Flavoured yoghurt and fermented milk (mala) are the most promising value added products, scoring consistently high on awareness, usage and interest to use. Other products receive much less attention. The potential lies in the meal characteristic.
- Affordability is the main barrier to non-consumption of milk in households all the time. This budget constraint returns in answers to different questions with very high frequencies. Without a low price point processed milk or milk products are less marketable. Consumers are already spending 8% of their expenditures on dairy and are looking for ways to reduce that.

- The Kenyan dairy industry has not managed to drive milk consumption outside homes. In this survey, BoP consumers who do not consume milk outside their home stood at 64%, with the main reason being affordability.
- Long life milk (UHT) and milk powder have some acceptance and are seen as alternatives during milk shortages and the associated price hikes or when storageability is crucial. Increasing access to these products would help. Cerelac is a niche product and seems to have little traction.
- Milk dispensing units are promising, if they can be established as trusted sources of milk. Quality control is essential to launch the technology efficiently.
- Our respondents report to be open to new product innovations. However, the evidence to support this is weak and the underlying research can't conclude about the actual market potential resulting from reported above average willingness to buy a cheaper, vegetable based tea whitener and/or whey products.

Recommendations or propositions

The consumer survey identified a number of propositions that could be openings for processors to increase the consumption of safe dairy products:

- Hawkers and milk bars shift large volumes of raw milk and are popular across SECs. Dukas are considering to sell more raw milk (in addition to processed milk) to compete with the mobile vendors. All three outlet types offer potential for conversion from raw milk to processed milk, or at least to higher quality (i.e. more hygienic) milk. Without their collaboration, a large shift in the milk market from raw to processed, is unlikely. Therefore, any programme to drive processed milk "down into the pyramid", should look into ways and means to utilise the strengths of the hawkers (price, convenience, prompt quality control and sometimes credit), milk bars (trusted sources) and dukas (proximity, credit, trust).
- Most milk is consumed in the morning. However, the perception of milk changes later in the day from a tea additive to a meal additive or a meal on its own. The meal aspect of milk could be strengthened. This also holds for mala and flavoured yoghurt. If the product is seen as rich in energy and nutrition, and has a more solid consistency, respondents will accept it as a meal and therefore be willing to spend more for it.
- Shelf life/storageability – and reliable supply – seem to be important drivers to increase purchase of processed milk. This is confirmed by other studies and reports that "new in the market" extended shelf life pouched milk of Daima, has gained large popularity amongst consumers, as it can be stored for up to 4 weeks outside a fridge if not opened, and is sold at almost the same price as conventional pasteurised liquid milk.
- On driving usage of milk outside homes: the industry may want to address the issue of costs and quality coupled with awareness, as these seem to be the main barriers to milk consumption outside home. Other issues mentioned included cultural reasons and the belief that milk is mainly for children, as such it is not appropriate to consume milk outside home. Respondents report some acceptability towards consuming a value added product such as fermented milk (mala) or yoghurt outside home but not raw milk.

- Developing a strong campaign/new products with a 'health and nutrition focus' could be an important driver to entrench usage of value added products further in the low income consumers segment. Reports have indicated that this segment of value added products is currently growing faster than the liquid milk segment. Developing campaign materials focusing on milk safety may also be helpful to drive milk usage outside homes, besides awareness creation on health benefits of milk vis-a-vis commonly accessed foods which are perceived to be more affordable. This may be a breaking point to driving consumption outside homes. Again packaging may mitigate issues of convenience and quality.
- This health and nutrition angle, could be coupled with possibilities of fortification of ESL/UHT milk and fast going milk products like yoghurt and mala. Openness to Innovation among Bop urban consumers presents an opportunity in availing future milk based products for consideration*.*

4.2 INSTITUTIONAL CONSUMERS

As outlined in our supply side chapter, a range of suppliers sell their milk to institutions. In order to get a glimpse of this market Research Solutions Africa conducted a survey of institutional milk consumers. The study was carried out in Nairobi Province and it involved interviews with 33 institutions. The institutions consisted of three categories namely schools (18), hospitals (11) and universities/colleges (4).

For the schools, the target was public and community primary schools in low income areas of Nairobi such as Kariobangi, Kawangware and Kayole, and the lower income sections of Westlands. This was also the case for hospitals. Public hospitals in selected low and middle income areas of Nairobi were selected for interviews. For universities, both the public and private universities were selected for interviews regardless of where they were located. A more detailed report of this survey is included as Appendix 6 to this study.

The small sample size, the diversity of responding institutions and their different schedules restrict the possibility to aggregate and analyze the data collected. The information provided should be seen as raising points of interest rather than providing a full empirical basis for institutional milk consumers.

We observed some interesting differences between the different types of institutions. First of all, schools used the smallest range of dairy products (past and/or current usage), restricted to pasteurised milk, UHT milk and raw milk. Hospitals also used yoghurts, mala, butter, milk powder, cream, flavoured milk and margarine. Cheese, ice cream and whey were only identified as used products in colleges.

Noticeably, a range of institutions had recently stopped using different varieties of milk (raw, UHT, pasteurised). The table below summarises the reasons for stopping for the different product types:

Reasons for a decrease in consumption	Dairy products
Expensive	Pasteurised milk, UHT milk and powder milk
Unreliable supply	Raw milk
The school milk programme stopped	Pasteurised milk, UHT milk
Used for special diets	Yoghurt, mala

TABLE 6: REASONS FOR REDUCING USE OF A PRODUCT

The two products which ranked highest in terms of likely future use were pasteurised milk and raw milk. Pasteurised milk was valued for its hygienic packaging, nutrition, good availability and good taste. Raw milk was valued for its affordability, nutrition and availability, though the final point does contradict other statements from similar consumers, who complained about patchy supply of raw milk, especially in terms of quality. Low likelihood of future use was argued for with low demand for non-milk dairy products, such as ice cream and cheese. This is in line with the findings of the outlet mapping.

Whereas pasteurised fresh milk was used by all institutions, the hospitals in the sample seemed to have a deliberate policy not to buy raw milk. Almost all the liquid milk was bought directly from processors either as pasteurised (the bulk of it) or as UHT.

The sample contained a number of schools that were in a school milk programme, which explained the surprisingly high use of UHT milk supplied by the participating processors at reduced/subsidised prices.

As much as schools and colleges indicated that product safety and hygiene are important drivers for buying-behavior, to a large extent price was still the overriding factor, hence purchase of raw milk exceeded that of pasteurised milk. However, as there is a high preference for quality and safety, and in general a growing awareness amongst a well-educated urban population of the risks of raw milk, there seems scope for processors to increase their market share, e.g. through targeted product safety awareness raising and marketing campaigns, direct deliveries to groups of schools on basis of bulk-discount and deliver arrangements, and other means.

We found the supply sources of institutions surprising. Supermarkets, middle men and even milk bars ranked high among the sources. Sourcing milk directly from processors was only the fourth most popular source - especially implemented by hospitals. This suggests that no structural procurement was made for milk and milk products. This offers a potential for efficiency and quality improvements as noted above.

A quarter of the schools we interviewed had school milk programmes in the past, sponsored by a wide variety of actors. Only 25% of these school milk programmes are still operational.

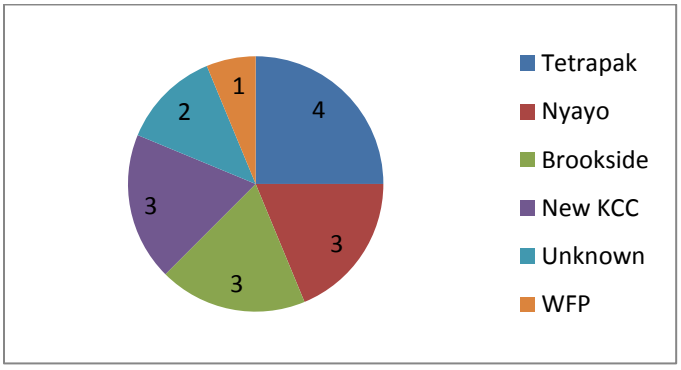

FIGURE 2: SPONSORS OF SCHOOL MILK PROGRAMMES (N=16)

An overview of the volumes consumed by the different types of organisations is included in Appendix 6 of the study. However, the sample size is too small to provide a meaningful analysis. The average prices per litre recorded were in line with our other sources:

Source	Raw	Pasteurised	UHT
Processor	59	60	64
Middlemen	56	70	
Supplier	50	66	70
Own dairy	50		
Milk bar	48	66	60
Duka		71	87
Supermarket		70	97

TABLE 7: PRICES IN KSH PER LITRE OF MILK

A final interesting finding is that institutions are very little aware of cost saving or quality enhancing technologies, such as milk dispensing units. Overall, the institutional market seems to offer possibilities to improve affordability and quality through targeted awareness raising and matchmaking among relevant stakeholders. The segment is worthwhile to look at as a pillar for KMDP.

Conclusions and recommendation from the institutional consumer survey

The study found out that the institutions are aware of milk products and their nutritious value. However, they restrict themselves to the use of a few products whose prices are considered to be friendly.

Next to price limitations there is, however, also lack of awareness of other milk products and the fact that the supply chain or distribution channels are considered as unreliable and inefficient.

- As for distribution channels, there is scope for creating more regular and steady supply channels or systems for milk (-products), both as a means to increase market share by processors and to reduce costs for institutions. A suggestion given by most of the interviewed institutions is the use of open tenders for processors who would be interested to directly supply them. Schools or other institutions could also group together and engage in a joint tender procedure to attract processors and negotiate more favourable conditions as a result of larger volumes, combined with end-of-month payment arrangement through a joint milk account.
- There is also scope on the side of processors and distributors for awareness creation on availability and benefits of processed milk products that are in the market, both with respect to the milk products that are currently used, and with regard to products that are not (yet) consumed in significant quantities by the institutions.

  The survey revealed that price is key in determining what type of milk product is used by the institutions. However, it also established that there is a high concern for food safety and hygiene. This is likely to explain the high use of processed milk in hospitals, but also schools (even if accounting for the fact that some participate in a school milk programme) use significant quantities of processed milk. This could therefore be an entry point for processors, especially if combined with awareness raising campaigns for food safety, reduced prices and reliable supply.

- There may be scope for expanding the use of products that are in the market but not yet widely used by institutions – or to introduce new ones – and appeal to consumers on the merit that they are perceived as substituting a meal or part thereof. For example yoghurts and mala. This was one of the findings of the consumer study that was carried out by RSA and is included as Report 5 of the bigger BoP study. It may also apply to schools and parents who enroll their children in these schools, although this was not validated by the study.
- School milk programmes have great potential to increase market share of processors, provided they are sustained. One way to achieve this is to incorporate the costs in the fee structure and launch awareness programmes at the schools on food safety, hygiene and nutrition. Equally important is that processors and/or other suppliers sell consistently at lower prices - and even margins - to schools, which should be possible given the volumes involved and the direct supply channels.
- Use of milk dispensers as a new technology in assessing milk is still not widely known and used. This is mainly due to scanty information on the technology and the types available in the Kenyan market. The current models are expensive and fully automated and not aligned to the needs of caterers. Based on findings by SNV regarding dispensing models in other countries, there could be scope to introduce more simple - but hygienic and easy-to-operate - dispensing devices by both institutions and especially processors. Processors could introduce these on a hire-purchase basis or in a franchise model, in particular the types that come with disposable or refillable 10-20 litre hygienic plastic bags or containers filled and distributed by the processor. This is a model that is widely applied in the Netherlands by Friesland Campina.

4.3 FINAL CONSIDERATIONS ON THE INDIVIDUAL AND INSTITUTIONAL BOP CONSUMER SURVEYS

Overall, the Kenyan market seems to offer many opportunities for improving the access, affordability and quality of milk and other dairy products. Fresh liquid milk is undoubtedly the central product in this when it comes to the BoP, because awareness of other products is very low. Introducing a new product would require significant efforts in marketing and awareness raising.

Amongst these are new or existing products, those that give the sensation of taking or substituting a meal seems to have the largest potential, as are products that appeal to the concern that mothers have for safe and nutritious food for their infants and school going children.

A longer shelf life also seems to be a concern, both for the suppliers of milk and the BoP, especially in the absence of a cold chain at the BoP suppliers and consumers. For example the Extended Shelf Life pouched milk of Sameer/Daima has shown to be very successful in creating market share at this level. This would constitute a strong case for moving more ESL and UHT products to this segment of the consumer market. However, prices need to come down, especially to make ESL/UHT affordable for the BoP. Packaging and distribution models are issues, but there is also a case for engaging in milk dispensing distribution models by the processors and branded franchised milk bars.

The institutional market is huge, especially when looking at schools and hospitals. School milk programmes are an attractive proposition for processors. However, sustainability, affordability, marketing and distribution are issues to be looked into.

Lastly, but of high importance in the discussion around affordable processed milk for the BoP, is the interest of processors to engage at this level beyond the current level of effort. Undoubtedly margins of products sold to higher income groups are higher and with a shortage of supply of the raw material (milk) and high cost, some of the processors are likely to move “only” excess milk to the lower income brackets, after satisfying the higher income domestic market and a growing export market for middle class consumers in neighboring countries.

5 INTERNATIONAL BENCHMARKING

Up until this point, we have focused almost exclusively on the Kenyan dairy market. Yet, it is useful to look for inspiration elsewhere on the continent and in the world. We did so in two different ways:

5.1 RSA PRODUCT SCAN IN NINE COUNTRIES IN SUB-SAHARA AFRICA

Research Solutions Africa conducted a product scan of dairy products in 9 African countries: Kenya, Uganda, Tanzania, Rwanda, Burundi, South Africa, Nigeria, Ghana, Mozambique and Zimbabwe. Our scouts collected images of the dairy product portfolio in 1 supermarket, 3 small shops in fixed structures and 5 kiosks/tabletops across these countries. The scouts also recorded the product type, the brand/product name, the packed volume and the price in local currency. We recalculated these prices into USD and converted volumes to provide an overview of the prices in different countries. The scouts registered a total of 1,072 products (which also includes 150 non-dairy products).

A summary of the products found and a full list of all products and the associated images can be found in Appendix 7.a/b of this document. The list with all products found is connected with tags to an image database. We have tagged every image with country, outlet type and product type, to make a picture selection easy. The free Picasa software has been used to attach the tags and the client will have to install Picasa in order to view the tags.

The product scan or overview is illustrative rather than representative. The main purpose of the images is to inspire ideas among stakeholders. Those in the dairy industry will note many peculiarities (e.g. packaging styles, printing techniques, marketing messages and so forth) that are impossible to spot for those who are not in the sector. We therefore encourage SNV/KMDP to share random selections of the images during stakeholder workshops. Finally, the images should come in useful whenever SNV wishes to illustrate presentations and reports. It should be one of the largest African dairy product image databases in existence.

Below we have highlighted a few of the observations that we made based on the different products found in the nine countries:

- If a product works in one African market, it might be worthwhile testing a similar product in Kenya. Vice versa: products that do not reach BoP markets in Kenya, might reach the BoP in other African countries.
- “Other dairy products” were mostly found at supermarkets and, to a lesser extent, at local stores. These included baby formula (mostly Nestlé and milk chocolate (though not all scouts might have identified chocolate as a dairy product).
- Evaporated/condensed milk was widely found in Nigeria and Ghana. It is a popular treat for children and, in addition, consumed in a similar way to mala (sour milk) in Kenya.
- Non-dairy products that some of our scouts identified as dairy products included margarine, mayonnaise and soy milk.

- Burundi and Ethiopia have the widest range of products reaching the kiosks and tabletops, including butter, cheese, and flavoured yoghurt. Rwanda and Eastern Uganda also have a cheese culture, though the scout sample did not identify this, since the cheese is often sold by dedicated, mobile cheese sellers.
- Across all outlet types, the scout in Nigeria identified the broadest range of products.
- The scouts found very few occurrences of raw milk. This would mostly be sold through other outlet types than those sampled by our scouts.

5.2 International Illustration by BoP Innovation Centre

The Base of the Pyramid Innovation Centre in the Netherlands (BoP Inc.) conducted an inventory or relevant innovations and technologies from other continents. Their full report is attached as Appendix 8 to this document. BoP Inc's international illustration uses a mix of case study analysis, expert interviews and secondary research. In order to perform an insightful benchmark of key initiatives that have reached impact at the BoP in the dairy and beverage sectors, the following steps were followed:

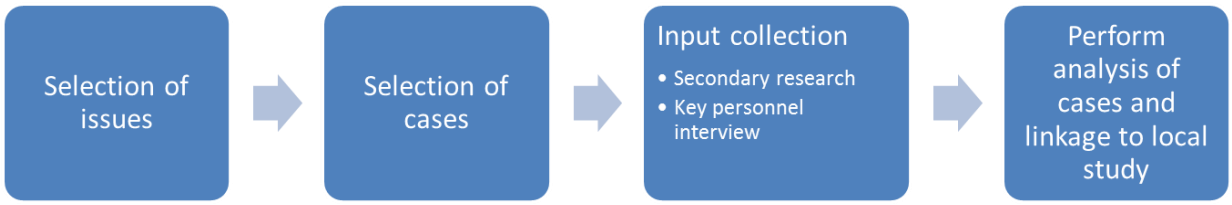

Figure 3: The process for the international benchmarking

First, a set of issues was selected in coordination with SNV and the RSA team that reflects key challenges encountered in Kenya revealed by the first steps of the supply and consumer studies:

1. Micro-distribution: which solutions have companies found to achieve efficient micro-distribution of their dairy products?
2. Cool-chain failure resilience: which solutions have companies found to avoid the quality deterioration of perishable food-products through cool chain interruptions?.
3. Technologies: what are potential technologies that could change the dairy value chain?
4. Marketing value added products to the BoP (include processed milk): How have companies successfully marketed value added dairy products to BoP consumers? Especially researching whether health is used as a selling point. For example which role has health played in the volume of marketing BoP dairy products and what have been the effects?

Based on these issues a list of 10 cases was selected based on a list of BoP market relevant criteria:

- Social Dimension (medium)
    - Is the product and service solving the problem?
    - Number of BoP involved or reached

    - Promotes leadership of low-income community leaders
    - Improves access to a better development of BOP community
- Economic Dimension (medium)
    - Increases company's income in new markets
    - Diversifies company's portfolio of products and services
    - Increased BoP income
- Potential for scale (medium, mainly qualitative)
    - Main condition for the business model to scale
    - Main conditions for the business model to replicate

The selection resulted in 4 cases covering the distribution issue, 3 cases covering the cooling issue, 1 case covering the technology issue and 3 cases covering the marketing issue. Each of the cases is summarised with additional sources. The report further highlights the unique characteristics of each case, outlines the way in which the case affects the BoP and describes the pre-conditions required to make the case a success. This allows a reflection by stakeholders on whether a case might be transferable to Kenya (though an in-depth analysis of this transferability is beyond the scope of this study). The information was collected from a range of different sources and activities:

- From the report "Access to food and improved nutrition at the BoP" performed by the BoP Innovation Centre in 2012 where 150 cases were selected based on the aforementioned criteria.
- The current running programmes of the BoP Innovation called 3 pilots for pro-poor innovations and 2SCALE where BoP Inc. has first-hand access to insights of these BoP business pilots.
- Network experts of BoP Inc. For instance the case of SKEPL was provided during an interview with the Business Call to Action (BCtA).
- Additional secondary research for all of them focusing on the issues at hands. This included interviews with key staff at the implementing companies as well as additional desk research.

The report's structure allows for a very quick intake of the key information. We therefore refer the reader to Appendix 7 for full details instead of providing a summary at this point. Nevertheless, we would like to draw a few conclusions with respect to the applicability of the different cases in Kenya:

1. On micro-distribution: BoP Inc. proposes several solutions to issues related to arranging micro-distribution. One is to employ large groups of women as direct sales staff, thus shortening the distribution chain and strengthening seller-buyer relationship. Another includes small manual distribution centres in its distribution pyramid. A third combines the first two and adds a more distributed production system. And a fourth proposes a distribution system that can be shared by different non-competing companies. This system is set up as a social enterprise where the distribution hubs are independent entrepreneurs.
    - All of these cases require either a strong organisation at its centre (or a small core team of organisations) or a very high degree of social organisation (self-help groups, micro banking networks or similar webs). Facilitating such a degree of organisation could be a task KMDP might want to accept.

- All of these cases also involve the BoP beyond their role as a customer. The BoP consumer becomes a producer, a distributor, a marketer and earns a living off the product sold to her and her peers. This point will have to be taken into account by the stakeholders working with KMDP.

2. On the cool chain: BoP Inc. presents three solutions for maintaining different elements of the cool chain. One case proposes affordable, robust and small cooling installations for on-farm use. Another case proposes cooled bicycle rickshaws for cooled transport. The third case makes the cool chain superfluous by making the product cooling independent (powdered milk).
   - The solutions for the cool chain can generally be implemented without major market specific constraints. They require a pioneering first mover, but generally no major investments or market structures. They can be implemented without needing to reinvent the whole dairy system.
   - Once again, the BoP becomes more than a consumer in two of the three cases used to address this issue: a producer in one case and a distributor in the other.

3. On disruptive technologies: despite their global coverage, BoP Inc. did not find a large number of disruptive technologies. Their best candidate is Shree Kamdhenu Electronics Pvt. Ltd. (INDIA). SKEPL currently offers several technological solutions including electronic weighing scales, milk analyzers, dairy cooperative accounting software and automated milk collection systems (AMCS). It combines traditional devices of the dairy sector with information and communication technologies. It also developed the “Nano”, a smaller more energy-efficient, handheld milk collection processor that is targeted for small and medium-sized cooperatives, which cannot afford a fully automated milk collection system.
   - The solution can be implemented relatively easy, but requires to be embedded in the milk chain to be of optimal use. Key stakeholders will have to collaborate.
   - The Kenyan market lags behind in terms of automation. Cases where people spend several days entering milk collection data in paper files are very common and much could be gained in terms of efficiency, accountability and transparency if automation would be used to ease the pain.

4. On marketing: The cases related to the marketing issues range from marketing fortified foods without a price premium, through production from local ingredients for local markets to developing products specifically for malnourished children and mothers.
   - The solutions often require external support (for example school feeding programmes or collaboration with an NGO)
   - The solutions show that in many ways Kenya is quite a developed market, since all cases from elsewhere are in some way reflected in Kenya.
   - In this issue, local differences seem to play an immense role.

6 DEVELOPING BUSINESS PROPOSITIONS

In the previous sections, we have outlined a wide range of aspects of the BoP market for dairy, including policies at work in the dairy sector in Kenya, the supply side, the consumer side, and sought inspiration in other countries and continents of products for technologies and business models that drive (processed) milk and milk products deeper into the pyramid. Taking the above into account and reflecting on opportunities for KMDP, a few strategic choices come to mind.

(a) Level of intervention

The arguably most important strategic choice concerns the level of an intervention. The following levels can be distinguished in this respect:

- Level 1: A cooled bicycle rickshaw requires a passionate NGO and a small organisation to test the concept. It is a simple lighthouse project testing new technologies. There are many such projects and the KMDP networking might disseminate such ideas, but for the implementation the network might be 'overqualified', i.e. wasting valuable resources that could be used at a higher level.
- Level 2: Other activities require a strong collaboration between similar stakeholders (e.g. processors), often with conflicting interests. Only shared forces can move a market. At this level it is important to recognise that modernizing a static market environment is against the interest of any stakeholders benefiting from the status quo.
- Level 3: To make it even more complicated, some activities require the collaboration between a wide range of different stakeholders. For so-called system innovations, diverse players will have to be brought on the same agenda. The opportunities here are massive, but so are the challenges.
- Level 4: Changing the environment is the highest level of complexity and probably outside the scope of KMDP. This includes building the roads, railways and electricity supply for rural markets, adjusting overall tax structures or trade agreements.

(b) Stakeholders

A second strategic choice concerns which stakeholders to include. Several models are possible:

- Multiple partnerships: Level 1 innovations can be implemented plentiful with different individual partners.
- Homogenous partnerships: Level 2 innovations can be implemented with a set of similar stakeholders, who might step on the toes of outsiders in the process (for example a group of processors might develop business models that shut out middle men).
- Transition arena: take the pioneers from a wide range of stakeholders along the value chain and work on a systems innovation that they can implement on their own.

- Forum: take everyone who is willing to be part of the project and see how far you get. It is difficult, but for major changes, it is also inevitable.

(c) Scope of intervention

A third strategic choice concerns the scope of intervention:

- A restriction to a specific part of the value chain or a specific intervention allows for much more powerful partnerships. The distribution at the BoP seems to be a high potential issue, as is the development of new products close to existing products with a track record at the BoP.
- A less restrictively defined subject matter allows for a wide range of participation and more serendipitous successes, but it also tends to slow down the collaboration.

6.1 Business Model Canvas

A useful way to rethink these strategic choices is to make use of the so-called Business Model Canvas. We have implicitly used this 9 step framework, which is illustrated in figure 4 below, throughout this report to provide structure and a common vocabulary. The canvas covers the following issues and our recommendations based on the same, as regards to structuring the thinking around business propositions.

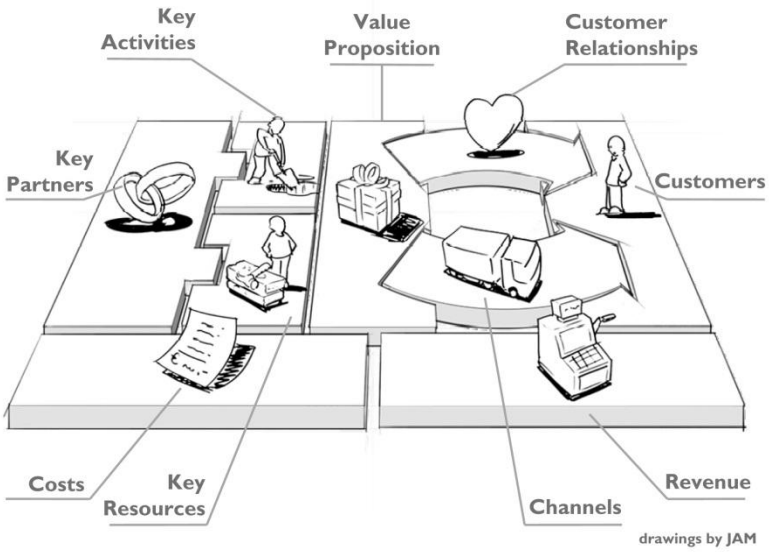

FIGURE 4: BUSINESS MODEL CANVAS (SOURCE: BUSINESSMODELGENERATION.COM)

1. Customer Segments: for whom do we aim to create value? Who are our most important customers?
    - The general customer segment of the BoP clearly offers potential as this report and other reports have shown. However, it is worthwhile to look further and define the target group even more clearly. Segment your target group as any business would do for a middle and

upper class audience. For example, who are the pioneers who might the first to adopt a new product and who are the late adopters?

- In addition, it is worthwhile to think of customer groups outside the BoP who might make it possible to deliver a product to the BoP as well. For example, a product might only be commercially viable if it targets the lower middle class in addition to the BoP. The higher volume sold might lead to lower prices and thus indirectly accelerate the deepening of the pyramid.
- The customer segmentation might very well be different for different stakeholders. While SNV has a social interest to reach the BoP, the same target group might only be of a limited commercial interest to some of the stakeholders. Being explicit about the different interests can facilitate project implementation.

2. Value Propositions: what do we offer to whom? What value do we deliver to a customer in a given segment? What needs do we satisfy?
    - The value proposition must be a very strong one at the BoP since price remains the strongest selling point once a minimum level of quality is achieved. Better quality for the same price is a possibility, but better quality for a higher price is much harder to sell.
    - Value proposition improvements discussed in this study include longer shelf life, fortification, higher convenience, dairy products with meal like characteristics, lower prices and others.
    - Some value propositions are easier to implement in the market than others. A lower price point is probably the easiest, while educating customers to comprehend a new product or the value of fortification requires a much bigger investment.

3. Channels: how do we reach each customer segment? What is easiest for the customer?
    - The channels remain a large challenge at the BoP as this report has shown once again. If KMDP sees an opportunity to address these together with their stakeholders and to transcend current linear lines of reasoning, such as smaller and smaller package sizes and larger sales forces penetrating deeper into low income areas, then a real contribution can be made.
    - Some cornerstones of a good distribution model are given in this and many other reports:
        - Package sizes must be adapted to the volume of consumption, because storing opened packages is unpopular.
        - Proximity and trust are crucial determinants when consumers select a point of purchase, especially for raw milk and milk with a short shelf life.
        - Retailers are very sensitive to profit margins and will push higher margin products.
        - Demand rules and is difficult to generate for new products. Any new product introduction must generate supply and demand simultaneously, so that customers and retailers adopt the product.

4. Customer Relationships: how do we build and maintain these? How do they fit effectively in both the customer's world and our own?
    - It is a challenge for any large company to maintain customer relationships, because a large section of the value chain separates the producer from the consumer. While individual retailers can earn trust and build personal relationships, producers of consumer goods have fewer options beyond their marketing campaigns. However, factors a consistent quality, recognizable brands and products, as well as reliable supply at all points of purchase do help to maintain a relationship with dairy product consumers.
    - This is a good point to remind the reader about one of the key lessons from the BoP Inc solutions to the issues raised in Kenya: make the BoP consumer also your producer and your distributor. Nothing will strengthen customer relationships more than that. Other parts of this report rein-force this by showing that trust is built through acquaintance (e.g. with a person or a packaging).

5. Revenue Streams: for what will our customers pay? How much? How would they prefer to pay?
    - Price remains the number 1 selling point and can't be avoided when selling to customers at the BoP.
    - However, we can differentiate between a few insights on what customers actually pay for. Most consume milk, because it enhances their tea. They pay for either nutrition or taste. Others pay for status, especially when they have indicated to by processed milk when visitors are around. Hospitals pay for safety when they purchase processed milk. Schools use it as a marketing tool (they would not participate in a school milk programme if parents would not value it and pay for it accordingly).
    - The physical product can also be disaggregated. Many solutions, such as milk dispensers, try to have the consumer pay for just the milk and not for the packaging or the transport.
    - The mode of payment is interesting. The study found that some retailers do extend credit to loyal customers and that customers do appreciate this. New payment models could attract additional consumers. M-Pesa and call credit loans might be of benefit in that respect.

6. Key Resources: what resources are essential to deliver our Value Propositions through the Channels and maintain our Customer Relationships?
    - The number one requirement is an adequately skilled team of people.
    - Other key resources include finance (including contributions from government or development agencies), infrastructure, milk supply, processing capacity and more.
    - Specific key resources depend on the product. While a common product, such as white milk, requires mainly logistical resources, a new product will also require educational resources.

7. Key Activities: what are the most important things you must do to make your business work?
    - This should be discussed after the strategic choices have been made.
    - In the context of KMDP, aligning priorities and plans is a likely candidate for a key activity.

8. Key Partnerships: who are our Key Partners and why? What Key Resources do they provide and what Key Activities do they carry out? What is in it for them? What relationship should we have?
    - This is often underestimated. Selecting your partners carefully and not on first come first served basis can significantly improve project design and implementation. Clarifying expectations is crucial.
    - Partners should be complimentary and not threaten each other's business model. The inclusion of middle men as stakeholders in the process will make it more difficult to discuss business models that exclude these middle men, unless they can attain another role. Therefore, the question of exclusion is as important as the question of inclusion.

9. Cost Structure: what costs are implied by our Business Model? Which are largest? What is fixed and what is variable? What drives them?
    - This last point is beyond the scope of this report.