SMALLHOLDER DIARY PROJECT

An annotated bibliography on the Smallholder Dairy Project, consulted for the Pro-Poor Livestock Policy Research project
A row over Sh10 million milk advertising campaign to popularise processed milk has boiled over. Interestingly, the so-called 'safe milk campaign' is being faulted, not for what it says about creamery made milk, whose health-promoting qualities are generally a matter of unanimity, but rather what it says about other substitutes, notably raw milk, in its adverts. The unfolding spat pits the Kenya Dairy Board against a group of NGOs and research organisations, speaking for the voiceless small-scale dairy farmers and the informal milk business.

We have been full of praise for the initiative taken by the Nairobi City Council to address the problem of street children and families. At long last, somebody has realised that the issue of people living on the streets cannot just be wished away. The council must also take a fresh look at the proliferation of hawkers on our streets. Right now, they have overrun large swathes of the Central Business District. Shopfronts have been invaded to peddle wares, while pedestrians are forced to compete with cars because the pavements have been taken over by piece-goods traders.

This is the press statement released by four NGOs to counter the facts used in the 'Safe Milk Campaign' launched by KDB. It raises concerns regarding the accuracy and 'proportion' in reporting of health risks of milk sold by hawkers and tells the real story of the dairy industry and dependent livelihoods.

E. coli O157:H7 is a newly recognised bacterial zoonosis that originates from the gut of infected cattle. It causes potentially fatal haemorrhagic enteritis, haemolytic uraemic syndrome and kidney damage in humans. Epidemiological data on E. coli O157:H7 infection and transmission in developing countries remain scarce, but it is suspected that consumption of unpasteurised milk is an important vehicle for its transmission to humans, as milk can easily be contaminated with cattle faeces during milking. Given the high proportion of informal sales of unpasteurised milk in many tropical countries, E. coli O157:H7 has been one of several zoonoses of concern.

The dissertation aims at identifying the determinants of the adoption of grade cattle technology in the specific case of Kenyan smallholders. Adoption of high grade cows by smallholders is driven by the objective of increased milk production, for both home consumption and sale. This resource can be found at:
The dairy production systems in Kenya are very diversified in terms of races of cattle raised, of intensity of use of the intrants (particularly ground and work) and of the feeding systems of the cattle. The liberalisation of the dairy sector of 1992 encouraged the production of milk while allowing the cooperative dairies and private dairies to play a more significant role in the marketing of the dairy products. Changes in the systems of production and marketing are thus awaited but not documented until now.

A stratified random sample, cross-sectional survey of 1755 households in the Kenya highlands was conducted between June 1996 and April 1998 to evaluate the rationale underlying smallholders’ breeding decisions. Additional data were collected in a follow-up survey of 50 households sub-sampled from the main survey sample. Cattle-keeping households were 987, of which 62% kept Friesian (FR) and Ayrshire (AY), 22% kept East African Zebu, Boran and Sahiwal (ZB) cattle and 16% kept Guernsey and Jersey (GJ) breeds. Farmers keeping ZB and GJ ranked producing milk for family consumption the most important reason for keeping cattle, whereas those keeping FR and AY ranked producing milk for cash income most highly. Farmers’ relative preference for GJ, AY and FR for high milk yield over hardiness was respectively 3.46, 7.58 and 17.63 times more when compared with preference for ZB. Additional attributes rated highly in the Bos taurus breeds were high butterfat yields, heavier bodyweight, unselective feeding behaviour in zero-grazing systems, hardiness and disease resistance in semi-zero- and free-grazing systems and high market value. Breeding practices tended to favour the use of dairy breeds of larger body size, particularly Friesian, which is inconsistent with technical recommendations that favour the use of the smaller dairy cattle breeds. These findings suggest that multiple objectives, including the need for more milk, adaptability to local feed conditions and diseases, and the provision of non-market production such as manure, insurance and financing roles of cattle, underlie smallholders’ breeding decisions in the Kenya highlands. This resource can be found at:
Animal class mortality rates were high (7% to 19%) regardless of grazing system practised. Diseases counted for the largest proportion of animal exits: 85% of heifer-calves, 38% of heifers and 36% of cows. According to farmers' ranking, East Coast fever and Anaplasmosis diseases assumed less importance with a shift from free-grazing to zero-grazing system. This resource can be found at: http://www.smallholderdairy.org/publications/Journal%20publications/Bebe%20et%20al-2003-cattle%20population%20dynamics.pdf. Last accessed 4/8/2009


This is a Smallholder Dairy Project (SDP) commissioned article in one of the leading newspapers in Kenya, describing SDP activities and outlining the fact that small-scale milk producers make profits in Kenya. It also argues that import of milk powder is not threatening the livelihood of Kenya's dairy farmers. It tells the story of supply and demand of both raw and pasteurised milk over time, and highlights the true impact of milk to public health and lists the benefit of dairying in Kenya. It closes the argument with an upbeat statement: 'Given enabling policies and well-functioning institutions, Kenya's successful and large dairy sub-sector will continue to grow and help drive the economic recovery of this country. Through this wide-ranging and high-quality research, the Smallholder Dairy Project is providing reliable information to support dairy smallholders, consumers, planners and the dairy industry as a whole.'


A Sh10 million advertising campaign to entice Kenyans to drink more processed milk came under heavy criticism yesterday from a group of non-governmental organisations. They argued that the campaign - largely financed by the country's main processors and supported by the Kenya Dairy Board - was based on largely unsubstantiated information, and would gravely affect the country's thriving informal milk market. This resource can be found at: http://www.ilri.cgiar.org/ilripubaware/Uploaded%20Files/200482495570.NC_031204_082_Nation_GroupAngeredByMilkAdverts.htm. Last accessed 4/8/2009


Dairy industry players are set to gain more control of the crucial sector when current legislation is reviewed. The Agriculture ministry would push for the amendment of the Dairy Industry Act in the next session of Parliament, said Assistant minister Joseph Munyao in Nairobi yesterday. Elsewhere in Eldoret, it was revealed that the Kenya Dairy Board would be restructured to pave the way for the direct election of directors by farmers, instead of the present system where they are appointed by the government.


This Land O'Lakes (a US based International Development NGO/Cooperative funded by USAID working in Dairy Sector) advertisement announcement outlines their services to the dairy community in Kenya. The mission of Land O'Lakes (LoL) is to build a strong, vibrant and sustainable dairy industry and they implement their activities through dairy cooperatives, farmers associations, and self-help groups. In areas where such groups do not exist, it encourages formation and registration of new groups. LoL conduct various courses covering dairying and cooperatives management and good governance.

This paper is written by one of the key actors in the Smallholder Dairy Project (SDP) to summarise his observations on policy influencing and processes while working with the project. It is written from the perspective of the SDP as a central player in the process of policy reform as SDP has undoubtedly been one, if not the only, main mover in this process in the last few years. However, there is an ongoing process to link with ODI in order to document the experiences of dairy policy reform in Kenya based on experiences of SDP and its partners, which will involve more of an outside perspective.


By supporting 'informal' dairy producers and sellers with policies better suited to their circumstances, developing countries are taking advantage of the historic opportunity that livestock now offers to lift millions of people out of poverty. With demand for foods of animal origin expected to double over the next 20 years in developing countries, the dairy cow is fast becoming one of the smartest investments a farmer can make. Small-scale African farmers are already doing a brisk trade in dairy products. Particularly in East Africa's three million dairy households, dairying acts as a cash crop, generating more regular household income and jobs for the unskilled than other enterprises.


This paper is based on the predecessor to the Smallholder Dairy Project (SDP) project - the Kenya Coast Smallholder Dairy Technologies. It highlights the constraint of cattle production in the coast due to inadequate year round feed supplies and high risk of disease (particularly East Coast Fever and Trypanosomiasis). A study carried out in the area determined the factors that influence adoption of dairy technologies (i.e. ownership of crossbred or grade dairy animal, the planting of forages and the use of infection-and-treatment method of immunisation to protect dairy cattle against East Coast Fever).


Dairy is an important enterprise throughout the densely populated highlands of central Kenya. Demand is extremely high because milk is an important part of the diet of both rural and urban Kenyans, with per capita milk consumption at 111 kg per year. Substantial quantities of milk from smallholders in central Kenya are marketed in Nairobi.


Given the important objective of providing livelihoods to resource-poor people in developing countries, International Livestock Research Institute (ILRI) and its partners measure the efficiency of dairy processing and marketing in both economic and employment terms. This resource can be found at: http://www.ilri.cgiar.org/ilripubaware/Uploaded%20Files/200481194500.00BR_ISS_OptionsInDairyProcessingAndMarketing.htm. Last accessed 4/8/2009


By supporting 'informal' dairy producers and sellers with policies better suited to their circumstances, developing countries are taking advantage of the historic opportunity livestock now
offer to lift millions out of poverty. This resource can be found at: http://www.ilri.cgiar.org/ilripubaware/Uploaded%20Files/200481194430.02BR_ISS_EnhancingMilkMarketsVitalToThePoor.htm. Last accessed 4/8/2009


Traditional milk markets supply over 80% of marketed milk in Kenya. The same smallholder dominance is seen in other countries of the South, such as Tanzania (98%), Nicaragua (86%) and India (83%) - now the largest dairy producer in the world.


Equitable growth strategies for poor countries foster inclusion of the rural poor into high-value agricultural markets. Dairy production presents an opportunity for smallholder households to become more integrated into such markets while improving their nutrition. This resource can be found at: http://www.ilri.cgiar.org/ilripubaware/Uploaded%20Files/2004811946260.00BR_ISS_DairyAndHumanDevelopmentInTheTropics.htm. Last accessed 4/8/2009


The risk of infection by milk-borne brucellosis is one reason for public health regulations which discourage informal milk markets that sell unpasteurised milk. However, these regulations are not generally implemented in many developing countries. Kenya is a typical example, with over 85% of milk sales passing through informal channels. Consumer practices to reduce or eliminate potential infection by milk borne health hazards under these circumstances have rarely been studied.


Ever since the Kenya Dairy Board launched a campaign for safe milk consumption, debate has raged over the correct processing methods. This article sets the record straight on a number of safety, quality and processing issues. To start with, it is important not to misunderstand pasteurisation. It does no harm to the nutrients in milk. It is a process that subjects milk to a specific temperature and time treatment to destroy all pathogenic (disease-causing) organisms without interfering with its nutritional value. This resource can be found at: http://www.nationaudio.com/News/DailyNation/Supplements/horizon/11122003/story111220031.htm


Fears that the recently launched Safe Milk Campaign by the Kenya Dairy Board (KDB) and leading dairy processing firms could put as many as 350,000 people out of employment, besides undermining most of the gains the sector has made since it was liberalised, emerged last week. According to industry players the Ksh10 million ($12,8205) campaign launched early this month jeopardises the incomes of another estimated 800,000 smallholder farmers who depend on the sector for their livelihood. This resource can be found at: http://www.ilri.cgiar.org/data/ilrievents/CleanVsDirty.asp. Last accessed 4/8/2009
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<td>'Be safe! Buy processed milk!' This is the clarion call of the Kenya Dairy Board, Kenya Bureau of Standards and Ministry of Health in a series of recent television advertisements. This comes in the light of widespread purchase of raw milk by the consumer and is aimed at encouraging them to opt for factory-processed milk instead. This resource can be found at: <a href="http://www.iri.cgiar.org/data/irirevents/PC_Nation_2003Nov_FallaciesAboutUnprocessedMilk.pdf">http://www.iri.cgiar.org/data/irirevents/PC_Nation_2003Nov_FallaciesAboutUnprocessedMilk.pdf</a>. Last accessed 4/8/2009</td>
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<td>This literature review highlights the current status of smallholder dairy production and milk marketing in western Kenya. It forms the basis and entry point for Smallholder Dairy (R&amp;D) Project activities in western Kenya in its second phase. A brief history of the dairy industry in Kenya is also presented. The report also highlights cattle production systems, types, population and distribution in RRC-Kakamega mandate region, but focuses more on Nandi, Vihiga, Kakamega and Bungoma Districts of the region identified by the project for implementation of its activities. Current trends in milk production and marketing, including pasture and fodder production, in these Districts are also discussed. The report also indicates the livestock extension services, research and development programmes within the region.</td>
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<td>Forget the war on terrorism or the assault on corruption. There is a new war being fought in our midst and, depending on who wins it, the outcome threatens to disorient families as they run around in search of what has been universally accepted as being good for their growing children. Apart from determining whether Kenyans who live in remote areas continue to have their hot beverages white or black, it will further determine whether the product's most necessary beneficiaries - children - will have to make do with breast-feeding alone, or if their parents will have to walk longer distances and fork out more to provide them with milk - processed milk. The war is about milk. Processed milk, or, as the current flood of advertisements puts it, milk in a packet. This resource can be found at: <a href="http://www.nationaudio.com/News/DailyNation/23122003/News/News_Spotlight231220031.html">http://www.nationaudio.com/News/DailyNation/23122003/News/News_Spotlight231220031.html</a></td>
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<td>This report presents a review of the policy environment for the dairy industry in Kenya. The objective of the study was to identify and document components of the policy environment concerning dairy input and output, markets, relevant stakeholders and their roles, the regulatory environment and factors constraining the implementation of those policies.</td>
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<td>Kenya has the largest dairy sub-sector in eastern and southern Africa making available annually an estimated 85 to 90 litres of liquid milk equivalent per capita based primarily upon well-established market-oriented smallholder dairy systems. As a result dairying (the production of milk for the market) has become a very significant source of income and food for an estimated 625,000 smallholder producer households and for those involved in the marketing of milk, in total some 25%</td>
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of all households. In addition, dairying plays a crucial role in sustaining smallholder crop-dairy systems through its contributions to nutrient cycling. It is these smallholder crop-dairy systems, generally based on the cropping of the staple food - maize - that dominate marketed dairy production and underpin the competitiveness of smallholder dairying in Kenya.


Food safety standards require the implementation of specific standards from production to consumption. The Hazard Analysis Critical Control Points (HACCP) is now a widely accepted methodology in risk analysis for industrially processed foods. The application of HACCP is a bigger challenge in developing countries where food market channels are less formal. This study adapted a HACCP methodology to assess health risks at different points in the informal milk marketing network. Key critical control points identified for high total bacterial counts were channels with multiple transaction points which took considerable time from the farm without refrigeration facilities. High coliform counts were associated with the use of plastic versus metal containers. Approximately 13% of samples were adulterated with added water. Recommendations for procedures to improve milk quality and how these can be communicated to farmers, market agents and consumers are proposed and discussed.


Dairy production is a key small farm strategy for generating income in the Nairobi milk shed. The high perishability of milk under Kenyan conditions appears to be associated with a high frequency of small individual transactions, the terms of which are subject to forced 'fire' sales, delayed payments or default. Reliability of outlets in the wet (milk glut) season is also a consideration, and credit sales typically are matched with a commitment to be a steady customer. Two salient phenomena are observed: reported unit milk prices differ widely within the same location and time period, and spot sales for cash tend to be at a higher unit price than sales on monthly credit. We hypothesize that dairy farmers in the Nairobi milk shed choose market outlets and levels of cash sales that reduce transactions costs and help assure reliable future outlets, at the expense of current income. A decomposition of producer milk prices across time, space, and market outlet suggests that reliability of outlet is worth up to 17% of the spot price, in addition to waiting a month to be paid. Risks of credit default are illustrated by predicted weekly credit prices that are 5% lower than monthly credit prices. Data from 21 smallholder farms monitored daily over one year are used to estimate a two-limit model of the role of the characteristics of market outlets and producers in explaining the share of producer output sold for cash rather than credit. Younger, more educated producers, receiving a regular off-farm salary, and near market centres are shown to be more likely to accept sales on credit. Older producers with more experience but less formal education are more likely to sell for cash rather than credit. The power of the model to explain different prices for milk in the same location and week suggests that such price differences viewed unidimensionally are not evidence of lack of market integration as conventionally defined, but an outcome of differential transactions costs and perceptions of risk by different producers.


This report is a result of a one and a half day project retreat at Lake Elementaita Lodge, designed to guide the Smallholder Dairy Project (SDP) team in developing a clear plan of action, and building on the advocacy outline and framework of engagement in policy processes. The recommendations are
based on the five elements of an advocacy strategy as discussed during the workshop: (i) objectives; (ii) stakeholders; (iii) diagnosis; (iv) action plan; and (v) evaluation. This is the first document which clearly defines the SDP strategy to influence policy.


The turf war in the dairy sub-sector intensified last week after a group of non-governmental organisations joined vendors of unprocessed milk in rejecting Kenya Dairy Board’s safe milk campaign. The Institute of Policy Analysis and Research (IPAR), ActionAid Kenya, Intermediate Technology Development Group (ITDG) and Strengthening Informal Sector Training and Enterprise (Site) said the high profile campaign is likely to have a negative effect on the dairy industry. Consumer safety, they said, should rightly be the concern of all. They, however, insist that any action against informal dealers should be based on clear, robust and recorded evidence ‘as consumers are likely to respond to what they hear, especially when it concerns their health.’


This literature review report contains a study of three districts: Kisii Central District, Nyamira District, and Rachuonyo District. The report highlights cattle population and distribution, milk production and marketing, pasture and fodder production, and organisation involved in the dairy industry in the three districts. It also presents list of publications on livestock research and development in the region.


The agriculture sector is generally facing declining production, institutional failure, poor prices, weak infrastructure and inadequate policy support. In spite of this, the dairy sector has been identified as being crucial for economic recovery as more than 800,000 households and 350,000 wage earners depend on it. To raise productivity, the sector has to resolve the various policy changes that have affected milk producer prices, cost and quality of veterinary drugs and services, quality and cost of feed prices, and unpredictable policy and technology environment. This resource can be found at: http://www.ipar.or.ke/milk%20trade.pdf


Of the estimated 2.7 billion litres of milk produced by local dairy farmers annually, up to 88% is consumed in raw form without going through the standard pasteurisation process, industry sources say. That leaves only 12% of the milk to be packaged by the processors. Unpacked milk is sold through informal channels, such as farm-to-farm, farm-to-house (in urban areas), farm-to-hotel, or farm-to-kiosk, as well as through hawking. According to Mr Vincent Ngurare, who was until last week the Kenya Dairy Board (KDB) managing director, the private dairy processors who handle an average 500,000 litres daily can only buy from farmers the amount of raw milk they are able to sell. ‘The private dairy processors are commercial entities,’ said Mr Ngurare. ‘Before liberalisation, KCC was the buyer of last resort and could afford to buy all the milk from dairy farmers regardless of the market conditions because it enjoyed subsidies from the government. Now that KCC is not a monopoly any more, the surplus milk has found its way into the informal market.’


Even as its survival continues to be threatened, the informal dairy sector in Kenya remains one of the
most dynamic sectors in the stagnating economy, creating more jobs than the formal dairy sector. Also, new research with the potential of demystifying the myth that milk sold through informal channels poses public health risks, has recommended that the government recognise the existence of the informal sector and licence the players.


New information about public health and milk marketing has recently become available from scientists in key research and development institutions in Kenya. They conducted comprehensive studies that included the laboratory analysis of hundreds of hawked and packed milk samples from randomly selected retailers and households in the country. The studies were conducted by the Smallholder Dairy (Research and Development) Project (SDP) and involved scientists from the Ministry of Agriculture and Rural Development, Kenya Agricultural Research Institute, University of Nairobi’s Department of Public Health, Pharmacology and Toxicology and the International Livestock Research Institute. The Kenya Dairy Board and Kenya Bureau of Standards also participated in the project. This resource can be found at: http://www.ilri.cgiar.org/data/ilrievents/CleanVsDirty.asp. Last accessed 4/8/2009


This report presents the results of a study of Kenya's dairy systems, addressing policy and institutional issues related to dairy development in Kenya. The Rapid Appraisal is an indicative analysis of the dairy systems within the following milk sheds and consumption centres: Lake Basin; Central and South Rift Valley; Central Province; Eastern Province; Greater Nairobi; and, Coast Province.


Despite an unfavourable policy environment against informal milk markets, these markets account for most milk sales in Kenya. Convenient delivery and lower prices are the principal benefits for poor consumers. Current milk handling and safety regulations in Kenya are derived from models in industrialised countries. These may not be appropriate for local market conditions. An important step in targeting policies better is to collect quantitative and qualitative information about milk-borne health risks under different marketing situations. Preliminary results of assessments of milk quality and handling practices of informal milk market agents and consumers in central Kenya show very low apparent prevalence of zoonotic health hazards in milk from the smallholder herds that contribute most marketed milk. Higher bacterial counts were associated with longer market chains and distance to urban areas. Most (up to 80%) of samples did not meet national bacterial quality standards. Over 96% of consumers boiled milk before consumption, mainly to lengthen shelf life but also for health reasons. The most important health risks were judged to be from anti-microbial residues found in up to 16% of milk samples tested.
Liberalisation in the dairy industry in Kenya is currently under way in several forms. The urban milk market monopoly of the Kenya Cooperative Creameries has been lifted. Clinical veterinary and artificial insemination (AI) services are no longer publicly supported in many areas. Private sector response to these reforms was expected to be greatest in the high-potential market-oriented dairy zones of Central Province, where the dairy farmers' cooperative societies play a central role in meeting the needs of dairy producers. A survey conducted by the authors measured the changes between 1990 and 1995 in milk marketing and service provision by the dairy cooperatives.

Eight months after it took the reins of power, the Coalition Government of President Mwai Kibaki chalked out an ambitious programme to fast track recovery of the ailing economy it had inherited from its predecessor, Kanu. Dubbed the Economic Recovery Strategy for Wealth and Employment Creation, the programme stated as its goals the generation of jobs, raising of income and improvement of the health of the millions of poor Kenyans, the majority of whom live in the countryside. With the percentage of the population living under the poverty line standing at an all time high of 56%, a near-stagnant economy that had just returned a depressed growth rate of 1% and an unemployment rate of more than 20%, nothing short of shock therapy of the type that was being proposed in the economic recovery plan was viable.

A field trial with smallholder dairy farmers in central Kenya was carried out to study the feasibility of reallocating concentrates as a means of increasing the profitability of milk production. Researchers designed the trial with extension officers, dairy cooperatives and feed company staff to ensure that all stakeholders and key players were involved. Central to the design was the provision of feed on credit from the dairy cooperative to its members, the volunteer farmers, involved in the study. The role of the research team was to present the technology to the farmers and monitor the implementation and impact. Farmers were not constrained in the way they chose to implement the recommendations, but the research team monitored any modifications as well as recording production parameters and characteristics of the farm and feed management systems likely to explain underlying variation.

In times of market liberalisation and structural adjustment, the agricultural sectors of developing countries face profound changes. To seize new market opportunities, farmers need to innovate - to become more efficient producers and effective entrepreneurs. In order to innovate, farmers need new technologies and information on how to access and manage them, as well as better support services for the delivery of inputs and knowledge, and better infrastructure for delivering produce to the market. Structural adjustment policies, however, have led to sharp reductions in public-sector research and extension services, on which farmers have come to rely as their principal sources of innovation. Can the private sector step in to provide these services? Is there a continuing role for public-sector actors? And, if so, how will private and public sector players interact? This resource can be found at: http://www.smallholderdairy.org/publications/Policy%20briefs/Schreiber-2002-
With more than two-thirds of the dairy cattle in eastern and southern Africa found in Kenya, and per capita production levels double those found anywhere else on the African continent, Kenyan milk consumption is amongst the highest in the world. On average, each Kenyan drinks four times the average (25kg/yr) for sub-Saharan Africa. Despite strong marketing within the formal sector, informal milk sales account for more than three-quarters of the milk market; buying raw milk, direct from farmers or local hawkers, is convenient even for wealthier households, and the high butterfat content is particularly valued for its taste and nutritional value. But with increasing pressure for regulation of the informal sector, can Kenya lead the way in reforming its dairy policies whilst maintaining the growth in smallholder production? This resource can be found at: http://www.new-agri.co.uk/04-4/develop/dev01.html. Last accessed 4/8/2009

Over 86% of all milk sold in Kenya is sold as 'raw', or unpasteurised, milk. This is in response to clear consumer demand, based on price, taste and availability. The processors who supply to the remaining 14% of the market are actually operating at well below 50% of their installed capacities, because there is limited demand for their products. This demand is only likely to change gradually, as incomes rise.

The aim of this study is to examine the factors that shape the policy environment in Kenya’s agricultural sector. The purpose is to help DFID, all development partners and other stakeholders in the sector to contribute more effectively to agricultural sector reforms and development.

This policy brief (the first of five tailor made for policy makers) highlights the high demand for dairy products in Kenya. Dairy products are important food budget items for many families in Kenya. A survey carried out in 1999 in Nairobi and Nakuru found that households spent an average of 18% of their income on dairy products, second only to their expenditure on cereals such as maize (27%). This resource can be found at: http://www.smallholderdairy.org/publications/Policy%20briefs/SDP%20BRIEF%201%20-FINAL%20R.pdf. Last accessed 4/8/2009

This policy brief addresses the issue of employment generation in the Kenya dairy industry. 90% of dairy producing and marketing in Kenya is done by smallholders and informal sector traders, therefore it is important that their needs are taken into account in decision making process. This resource can be found at: http://www.smallholderdairy.org/publications/Policy%20briefs/SDP%20BRIEF%202%20-UPDATE.pdf. Last accessed 4/8/2009

This policy brief outlines the competitiveness of the smallholder dairy enterprise in Kenya. The dairy industry forms a significant part of the rural economy in Kenya, accounting for 14% of agricultural gross domestic product (GDP) as well as being a primary source of livelihood for many smallholders, who account for over 70% of total marketed milk in the country. This resource can be found at: http://www.smallholderdairy.org/publications/Policy%20briefs/SDP%20BRIEF%203%20-FINAL%20R.pdf. Last accessed 4/8/2009


Current milk flow channels in Kenya clearly show that informal milk markets dominate; with approximately 86% of milk sold raw or unpasteurised. This dominance is mainly due to consumer preference for raw milk and the relatively high cost of pasteurised milk. The milk is either sold directly to consumers by farmers, or passed to consumers through cooperatives, retail outlets (including shops and kiosks), or small-scale traders (including hawkers and milk bars). Small-scale traders create valuable employment and generate respectable incomes for themselves, while acting as a cost-effective link between dairy producers and their consumers. This resource can be found at: http://www.smallholderdairy.org/publications/Policy%20briefs/SDP%20BRIEF%204%20-FINAL%20Rv.pdf. Last accessed 4/8/2009


Malnutrition affects large numbers of children throughout the developing world. In Kenya, nearly one-third of children showed evidence of chronic malnutrition in the mid 1990s. A major cause of malnutrition in Kenya is inadequate dietary intake, both in terms of quantity and quality. The effects of inadequate intake are most pronounced during periods of rapid physiological change, such as pregnancy or childhood and adolescence. The consequences of malnutrition include reduced resistance to disease, retarded physical growth, poor cognitive development, and reduced physical activity. This resource can be found at: http://www.smallholderdairy.org/publications/Policy%20briefs/SDP%20BRIEF%205-FINAL%20R.pdf. Last accessed 4/8/2009


Smallholder dairy production is a widespread and growing activity in the Kenyan highlands, and a potentially important source of livelihood for many poor farmers with road access to urban areas of east and southern Africa. Yet both market participation and net prices received vary widely across households. It is hypothesised that transport difficulties over poor roads directly affect farmer ability and willingness to participate in this market for a highly perishable commodity, even where asset and information levels would otherwise permit such participation. Furthermore, otherwise identical milk sales in a given market can yield very different farm-gate milk prices across farms, for the same reason, depending on the location of the farm. A Heckman iterative selection model is fitted to explain market participation and milk prices received across households for 712 observations on marketing (or non-marketing) of milk by Kenyan smallholders in the greater Nairobi milk-shed. GIS-derived variables for distance and transport costs are combined with survey-derived variables for household characteristics to model market participation and the formation of farm-level milk prices. Parameters are used to specify milk price distance decay functions. The results differentiate the effects of roads by type and distance, and highlight the importance of milk production density and
market infrastructure. Policy implications are discussed.


This research report was carried out to accurately diagnose the existing and future constraints of dairy production and practices of dairy farmers, and the opportunities facing them. These may occur at a number of levels: the dairy animals themselves, agro-ecology of the area, farm practices, household resources, level and type of services available, infrastructure, and other policy or macro-environment factors.


GIS-derived measures of location and space have increasingly been used in models of land use and ecology. However, they have made few inroads into the literature on technology adoption in developing countries, which continue to rely mainly on survey-derived information. Location, with all its dimensions of market access, demographics and agro-climate, nevertheless remains key to understanding potential for technology use. The measures of location typically used in the adoption literature, such as locational dummy variables that proxy a range of locational factors, now appear relatively crude given the increased availability of more explicit GIS-derived measures.


Research aimed at developing appropriate interventions to assist smallholder dairy producers requires a clear understanding of the overall systems environment. Smallholder dairy systems are shaped by production characteristics and technologies, but also by farm/household resource constraints and the market environment. For example, farms in poor agro-ecological zones yet close to urban centres may compete effectively for markets against distant farms located on better land, and their production strategies will reflect that market orientation. The appropriate characterisation of dairy producer farm/households should thus consider this multiplicity of factors, so that resulting research priorities will be more likely to address the factors to which producers themselves are responding, and ultimately to yield the desired impact. This paper describes the characterisation method used to identify patterns among smallholder dairy farm/households in Kiambu district in the highlands of central Kenya, and then from among them a relatively homogeneous target groups of dairy producers. The approach used differs from previous methods by combining principal component and cluster analysis to allow incorporation of a greater range of variables.


Cattle play significant social and economic roles in the subsistence production systems of the East African highland - as a store of value, measure of wealth, and source of cash flow, fuel, food, draught power and manure. However, the productivity of indigenous breeds is relatively low, with milk offtake rarely exceeding 300kg for a lactation period of about seven months.
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<td>Thorpe, W., Muriuki, H.G., Omore, A., Owango, M.O. and Staal, S. (2000) Dairy Development in Kenya: The past, the present and the future. Smallholder Dairy (Research and Development) Project Research Report. SDP.</td>
<td>Large increases in demand for milk and dairy products in developing countries are projected for the next 25 years. These represent exciting market opportunities for smallholders, such as those in Kenya, which has over 85% of the dairy cattle population in eastern Africa. Currently Kenya’s per capita availability of milk is four to seven times higher than the other countries in the region. The widespread adoption of dairy cattle by smallholders in Kenya was stimulated by several interacting factors: smallholder communities who kept cattle and who had milk as an important part of their diet; a sub-tropical geography suitable for dairy cattle; the presence of significant dairy populations (owned by settler farmers); and the conducive policy and institutional environments provided by successive Governments.</td>
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<td>Thorpe, W., Muriuki, H.G., Omore, A., Owango, M.O. and Staal, S. (2000) Development of Smallholder Dairying in Eastern Africa with Particular Reference to Kenya. Smallholder Dairy (Research and Development) Project Research Report. SDP.</td>
<td>Large increases in demand for milk and dairy products projected for the next 25 years represent exciting market opportunities for smallholders in eastern Africa. With the exception of Kenya, traditional cattle production systems based on indigenous breeds dominate milk production in the region, yet they contribute relatively little to marketed production, mainly because of poor access to major urban markets. Kenya, which has over 85% of the dairy cattle population in eastern Africa, dominates dairy production and marketing in the region. Its per capita milk availability is four to seven times higher than the other countries in the region. The widespread adoption of dairy cattle in Kenya was stimulated by several interacting factors: the conducive policy and institutional environments provided by successive Governments; the presence of significant dairy populations (owned by settler farmers); a sub-tropical geography suitable for dairy cattle; and smallholder communities who kept cattle and who had milk as an important part of their diet.</td>
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<td>Waithaka, M.M., Nyangaga, J.N., Staal, S.J., Wokabi, A.W., Njubi, D., Muriuki, K.G., Njoroge, L.N. and Wanjohi, P.N. (2002) Characterisation of Dairy Systems in the Western Kenya Region. Smallholder Dairy (Research and Development) Project Research Report. SDP.</td>
<td>In the second phase of the Smallholder Dairy Project (SDP), as well as continuing work in central Kenya, attention was given to western Kenya where lessons learnt from the central and coastal regions of Kenya would be applied. Western Kenya shares a number of features that present an opportunity for smallholder dairy research and development. The climate is favourable for dairy production and average farm sizes are declining rapidly due to increasing population pressure.</td>
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<td>Waithaka, M.M., Wokabi, A., Nyangaga, J., Ouma, E., de Wolff, T., Biwott, J., Staal, S., Ojowi, M., Ogidi, R., Njarro, I. and Mudavadi, P. (2000) A Participatory Rapid Appraisal of Farming Systems in Western Kenya. Smallholder Dairy (Research and Development) Project Research Report. SDP.</td>
<td>In the second phase of the Smallholder Dairy Research and Development Project (SDP), as well as continuing work in central Kenya, attention will be given to western Kenya where lessons learnt from the central and coast regions of Kenya will be applied. Western Kenya shares a number of features that present an opportunity for smallholder dairy research and development. The climate is favourable for dairy production and average farm sizes are declining rapidly due to increasing population pressure.</td>
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<td>A cross-sectional survey covering 63 households (HH), in three administrative locations of Limuru Division in Kiambu District, was carried out by means of a structured questionnaire. This resource can be found at: <a href="http://www.smallholderdairy.org/publications/Thesis/Wambugu-2000-MSc%20thesis.pdf">http://www.smallholderdairy.org/publications/Thesis/Wambugu-2000-MSc%20thesis.pdf</a>. Last accessed 4/8/2009</td>
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<td>A survey was conducted to evaluate the use of Milk Urea Nitrogen (MUN) as an indicator of the nutritional status of lactating animals. 27 animals in a randomly selected sample of 21 farms in Kiambu District were monitored for nutritional status for 12 weeks. Fortnightly records were taken on feed offered, body condition, body weight and milk yield. Milk samples were collected weekly and analysed for MUN. Preliminary results indicated that there was a significant negative correlation between MUN and milk yield, and a marginal correlation between MUN and body weight. There was no significant relationship between MUN and Body condition score.</td>
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