Can quality-based milk payments improve milk safety?

Policy insights from a pilot project in Kenya

Policy Brief
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Can paying "quality milk bonuses" to farmers lead to safer milk and trigger improvements across the entire dairy value chain? In order to test how a quality-based milk payment system (QBMPS) might work in practice, dairy processor Happy Cow Ltd implemented a pilot project between 2015 and 2019, in collaboration with two of its smallholder-focused dairy cooperative enterprises in Nakuru and Nyandarua counties. The project was co-financed by the Kenya Market-led Dairy Programme (KMDP) of SNV Netherlands Development Organisation with support from the Embassy of the Kingdom of the Netherlands in Nairobi.

This Policy Brief highlights key policy learnings from the project, based on a study conducted by researchers from the 3R Kenya Project (Ndambi et al, 2019). The recommendations build on data gathered by the project, as well as broader analysis focusing on some direct costs and benefits — to farmers, processors and consumers — of pursuing improved milk quality and safety. It is hoped that this information will enable key dairy stakeholders to address a number of systemic issues that continue to hinder the upscaling of such improvements across the dairy sector as a whole.

The total annual public health costs of consuming unsafe milk in Kenya are estimated at KES 436 billion.

An equivalent of 855 full lives are lost annually in Kenya due to milk-related infectious diseases

The case for quality-based milk payments in Kenya

Annual per capita consumption of milk in Kenya is projected to grow significantly by 2050. According to a survey by the Food and Agriculture Organization of the UN (FAO), rising demand for dairy products contributed to a 10.6% increase in the quantities of milk and cream processed in just one year (2017-2018), with cheese processing growing by 15.5% in the same period. Kenya's population is projected to double by 2050, while the Gross Domestic Product (GDP) per capita is expected to increase by over 140% in the same period. This presents an even greater economic opportunity for farmers, small and large processors, and other actors along the entire dairy value chain, to tap into the growing demand. The further expansion of the dairy sector also opens up opportunities for promoting safe and high quality milk and achieving co-benefits in the areas of food security, human health, improved income and a more competitive market environment.

Despite its strategic importance, however, Kenya's dairy sector remains largely informal, with the bulk of milk sold in its raw unprocessed form. Because most consumers prefer to purchase low-cost raw milk, and payments for farmers are based solely on the quantity of milk produced, there are few incentives for commercial actors to invest in quality milk processing and marketing.

Many studies have established the high risk posed by the consumption of poor quality and unsafe milk in Kenya. Unsafe milk may contain food-borne pathogens that cause diseases such as brucellosis, listeriosis and tuberculosis Moreover, antibiotic residues in milk may cause antibiotics resistance, which makes treatment of illnesses more difficult (FAO, 2017).

Key Messages

Many studies have established the high risk posed by the consumption of poor quality and unsafe milk in Kenya.

Kenya's weak regulatory environment contributes to the continued growth of informal milk markets and inhibits the emergence of a competitive and quality-based dairy industry.

If implemented in a coherent and comprehensive way, the National Dairy Development Policy and Dairy Sector Regulations 2017, and the related dairy standard (KS1552:2016) could spur improvements across the entire dairy value chain

To achieve sustained improvements on the supply side, there is need for consumer organisations and other stakeholders to "step up" demand for quality milk products.

The lack of adherence to quality and safety standards extends to the wider value chain and includes the use of poor quality livestock feed, non-food grade plastic containers for milking and transportation, and minimal testing and lack of rejection at collection points. These challenges are further exacerbated by limited consumer awareness, processor competition for milk volumes at the expense of quality, poor milk handling practices along the chain, and minimal enforcement of milk quality and safety standards.

Costs and benefits of improved milk quality: *Key findings from the Happy Cow pilot project*

Farmers: *In cash terms, farmers are the greatest beneficiaries of a well-functioning quality-based milk payment system (QBMPS). Farmers who met the quality standards required by Happy Cow and were thus awarded a bonus received an additional KES 742 in profit per month based on average milk sales of around 10.7 kg.*

Consumers: *Actions to promote consumer demand for safe milk are important in sustaining investments in QBMPS. Conducting awareness and advocacy campaigns at county and national levels to enhance understanding of the health impacts of unsafe milk consumption and strengthen demand for quality milk products are also critical.*

Dairy Cooperatives and Processors: *Reducing the current high levels of unsafe milk in the market will require enforcing quality standards for all actors in the dairy chain, including informal markets. Unless improvements are made to the current regulatory framework, investing in a QBMPS is not financially viable under the current market conditions in the country.*

A more detailed overview of the study findings and a cost-benefit analysis of improvements can be found in the related 3R Kenya research brief - 001,2018.

Poor milk quality also undermines the emergence of a competitive dairy value chain in the country. By strengthening the capacity of farmers to deliver quality milk and investing in the requisite quality control infrastructure by cooperatives and processors, a quality-based milk payment system can yield benefits for all actors involved. These include: higher income for farmers; lower milk rejection rates at collection points; reduced processing costs; and improved access to safe and quality dairy products for end consumers.

An overview of the QBMPS study

The QBMPS study distinguished between direct medical costs associated with consumption of unsafe milk products and indirect costs incurred from the reduction of work productivity or even deaths resulting from related illnesses. The total annual public health costs of consuming unsafe milk in Kenya are estimated at KES 436 billion, with direct costs constituting the bulk of this amount. It is further estimated that the costs of antibiotics resistance from residues in milk account for approximately KES 4.3 billion each year. Increased consumption of safe milk could therefore contribute to at least three of Kenya's Big Four strategic priorities: health, food and nutrition security, and manufacturing.

According to studies in other countries, implementing quality-based milk payment systems has improved the safety of milk supplies by providing economic incentives to all players to improve the quality of milk. However, given the huge investment required in the short and medium term – especially for processors – there is need for government support and coordinated policies across the entire dairy value chain and related sectors to ensure that the all actors contribute their fair share to quality improvements.

Furthermore, action at the systems level is a prerequisite for the further formalisation of the dairy sector and emergence of a more competitive market environment. This can in turn trigger innovation and quality improvements across the entire value chain.

A training on milk hygiene for members of a dairy farmersí cooperative in Nyeri county, with support from the SNV Kenya Market-led Dairy Programme.

Conclusions and policy recommendations

To move from the "business as usual" scenario of an informal milk supply chain with limited quality assurance towards a more formalised and accountable dairy sector in Kenya, there is need to address both the supply and demand sides. This includes raising awareness among consumers about the risks associated with unsafe milk products, and ensuring better enforcement of safety and quality standards.

The following are some specific recommendations emerging from the pilot QBMPS study.

Government and regulatory agencies

- Banning the use of non-food grade plastic cans.
- Devising a model for regulating the sale and use of dairy inputs such as livestock feed and antibiotics.
- Promoting public information and awareness campaigns to enhance milk quality.
- Establishing accredited laboratories at county level to ensure consistent and continuous monitoring of milk quality.
- Exploring opportunities to incentivise quality improvements by processors, for example through tax exemptions on laboratory testing equipment and other core infrastructure espoused in the Kenya Dairy Regulations 2017.
- Strengthen dairy extension services to farmers by both government and private sector extension agents through inclusion of quality standards of inputs, products and food safety, as called for in the National Agriculture Sector Extension policy.

Dairy cooperatives and processors:

- Investing in well-equipped laboratories and trained staff to ensure rigorous and continuous quality control of milk delivered at all collection points.
- Reject milk that does not meet quality and safety standards.
- Provide feedback and follow up training to farmers and transporters responsible for delivering poor quality milk to prevent further losses.
- Ensuring continuous training and extension, as well as credit provision to farmers, targeting improving milk quality, and facilitate farmers to acquire the necessary inputs such as aluminium cans, milk testing kits and aflatoxin-free feeds, as well as access to veterinary services.
- Strengthening self-regulation mechanisms within processor associations and other industry networks to promote uniform quality and safety standards across the dairy sector.

Kenya Dairy Board Nakuru Manager Bernard Simiyu hands over a permit to a milk bar owner from Njoro in Nakuru country

New dairy regulations

A review of existing studies of compliance by Kenya's dairy sector carried out by the International Food Policy Research Institute (IFPRI) in 2018 found that a substantial proportion of milk sampled "fails to comply with or more standards." The study called for an enforcement approach that allows firms to correct their actions if they are found to be in breach of quality standards.

The Kenya Dairy Industry Regulations (2017) propose laws governing various aspects of the dairy value chain, and include a recommendation that pricing of dairy produce be determined by incorporating values for quality-based payment systems. Some of specific areas covered by the regulations include:

- Licensing of dairy managers
- Transportation, storage and distribution of dairy produce
- Labelling and traceability of milk products
- Dairy equipment, materials and additives
- Management of dairy produce, personnel, equipment and facilities
- Requirements for milk testing laboratories and calibration of milk equipment and apparatus

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[The brief is a summary of a more comprehensive research report available at http://www.3r-kenya.org/]

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