

## FEED THE FUTURE INNOVATION LAB FOR LIVESTOCK SYSTEMS

### PERSPECTIVES ON POLICY SUPPORT TO THE RWANDA DAIRY SECTOR

**Acknowledgement:** This research brief was prepared by University of Florida's Ronald M. Gordon, John J. VanSickle, and Arie H. Havelaar.

#### Executive Summary

The 2013 Rwanda National Dairy Strategy states that the dairy sub-sector is important to the economic development of Rwanda and is an important tool in the impetus for poverty alleviation. In addition, the dairy sector is recognized as a significant contributor to the country's gross domestic product. Within this context, this Research Brief succinctly examines key policy areas that influence the production, marketing and consumption of milk and dairy products in Rwanda.

The discourse begins with an assessment of the 2016 Ministerial Order n° 001/11.30 that serves as the main policy instrument impacting the collection, transportation and selling of milk of specified quality standards. This brief also examines the circumstances pertaining to milk production, its transportation to milk collection and cooling centers (MCCs) and the selling of milk and milk products by vendors who operate milk bars and kiosks. Policy recommendations address reinforcing of the overarching dairy sector Ministerial Order n° 001/11.30 of 2016 and the upgrading and strengthening of the dairy sector infrastructure and support systems.

The need for policy collaboration involving the Ministry of Agriculture and Animal Resources (MINAGRI), with the Ministries of Infrastructure (MINIFRA), Local Government (MINALOC) and the respective Districts is also cited. Lastly, this brief reflects on the cadre of policy makers responsible for evaluating the impact of domestic policies on the dairy sector and recommends strengthening the professional scope of dairy sector policy makers.

#### Context

The Rwanda dairy sub-sector is envisioned to be a strong contributor to the national economy and a major pillar in the food security enhancement within Rwandan households through the sustainable production and consumption of wholesome milk and milk products. To facilitate this contribution requires a suite of policies and strategies to stimulate increased milk production by dairy farmers. It is also necessary to promote a greater flow of milk from dairy farmers through the formal market chain that provides for the processing of the milk into products that satisfy the established quality standards.

**Project:** Rwanda Enhancement for Enabling Policy Support to the Dairy Sector

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**Project area:** Dairy Sector Value Chain

## Assessment of Policy Options

The 2016 Ministerial Order n° 001/11.30, effective since October 2016, is intended to be the main policy instrument impacting the collection, transportation and selling of milk of specified quality standards. However, it seems not to be functioning well since several lapses have been reported and the sale of milk on the informal market competes strongly with milk distribution through the formal market for processed milk and milk products. The Ministerial Order (MO) is intended to promote the flow of milk of wholesome quality to consumers, but there is substantial non-compliance with this MO that results in a large volume of unprocessed milk being sold through the informal market. Among the key participants in the milk market value chain<sup>1</sup>, 100% of the industrial processors (4) were aware of the MO. In contrast, 60% of dairy farmers, 46% of milk transporters, and 10% each of cottage processors and milk collection and cooling centers (MCCs) were unaware of the MO<sup>2</sup>. Also, a large proportion of dairy farmers (62%) perceive the MO as ineffective because of its depression of prices and the degree of non-compliance by many market value chain participants. In addition, monitoring of the compliance of milk vendors with the MO is undertaken sporadically and usually on a publicly published schedule that allows the vendors to prepare for the visit of the inspectors, thereby defeating the monitoring objectives of assessing prevailing compliance with the MO. Consequently, the vendors sell mainly milk of sub-standard quality to consumers. Yet the milk vendors are a key consumer outlet for the informal market, through milk bars and kiosks.

The MO specifies that milk should be transported from dairy farmers to the milk collection and cooling centers (MCCs) in under 2 hours, and 84% of milk transporters (MTs) do so in 2 hours or less. But 16% of MTs take more than 2 hours to transport the milk and some of these (1.5% of the sample) take more than 3 hours. While 92% of the MTs surveyed use either a motorcycle or a bicycle to deliver the milk, the degraded conditions of the farm roads lead to increased time to transport milk to MCCs.

Dairy farmers cited the need for technical assistance to catalyze improvements in dairy production and milk output. Among other things, the technical assistance requirements cited were in the areas of animal husbandry, modern dairy farming techniques, the cultivation of improved grasses for feed, improved access to water and the construction of cowsheds. Access to more comprehensive and less costly veterinary services as well as the ability to conduct milk quality tests were also identified as critical for dairy farmers to be able to produce increased and better-quality milk output.

Only about 37% of the MCCs collect milk twice daily, while most farmers usually milk their cows twice each day. When there is no MCC to which the dairy farmers can deliver their milk, they sell to the informal market, donate the milk to friends or consume at home, among other things. This significantly constrains the volume of milk that can possibly be processed and marketed through the formal market. These circumstances suggest the expansion of the capacity of all MCCs to effectively deliver a twice-daily service of collecting and chilling milk for dispatch to the processors. The increased capacity of the MCCs underpins the goal of an increased flow of processed milk to the market.

The disease burden from the consumption of dairy products was evaluated by extracting data for Rwanda from the World Health Organization's Global Burden of Foodborne Disease study and collecting additional data to attribute the burden of dairy to specific products, like raw milk, through a Structured Expert Elicitation study. Experts participating in the study were from Rwanda or had a working knowledge of the Rwanda dairy value chain and related public health impacts. There were 57,500 illnesses occurring annually in Rwanda owing to consumption of dairy products, causing 55 deaths and a loss of 3,870 Disability Adjusted Life Years (DALYs) and causing a cost-of-illness of US\$3.2 million. The DALY metric integrates the impacts of morbidity and mortality in a single metric. One DALY can be considered as one healthy life-year lost. Five pathogenic micro-organisms were included in this assessment. Of these, *Campylobacter* spp., non-typhoidal *Salmonella enterica* and *Cryptosporidium* spp. contributed

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<sup>1</sup> Industrial processors, cottage processors, milk collection and cooling centers, dairy farmers, milk transporters and vendors.

<sup>2</sup> Vendors were not surveyed.

most to the number of cases. *Mycobacterium bovis*, non-typhoidal *Salmonella enterica* and *Campylobacter* spp. contributed most to deaths and DALYs. The disease burden of *Brucella* spp. was low by all metrics.

Survey responses were obtained from 15 policy makers whose professional disciplines encompassed agriculture (2), food science (5), veterinary medicine (3), animal sciences (4) and natural sciences (1). Eleven of the group had graduate degrees and, collectively, 13 members of the group had 5 or more years of experience. While the policy makers are equipped to cope with technical issues pertaining to the dairy sector, it seems that they may be challenged regarding knowledge of and application of the principles related to the economics of agriculture and natural resources with respect to the dairy sector. Accordingly, it is advocated that the cadre of policy makers within the Ministry of Agriculture and Animal Resources (MINAGRI) be augmented with professionals from the disciplines of agricultural economics, the economics of natural resources' utilization and sociology.

Of the burden of dairy, 13,300 illnesses, 26 deaths, 1,700 DALYs and USD \$1.4 million were attributed to drinking raw milk. Thus, the burden of drinking raw milk constituted 44% of the DALY burden of dairy products. Sizeable proportions of the burden were also attributable to the drinking of traditionally (16-23%) or industrially (6-22%) fermented milk. Transitioning from consuming raw to processed milk (fermented, heat treated or otherwise) may prevent a considerable disease burden and cost-of-illness, but the full benefits will only be achieved if there is a simultaneous improvement of pathogen inactivation during processing and the prevention of recontamination of processed products.

## Recommendations

- 1) Reinforce the regulations in the Ministerial Order n° 001/11.30 of 10/02/2016 (MO), periodically, through random monitoring and evaluation visits to the respective constituents of the milk value chain and a more diligent monitoring of the adherence to the MO. Establish collaboration with the local governments in the respective Districts regarding the monitoring of adherence to the MO. Consider possible sanctions against those value chain actors for non-compliance with the MO.
- 2) Design a long-term development plan to upgrade farm/feeder roads in collaboration with the Ministries of Infrastructure (MINIFRA), Local Government (MINALOC), and the respective Districts. This can then be implemented in stages so that it provides relief in an optimal manner.
- 3) Strengthen and expand the current suite of dairy extension services in the areas of animal husbandry (inclusive of more productive breed stock), modern dairy farming techniques (inclusive of optimal local feeding systems), comprehensive lower cost veterinary services and milk quality testing.
- 4) Expand the capacity of all MCCs to effectively deliver a twice daily service of collecting and chilling milk for dispatch to the processors, progressively. This is in recognition that most dairy farmers milk their cows twice daily. Given that many MCCs are constrained to meet the cost of utilities, expansion of their service should be considered in conjunction with the adoption of solar or other technologies that can ultimately contribute to reduced operation costs.
- 5) Promote the culture of consumption of processed milk and dairy products as well as encourage, more widely, the boiling of milk before it is consumed. Concurrently, improve control of milk processing and prevention of recontamination.
- 6) Augment the cadre of policymakers within the Ministry of Agriculture and Animal Resources (MINAGRI) with professionals from the disciplines of agricultural economics, the economics of natural resources' utilization and sociology, in a timely manner, to augment understanding of what motivates dairy value chain actors and to facilitate more comprehensive analyses of the factors influencing the marketing of milk.

- 7) Undertake routine monitoring of the impact of all policy instruments to develop a database that allows evaluation and assessment of the impact of respective policy instruments. This monitoring will enable appropriate policy adjustments.

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