



LV CONVEGNO DI STUDI

METAMORFOSI VERDE
AGRICOLTURA, CIBO, ECOLOGIA

Complesso monumentale di San Pietro
Dipartimento di Scienze agrarie, alimentari e ambientali
PERUGIA 13-15 settembre 2018

'Bread and butter': smallholders food security and innovation in the value chain. A case study in the dairy sector of Rwanda

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Abstract

Background - Despite more than two decades of market liberalization in Africa and considerable efforts to transform smallholder agricultural sector from subsistence to commercial production, farming remains subsistence oriented, and is unable to meet changing market demand as well as to improve food security. Private sector often lacks knowledge of smallholder segment as a market for their products and services, and as potential suppliers of their inputs. Addressing this missing link between smallholder farmers and other key value chain actors is vital for rural development.

In Rwanda the dairy sector contributes about 33% to agricultural GDP and 6% to the national GDP. With a population of 11.1 million people, Rwanda has a per capita milk consumption of 40 litres per annum which is below the level of other Eastern Africa countries such as Kenya (Usaid-Kaves, 2015).

Smallholders have a low level of income, high poverty rate and face various exogenous risks emanating from the biophysical and socio-economic environment in which they operate. These risks coupled with farm specific resource endowments and constraints affect the level and variability of household incomes. In the last years, dairy value chain development has been considered as a promising solution for income generation and food security and several development initiatives have been implemented in the country (Kuyiah, 2006).

The present study aims to analyse the participation of Rwandan smallholders in the dairy value chain . We focus on the Kirehe District which is an area where the innovative introduction of the climate-smart *Brachiaria* grass in forage-livestock systems has been piloted, with the goal to increase productivity and income of dairy farmers Research activities were financed by the Project H2020 InnovAfrica. Even if, due to data constraints, only the site district will be taken into account, results will provide useful indications about the economic opportunities and barriers to the development of smallholders' engagement in value chains, which can be extended to other similar contexts in the Region.

Methodology - Value Chain Analysis (VCA) rests on the segmentation of different activities and mapping of interactions that may generate costs or value in the production and sale of products or services. VCA uses both qualitative and quantitative methods in unlocking the complexity in value chain pathways and relationship between various actors (Usaid-Kaves, 2015; Kirimi et al., 2011; Hellin and Meijer, 2006).

We mapped the key actors (input suppliers, farmers, processors, retailers) active in the study site and their interactions.

There are not recent quantitative works analysing the smallholders' dairy value chain in Rwanda and reliable data were not available. Field activity (households' surveys, Focus Group Discussion, and key-informant interviews) was conducted in the case study area to fill the gap related to data availability. Outputs include: a value chain map showing the relevant actors, enabling environment (infrastructure, policies, institutions and processes that shape the market environment) and service providers (extension services); a SWOT (strengths, weaknesses, opportunities, and threats) matrix, which represents a general, qualitative starting point for any competitiveness strategy or other analysis for decision-making purposes (Webber and Labaste, 2009); product flows along the chain; and price analysis.

Preliminary results - The following actors constitute the building blocks of the mapped value chain: i) Milk is supplied by smallholder farmers (~90%) who breed improved race cows (1-2 cows/farmer - 20 litre/day per cow) and large farmers (~10%) who breed indigenous race cows (6 cows/farmer - 3 litre/day per cow); ii) input suppliers are represented by agro-dealers providing fertilizers, pesticides, seeds and vet drugs; iii) dairy cooperatives collect 30% of milk produced by local dairy farms (whereas the remaining 70% was identified as self-consumption), playing a major role in both the storage and the commercialization of milk; iv) a leader company, Inyange, processes the collected milk into diversified dairy products (e.g.: ghee, yogurt, butter) addressed to national and African markets; v) at retailing stage, the production is distributed to groceries (in the local area) and supermarkets (across the country).

The chain is favoured by an enabling institutional environment, with a strong focus on organizational elements, and the implementation of a well-developed subsidy system (e.g.: fertilizer, livestock asset). National agricultural policies are also perceived as conducive for innovations. This can be considered the main strength of Rwandan agriculture. However, the analyses highlighted many constraints to the overall development of the dairy value chain, especially with reference to the smallholders' engagement and the spread of proposed innovations: soil erosion, lack of fodder (in particular during dry season) and a general low use of inputs and technology account for an unstable milk supply. Moreover, due to low farm-gate prices, milk production is perceived by farmers as a not profitable economic activity.

keywords: Rwanda, Dairy VC

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