Mapping of smallholder dairy value chains in Ouagadougou and Dori, Burkina Faso

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Written by Hubert Some¹ and Augustine Ayantunde²

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²International Livestock Research Institute
Introduction

Milk and dairy products are a key source of essential nutrients, and are an important food product especially for children and pregnant and lactating women. Despite the large cattle livestock sector in Burkina Faso, milk production in the country is limited and dairy consumption is well below recommended levels. Most milk produced in the country derives from traditional low-yielding extensive farming system, with few semi-intensive dairy units mostly located in peri-urban areas. Increased urbanization in the country means the demand for milk and dairy products is increasing. Such demand is now being met primarily by imported milk powder, given that the current dairy production systems in the country are unable to satisfy this demand. On the other hand, such increased demand represents an economic opportunity for the dairy sector in the country and the government is planning investments to grow and modernize milk and dairy products production and marketing in the country. However, livestock intensification is associated with increased environmental impacts, as well as increased health hazards in larger and longer supply chains. The dairy sector and farm associated hazards is poorly known in Burkina Faso, and such information is required to appropriately inform policies and dairy sector development strategies.

Despite being an essential food nutrient, milk and dairy products are vulnerable to contamination with bacteria and important human foodborne pathogens. Health risk associated with *Salmonella* spp. and *Staphylococcus aureus* have been associated with consumption of milk and dairy products of poor microbiological quality. More recently, reports on high levels of aflatoxins in milk products and their associated carcinogenic effect and putative association with chronic malnutrition (stunting) in children have shown the importance of understanding the levels of such hazards in milk and dairy products and which management approaches can be used to limit their presence in the dairy supply chains.

In line with the planned project activities, a workshop was organized involving key smallholder dairy value chain actors on 10 October 2018 in Ouagadougou and on 11 October 2018 in Dori to inform key actors in dairy production and food safety about the project and to map the smallholder dairy value chain. The lists of participants at both meetings are in Annex 1 (18 at the meeting in Ouagadougou and 14 in Dori). The participants included dairy producers, processors and traders. Researchers from INERA and IRSAT also participated along with officials from the Ministry of Animal Resources and Fishery, Ministry of Health and food safety regulatory agency.

Mapping the dairy value chain

To guide the mapping of dairy value chain in peri-urban areas of Ouagadougou and in rural areas of Dori, the facilitator of the workshop introduced the value chain concept. The overall objective was to characterize smallholder dairy value chain in peri-urban area of Ouagadougou and in rural area of Dori to inform their strategic development and improve efficiency. The specific objectives were to (1) characterize the important activities and actors for the smallholder dairy value chain and (2) identify constraints, difficulties and possible interventions to improve the value chain.

For the mapping exercise, the participants were divided into three work groups in Ouagadougou representing production, processing and commercialization segments of the chain. Due to the low number of participants in Dori, there were only two work groups (production and processing). The instructions and questions for the work groups were as below.

A. Identification of actors
   - List all input suppliers by type and location of these providers for dairy production, processing and marketing.
   - List the different types of dairy products and their origins at the level of your production, processing and marketing activities.
   - List all clients or customers (type and size if possible).
• List dairy producer, processor or trader organizations who work with you.
• List all of the support services for dairy production, processing and marketing, and the nature of their services.

B. Identification of the constraints and difficulties
• List the main difficulties and constraints you have encountered in production, processing and marketing of milk products.
• What are the issues related to hygiene that you have encountered in the production, processing or marketing of milk products?

C. Identification of solutions
• What solutions do you suggest for a better organization of dairy value chain in Burkina Faso in terms of production, processing and marketing?
• What solutions do you suggest to resolve the identified difficulties and constraints?
• What action do you suggest to minimize and/or resolve constraints you have encountered?

The reports from the work groups were used for the mapping of the dairy value chain in peri-urban areas of Ouagadougou and in rural areas of Dori.
## Synthesis of dairy value chain work groups for Ouagadougou

<table>
<thead>
<tr>
<th>Identification of actors</th>
<th>Production</th>
<th>Processing</th>
<th>Commercialization (marketing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category of actor</td>
<td>• Government</td>
<td>• Processors’ organization unit and cooperatives (small-scale milk processing unit)</td>
<td>• Farms (COPROLAIT)</td>
</tr>
<tr>
<td></td>
<td>• Large producer</td>
<td></td>
<td>• Breeders, women processors or processing units (area of: Koubri, Laiterie de Fada, Pabré)</td>
</tr>
<tr>
<td></td>
<td>• Smallholder producers</td>
<td></td>
<td>• Supermarkets (Marina market, Surface, ALIMENTATION BON SAMARITIN)</td>
</tr>
<tr>
<td></td>
<td>• Cooperatives</td>
<td></td>
<td>• Government import</td>
</tr>
<tr>
<td></td>
<td>• Agricultural Inputs (seed, fertilizer): INERA, MRAH, MAAH, traders</td>
<td>• Fresh milk producers and collectors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Veterinary inputs (drugs, vaccines): MRAH, veterinary pharmacies</td>
<td>• Powder milk, sugar, aromas, packaging materials: traders in urban centres</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Zootechnic inputs (concentrate feeds, artificial insemination service): MRAH, SOFAB, SOFITEX, SN-CITEC, FASO COTON, GMB, small processors, small traders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input supplier</td>
<td>• Fresh milk, pasteurized milk, sour milk, yoghurt, cheese</td>
<td>• Yoghurt, fresh milk in sachet, pasteurized milk, sour milk, locally processed products (gappal – milk mixed with millet; dégué – yoghurt mixed with milk)</td>
<td>• Fresh milk, fermented milk, sour milk, yoghurt, powder milk, cheese, butter, condensed milk</td>
</tr>
<tr>
<td>Product</td>
<td>• Individual consumers (all products)</td>
<td>• Individual consumers</td>
<td>• Individual consumers, hotels</td>
</tr>
<tr>
<td></td>
<td>• Supermarkets (all products)</td>
<td>• Supermarkets</td>
<td>• Restaurants, hospitals</td>
</tr>
<tr>
<td></td>
<td>• Processing units by associations and cooperatives (fresh milk)</td>
<td>• Governmental and non-governmental institutions</td>
<td>• School restaurants</td>
</tr>
<tr>
<td></td>
<td>• UNICEF, Ministry of Education, WFP</td>
<td>• Sale outlets</td>
<td>• Boutiques</td>
</tr>
<tr>
<td></td>
<td>• Milk collection centres</td>
<td></td>
<td>• Military camps, prison services</td>
</tr>
<tr>
<td>Client (customer)</td>
<td>• Ministry of Animal Resources and Fishery: strengthening, technical support, veterinary cares, artificial insemination</td>
<td>• INERA: Capacity building</td>
<td>• Institutions that support commercialization and marketing of milk products (laboratories, regulatory bodies for quality of products to be marketed)</td>
</tr>
<tr>
<td></td>
<td>• Projects and NGOs (e.g. PADEL-B, PRAPS, VSP): financial and technical support,</td>
<td>• IRSAT: quality control and capacity building, technology development and dissemination</td>
<td>• Microfinance</td>
</tr>
<tr>
<td></td>
<td>• Ministry of Scientific Research and Innovation: applied research, improved seed</td>
<td>• ABNORM: advisory support, sensitization and sharing of information on quality standards</td>
<td>• Development projects and programs (training in marketing, market study)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• MRAH: technical support and technology dissemination</td>
<td>• Ecole Nationale d’Elevage et de la Santé Animale (National College on Livestock production and health) – training of the livestock farmers</td>
</tr>
<tr>
<td>Support Service</td>
<td>• PDEL/ZPO &amp; PADEL-B: technical and financial support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification of constraints and difficulties</td>
<td>• Non-availability and high cost of inputs</td>
<td>• Milk conservation/processing</td>
<td>• Conservation of milk products</td>
</tr>
<tr>
<td></td>
<td>• Low productive breeds</td>
<td>• Inadequate facilities for conservation and processing due to financial constraints, lack of access to credit</td>
<td>• Lack of infrastructures or facilities for conservation of milk products</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Non-compliance by the input suppliers</td>
<td>• Problem with transport of milk products</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lack of competence in appropriate technologies for conservation and processing due to insufficient training</td>
<td>• Limited access to markets by the producers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inadequate quantity of milk during the dry season</td>
<td>• Bad roads to transport milk</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Weak implementation of the regulations for quality control of milk products</td>
</tr>
</tbody>
</table>
### Production

- Lack of awareness and training in milk handling and hygiene
- Socio-cultural problem
- Poor conservation of fresh milk: inappropriate materials, lack of cold storage
- Sanitary problem: abusive use of antibiotics, udder infection

### Processing

- Dirty environment
- Contamination by pathogens
- Milk contamination by residues of veterinary drugs

### Commercialization (marketing)

- Presence of pathogens in fresh milk
- Poor packaging of milk products
- Use of materials that can contaminate the milk products

### Problems related to hygiene

- Lack of awareness and training in milk handling and hygiene
- Socio-cultural problem
- Poor conservation of fresh milk: inappropriate materials, lack of cold storage
- Sanitary problem: abusive use of antibiotics, udder infection

### Solutions

#### Organization of dairy value chain

- Organizing the actors into cooperatives and producers' associations
- National regulations for cooperatives and producers' association
- State support

#### Suggested solutions to constraints and difficulties identified

- State subsidy for inputs and equipment
- Infrastructural development particularly good road network
- Policy that promote local production and value addition, for example high tax on imported dairy products
- Better access to credit by smallholder dairy producers
- Improvement in technical support services

### Commercialization (marketing)

- Presence of pathogens in fresh milk
- Poor packaging of milk products
- Use of materials that can contaminate the milk products

#### Organization of dairy value chain

- Incentives for functioning associations

#### Establishment of platform for all the actors in dairy value chain

- Application of good practices for milk conservation and processing
- Improved energy supply by the State
- Promotion of renewal energy
- Awareness building in implementation of standard control measures
- Training of the actors
- Support for producers' and processors' associations
- Promotion of sale of processed milk products by institutions

#### Establishment of platform for all the actors in dairy value chain

- Facilitate access to renewable energy e.g. solar energy
- Subsidy for materials for conservation of milk products
- Establishment of innovation platform to link different actors in the value chain
- Strengthening the organization of the value chain and the actors
- Rehabilitation of roads to better link the producers to the market
- Building awareness and training of the actors in quality control
Dairy value chain mapping in urban areas of Ouagadougou

<table>
<thead>
<tr>
<th>Segment/Activity</th>
<th>Actors and Flows of Dairy products between actors</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSUMERS</td>
<td>Individual consumers</td>
</tr>
<tr>
<td></td>
<td>Households/ institutions</td>
</tr>
<tr>
<td></td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Export: Niger Mali</td>
</tr>
<tr>
<td>WHOLESALE TRADERS</td>
<td>Traders from Koubri and Ouagadougou</td>
</tr>
<tr>
<td></td>
<td>Supermarkets: Bon Samaritain – Marina Market</td>
</tr>
<tr>
<td>PROCESSERS</td>
<td>Private processors: 20 laiteries dans la zone Périurbaine</td>
</tr>
<tr>
<td></td>
<td>SOPROLAIT: 30,000 l/jr</td>
</tr>
<tr>
<td>PRODUCERS</td>
<td>Collector</td>
</tr>
<tr>
<td></td>
<td>UNPL</td>
</tr>
<tr>
<td></td>
<td>Laitière de Pabré</td>
</tr>
<tr>
<td></td>
<td>Moines de Koubri</td>
</tr>
<tr>
<td></td>
<td>Laiterie de Cissin/état</td>
</tr>
<tr>
<td>PRODUCERS</td>
<td>Small individual</td>
</tr>
<tr>
<td></td>
<td>COPROLAIT 278 members</td>
</tr>
<tr>
<td></td>
<td>Laitière de Pabré</td>
</tr>
<tr>
<td></td>
<td>Moines de Koubri</td>
</tr>
<tr>
<td></td>
<td>UNPL</td>
</tr>
<tr>
<td></td>
<td>Laiterie de Pabré</td>
</tr>
<tr>
<td></td>
<td>Moines de Koubri</td>
</tr>
<tr>
<td></td>
<td>CMAP Loumbila/état</td>
</tr>
<tr>
<td>INPUTS SUPPLIERS</td>
<td>Agricultural Inputs: INERA – MRAH – MAAH – Traders</td>
</tr>
<tr>
<td>Services Supplier</td>
<td>Veterinary inputs: MRAH – PHARMACIES PRIVATE VETS</td>
</tr>
<tr>
<td></td>
<td>Inter profession: IPROLAIT (11 OPL - 900 members)</td>
</tr>
<tr>
<td></td>
<td>Zootechnic inputs: MRAH, SOFAB, SOFTEX, SN-CITEC, FASO COTON, GMR processors small traders</td>
</tr>
</tbody>
</table>

Legend
- - - - Input flows and services provided by the actors (producers)
- - - Flow of milk products among the actors
- - - Flow of milk products among the organized actors
## Synthesis of dairy value chain work groups for Dori

<table>
<thead>
<tr>
<th>Identification of actors</th>
<th>Category of actor</th>
<th>Members of work group</th>
</tr>
</thead>
</table>
| Input supplier           |                    | • Dicko Boakimba Abdoulaye  
                           |                    | • Bocoum Boureimta Manga  
                           |                    | • MODIBO Ouamarou  
                           |                    | • IDO lorou  
                           |                    | • Diallo Amadou  
                           |                    | • Amadou Boureimta  
                           |                    | • Dicko Amadou |
| Product                  |                    | • Fresh cow and goat milk  
                           |                    | • Fresh milk in sachet, yoghurt, gopal (milk mixed with millet grain), soup from milk processing, oil from milk processing, cheese |
| Client (customer)        |                    | • Individual consumers (all products)  
                           |                    | • Supermarkets et small shops (all products)  
                           |                    | • Small milk processing units in Dori, small milk processing units owned by cooperatives (fresh milk)  
                           |                    | • Milk collection centres  
                           |                    | • UNICEF, Ministry of Education, WFP |
| Support service          |                    | • Ministry of Animal Resources and Fisheries: training, technical advisory services, veterinary service, artificial insemination  
                           |                    | • Projects et NGOs: subsidized improved sorghum and cowpea seeds  
                           |                    | • INERA: Capacity building  
                           |                    | • State: subsidy on agro-industrial by-products  
                           |                    | • REGIS ER (USAID project): cotton seed cake and goats  
                           |                    | • Ministry of Scientific Research and Innovation: training, applied research, improved seeds |
| Identification of constraints and difficulties | Constraints | • Reduction in feed biomass and quality  
                           |                    | • Low access to agro-industrial byproducts (non-availability and high cost)  
                           |                    | • Water scarcity particularly in the dry season  
                           |                    | • Animal diseases  
                           |                    | • Low value addition  
                           |                    | • Sale of fresh milk in traditional ways  
                           |                    | • Inadequate watering points for animals |
| Problems related to milk hygiene |                      | • Traditional milking practices  
                           |                    | • Lack of training in modern milking techniques and milk hygiene  
                           |                    | • Inadequate knowledge about dairy husbandry  
                           |                    | • Lack of appropriate materials for milking  
                           |                    | • Poor hygiene of materials used for milking |
| Solutions                | Organization of dairy value chain | • Constructing the key actors in a platform  
                           |                    | • Building capacity of difference actors in the value chain  
                           |                    | • Technical and financial support to the producers' associations or platforms |
| Solutions                |                    | • Construction of water points (drains, well and hand-pumped well)  
                           |                    | • Rehabilitation of degraded rangelands for use by the pastoralists  
                           |                    | • Establishment of feed mills in the region  
                           |                    | • Strengthening veterinary services (providing necessary materials and recruiting new staff)  
                           |                    | • Protection of the existing pastoral zones from encroachment  
                           |                    | • Promotion of cultivation of forage plants  
                           |                    | • Strengthening the capacity of producers in feed conservation and processing techniques |

- **Members of work group**
  - Dicko Boakimba Abdoulaye
  - Bocoum Boureimta Manga
  - MODIBO Ouamarou
  - IDO lorou
  - Diallo Amadou
  - Amadou Boureimta
  - Dicko Amadou
  - Diallo Boureimta

- **Input supplier**
  - Agricultural inputs: INERA, Ministry of Animal Resources, Ministry of Agriculture and water resources, traders
  - Veterinary inputs: State veterinary services, Private veterinary shops
  - Zootechnic inputs (cotton seed cake, cereal bran, agro-industrial byproducts, mineral block, multi-nutrient block)
  - Small-scale traders at markets in Dori

- **Product**
  - Fresh cow and goat milk

- **Client (customer)**
  - Individual consumers (all products)
  - Supermarkets et small shops (all products)
  - Small milk processing units in Dori, small milk processing units owned by cooperatives (fresh milk)
  - Milk collection centres

- **Support service**
  - Ministry of Animal Resources and Fisheries: training, technical advisory services, veterinary service, artificial insemination
  - Projects et NGOs: subsidized improved sorghum and cowpea seeds
  - INERA: Capacity building
  - State: subsidy on agro-industrial by-products
  - REGIS ER (USAID project): cotton seed cake and goats
  - Ministry of Scientific Research and Innovation: training, applied research, improved seeds

- **Identification of constraints and difficulties**
  - Reduction in feed biomass and quality
  - Low access to agro-industrial byproducts (non-availability and high cost)
  - Water scarcity particularly in the dry season
  - Animal diseases
  - Low value addition
  - Sale of fresh milk in traditional ways
  - Inadequate watering points for animals

- **Problems related to milk hygiene**
  - Traditional milking practices
  - Lack of training in modern milking techniques and milk hygiene
  - Inadequate knowledge about dairy husbandry
  - Lack of appropriate materials for milking
  - Poor hygiene of materials used for milking

- **Solutions**
  - Constructing the key actors in a platform
  - Building capacity of difference actors in the value chain
  - Technical and financial support to the producers' associations or platforms

- **Solutions**
  - Construction of water points (drains, well and hand-pumped well)
  - Rehabilitation of degraded rangelands for use by the pastoralists
  - Establishment of feed mills in the region
  - Strengthening veterinary services (providing necessary materials and recruiting new staff)
  - Protection of the existing pastoral zones from encroachment
  - Promotion of cultivation of forage plants
  - Strengthening the capacity of producers in feed conservation and processing techniques

- **Identification of actors**
  - Farmer groups (many producers' associations, each consisting of at least 15 members)

- **Identification of actors**
  - 12 processing units (Unite de transformation de lait des groupements et cooperatives - mini laiterie) such as COSAM SAAYE, COSAM NAHOUDEGUL, COSAM TORDEM, Madin, AZAWAKI

- **Identification of actors**
  - Fresh Milk: Village milk collectors, milk collectors in Dori
  - Gallons for milk collection: traders from Ouagadougou and Dapoya, import from Ghana
  - Approved sugar by the National Laboratory for Public Health, Ouagadougou
  - Approved sugar from local sources
  - Millet grain for Gopal: traders at Dori market

- **Identification of actors**
  - Individual consumers
  - Supermarkets et small shops (all products)
  - Local retailers (boutiques, processing units in Dori and Faguountoa)
  - Retailers from Ouagadougou
  - WFP
  - Mining companies (IAM-Gold)
  - Supermarkets (Alimentation Bon Samaritain)

- **Identification of actors**
  - National Laboratory on Public Health: control of milk quality and hygiene
  - Livestock services: training in good hygiene practices, milk processing techniques
  - WFP: improved milk processing techniques and materials
  - INERA: multi-nutritional blocks

- **Identification of actors**
  - Sack cows
  - Hygiene during processing and pasteurization of milk
  - Hygiene problem related to materials used

- **Identification of actors**
  - Inadequate energy supply for conservation of dairy products
  - Transport problem
  - Fluctuation in price of fresh milk particularly at producer level
  - Insufficient quantity of agro-industrial by-products
  - Inadequate quantity of milk produced
  - Strong imbalance between demand and supply
  - Non-compliance with regulatory norms

- **Identification of actors**
  - Dicko Mariama
  - Mme Barry/dicko Aminata
  - Dr Augustine Ayantunde
  - UNICEF, Ministry of Education, WFP
  - Mining companies (IAM-Gold)

- **Identification of actors**
  - Dicko Mariama
  - Mme Barry/dicko Aminata
  - Dr Augustine Ayantunde
  - UNICEF, Ministry of Education, WFP
  - Local retailers (Ibrahima)
  - Supermarkets (Alimentation Bon Samaritain)
Dairy value chain mapping in rural zone in Dori

Segment / Activity | Actors & Flow of Dairy Products between Actors
--- | ---
CONSUMERS | Individual consumers → Households/institutions/WFP/Schools/Minning companies → Supermarket → Export: Niger Mali
TRADERS | Retailers Ouagadougou → Retailers DORI → Supermarkets: Bon Samaritain – Marina Market – etc.
PROCESSORS | Processing units in rural → Processing unit - Dori → Association AZAWAK → Madin → COSAM TORDAM → COSAM SAAYE → Association Vaches Rouges
PRODUCERS | Smallholder producers → AZAWAK 42 Femmes → Producers Association → Informal producers associations
INPUT & SERVICE PROVIDERS | Cereal bran, feed market → APRESS, CRUS → Packaging Ouaga → Packaging Ghana → Zootecnic inputs (seed cake, mineral block, veterinary services)

Legend
- Input and service flows among actors (producers)
- Milk product flows among actors
- Milk product flows among organized actors
Annex 1: List of participants

Available upon request
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