Working Document

WP3

Agroecological characteristics of dairy value chain stakeholders' business models in Bobo-Dioulasso



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The CGIAR Initiative Transformational Agroecology across Food, Land, and Water Systems develops and scales agroecological innovations with small-scale farmers and other food system actors in seven low- and middle-income countries. It is one of 32 initiatives of CGIAR, a global research partnership for a food-secure future, dedicated to transforming food, land, and water systems in a climate crisis.
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1 Introduction

In Burkina Faso, dairy consumption is low (around 20 kg/capita/year). However, consumption is rising and will continue to do so in the years to come as a result of population growth and rising spending power. Dairy products made from local milk are in growing demand. Consumers are increasingly looking for good quality dairy products, made from fresh milk, and available in a wide range of forms (liquid milk, yoghurts in a variety of flavours, dégué, gapal, cheese, butter, etc.). There is, however, significant competition from dairy products made from low-cost imported milk powder. As a result, dairy value chain stakeholders need to innovate at every level of the agri-food chain to meet this emerging demand over the long term.

In Burkina Faso, operations focus on the dairy value chain and are carried out as part of an Agroecological Living Landscape (ALL). This ALL is based on Bobo-Dioulasso's multi-stakeholder Dairy Innovation Platform (DIP), which was set up in 2020 and extended to new members in 2023 so as to form an ALL.

In 2023, the Dairy Innovation Platform was further consolidated into an Agroecological Living Landscape with the inclusion of new members and partners as part of the CGIAR Initiative on Agroecology project. Activities were carried out in all five of the project's Work Packages (WPs) and generated data and results that will be used in 2024 to co-design an Agroecological Business Model for the local dairy value chain.

Consequently, as part of this co-design process, the current business model needed to be documented and clarified in terms of its standing in relation to agroecology based on the 13 elements commonly used today to assess the agroecological nature of an agri-food system (Wezel et al., 2020).

To this end, WP3 ('*Developing an inclusive business model and financial strategies relevant to Bobo Dioulasso's dairy value chain*') facilitators suggested characterising the current business models of stakeholders operating upstream in Bobo-Dioulasso's dairy value chain (agro-pastoral dairy farmers, mini-dairy farms, milk collection centres, independent collectors, processing units using local milk and processing units using milk powder) based on the knowledge of the industry as outlined by Sib et al. (2023).

In order to confirm current business models, focus groups involving representatives of the various segments of Bobo Dioulasso's dairy value chain were set up on 19 and 20 February 2024 in the CIRDES (*Centre International de Recherche-Développement sur l'Élevage en zone Subhumide*) training room.

This helped to identify the characteristics of business models that were either aligned or at odds with the 13 elements of agroecology. The purpose of this final stage was to identify the elements that will need to be addressed in order to develop an agroecological business model for the dairy industry.

2 Method

2.1 Workshop facilitation

2.1.1 Plenary session

Prior to focus groups being set up for each category of dairy value chain (DVC) stakeholders, a plenary session was held to provide context and information to the various stakeholders as to i) the purpose of a Business Model (BM) and its relevance to the various parts of the DVC, and ii) the Business Model Canvas and its various components.

Business Model: In a corporate context, a business model is a conceptual structure that defines how a company creates, delivers and captures value. It describes a company's value creation approach by identifying its revenue streams, costs, target customers and value proposition.

Business Model Canvas: The Business Model Canvas is a strategic management and business start-up tool for developing new business models or documenting existing ones. It is a visual diagram (Table 1) with details about a company's value proposition, infrastructure, customers and finances. Developed by Osterwalder and Pigneur (2010), the Canvas is widely used by start-ups and established companies seeking to understand, design and iterate on their business models. It is made up of 9 building blocks.

1) **Value Proposition**: This describes the products or services that meet the needs or solve the problems of the target customer segments.
2) **Key Partners**: External entities that contribute to the value proposition and overall operation of the business model.
3) **Key Activities**: Critical steps a company must take to operate successfully and deliver its value proposition.
4) **Customer Relationships**: This refers to how a company interacts with its customers through the various stages of the customer journey in order to build and maintain relationships.
5) **Customer Segments**: These are the different groups of people or businesses that the company aims to reach and serve.
6) **Key Resources**: Assets required to deliver the value proposition, such as human resources, physical resources, intellectual property, etc.
7) **Distribution Channels**: Ways in which a company reaches and interacts with its customers to deliver its value proposition.
8) **Cost Structure**: Expenses associated with running the business model, including fixed and variable costs.
9) **Revenue Streams**: Sources of income derived from the value propositions offered to customers.

Table 1. BM Canvas for Bobo Dioulasso's dairy value chain (Burkina Faso)

<table>
<tr>
<td rowspan="2"><u>Key Partners</u>
Who are our partners (upstream)? Which resources are we acquiring through partners? What are our partners' key activities?</td>
<td><u>Key Activities</u>
What key activities do we need for our value proposition? Our distribution channels? Our customer relationships? Our revenue streams?</td>
<td rowspan="2"><u>Value Proposition</u>
Which customer need are we satisfying? How does our proposal effectively meet our customers' needs?</td>
<td><u>Customer Relationships</u>
In what ways are we ahead of the competition? How can we protect ourselves from this competition?</td>
<td rowspan="2"><u>Customer Segments</u>
Which customers is our solution designed for (list them)?</td>
</tr>
<tr>
<td><u>Key Resources</u>
What key resources do we need for our value proposition? Our distribution channels? Our customer relationships? Our revenue streams?</td>
<td><u>Distribution Channels</u>
Through which communication and distribution channels do you reach your customers? What are the highlights of your customer relationships?</td>
</tr>
<tr>
<td colspan="3"><u>Cost Structure</u>
What key resources and activities are most expensive?</td>
<td colspan="2"><u>Revenue Streams</u>
Where does the revenue from our business come from? Who pays for our products? What added value do we generate? Which offer do our customers currently pay for?</td>
</tr>
</table>

2.1.2 Focus group

Over the course of the two-day workshop, six Focus Group Discussions (FGDs) were held, each comprising 4 to 7 people (Table 2).

Table 2. Focus Group schedule

Dates	Focus Groups	Facilitators
19/02/2024	Agro-pastoral dairy farmers: 6 participants + 2 facilitators	Etienne SODRE & Ollo SIB
	Milk Collection Centres: 7 participants + 2 facilitators	Michel OROUNLADJI & Hati KONATE
	Mini-dairies using mainly local milk: 7 participants + 2 facilitators	Souleymane SANOGO & Désiré OUATTARA
20/02/2024	Mini (semi-intensive) dairy farms: 4 participants + 2 facilitators	Etienne SODRE & Ollo SIB
	Independent milk collectors: 6 participants + 2 facilitators	Michel OROUNLADJI & Hati KONATE
	Mini-dairies using milk powder: 6 participants + 2 facilitators	Désiré OUATTARA & Souleymane SANOGO

2.1.3 Focus group facilitation

Focus group facilitation involved the following steps:

1) Component breakdown of contents validated by researchers. Participants were then asked whether or not they agreed with the proposals. They then made suggestions where necessary.

2) Consolidation of the various contributions and validation of current BMs.

3) Outlook: participants were informed that this exercise would be repeated in subsequent stages of the agroecological BM co-design process (cost/benefit analysis workshops for Ae packages validated by farmers, collection centres and local milk processors; an Ae package being a set of innovations that reinforce the Ae character of a business operation, as validated by stakeholders representing the occupational group).

2.2 Identifying the Ae characteristics of dairy industry stakeholders' business models

The agroecological characteristics of the six business models were identified and intensity-scored by experts (i.e. IAE researchers) using the 13 elements of agroecology described by Wezel et al. (2020)

To this end, we used a simple grid (Table 3) in which each main line refers to one of the 13 AE elements and where each AE characteristic associated with a principle is briefly described and then scored according to its intensity level on the following scale: + low, ++ moderate; +++ high; or - not agroecological)

The purpose of this final stage in the description of current BMs is to identify the elements that will need to be addressed in order to develop an agroecological business model for the dairy industry.

Table 3. Agroecological characterisation table for each BM

Elements of agroecology	BM's agroecological characteristics	-	+	++	+++
1. Recycling					
2. Input Reduction					
3. Soil Health					
4. Animal Health					
5. Biodiversity					
6. Agroecosystem Synergies					
7. Economic Diversification					
8. Co-Creation of Knowledge					
9. Social Values and Diets					
10. Fairness in Trade					
11. Connectivity between Stakeholders					
12. Land and Resource Governance					
13. Participation					

3 Results

Results are shown by occupational group using two tables: 1) The first table shows the current BM as validated by the occupational group stakeholders; 2) The second table shows the BM's agroecological characteristics in relation to the 13 elements of agroecology.

3.1 Agro-pastoralists - Business Model and Ae characteristics

Table 4. Agro-pastoral dairy farmers (> 200 units) - Business Model Canvas

<table>
<tr>
<td rowspan="2"><u>Key Partners</u>
Agro-pastoralist community (supply of breeding bulls and females, plus various services: animal health, etc.)
Private veterinarians
Feed suppliers (including crop residues)
Collection centres (training)
Livestock and agriculture departments
DIP
Research bodies
Local authorities
Livestock farmers' organisations
NGOs
Traditional authorities</td>
<td><u>Key Activities</u>
Production, self-consumption and sale of cow's milk
Livestock farming (main activity)</td>
<td rowspan="2"><u>Value Proposition</u>
To produce and sell a large quantity of quality milk from a known source to customers at local markets and to mini-dairies in Bobo-Dioulasso, mainly in the rainy and cold dry seasons, in order to meet household needs</td>
<td><u>Customer Relationships</u>
Tradition and expertise
Lower production cost
Highlighting the benefits of local milk
Competition: imported milk powder</td>
<td rowspan="2"><u>Customer Segments</u>
Door-to-door customers and markets
Independent collectors
Collection centres
Mini-dairies (less common)</td>
</tr>
<tr>
<td><u>Key Resources</u>
Rural land
Spontaneous pastures
Crop residues
Supplementary livestock feed
Surface water (sump, borehole)
Local zebu breeds
Family labour and shepherd
Traditional skills (selection of dairy cows from the herd)
Veterinary products
Cattle tracks
Surface water (ponds, rivers, etc.)</td>
<td><u>Distribution Channels</u>
Direct sales to markets and private individuals (women)
Farm-gate sales to collectors
Delivery to collection centre
Occasional direct sale to a dairy
Direct on-farm sale to consumers

Highlights:
Hauts-Bassins Milk Marketing Days (MMDs)
Monthly meetings with MCCs
Meetings with DPUs at the start of the rainy season</td>
</tr>
<tr>
<td colspan="3">Cost Structure
Acquisition of dairy cows and breeding bulls
Quality livestock feed and fodder
Standard veterinary care
Water procurement
Workforce</td>
<td colspan="3"><u>Revenue Streams</u>
Milk buyers: Market and door-to-door customers, Independent collectors, Collection centres, Mini-dairies (less common)
Sale of male calves and cull females
Sale of animal dung</td>
</tr>
</table>

Table 5. Agro-pastoralists - BM's agroecological characteristics and intensity level (+: low, ++: moderate; +++: high; - not agroecological)

Elements of agroecology	Agroecological characteristics	-	+	++	+++
1. Recycling	Crop co-products recycled as fodder		X		
	Crop and livestock co-products recycled as OM on farms		X		
	Livestock co-products recycled as OM on local land		X		
2. Input Reduction	Use of livestock feed in the dry season			X	
	Standard veterinary care	X			
3. Soil Health	Organic fertilisation of farmland			X	
	Soil preservation and protection	X			
4. Animal Health	Standard veterinary care	X			
	Traditional veterinary care				X
5. Biodiversity	Promoting local breeds				X
	Use of pastures and surface waters				X
6. Agroecosystem Synergies	Interactions between crops, livestock and trees		X		
7. Economic Diversification	Livestock sales, milk sales, organic manure sales			X	
8. Co-Creation of Knowledge	Promoting local expertise in pastoral livestock farming				X
9. Social Values and Diets	Production and sale of quality milk			X	
10. Fairness in Trade	Women's place and role in the household and dairy economy		X		
11. Connectivity between Stakeholders	Diverse customer base (private individuals, MCCs, collectors, mini-dairies)			X	
12. Land and Resource Governance	Involvement in agro-sylvo-pastoral (ASP) resource management		X		
13. Participation	Involvement in livestock farmers' organisations, local authorities and NGOs			X	

3.2 Mini-dairy farms - Business Model and Ae characteristics

Table 6. Mini (semi-intensive) dairy farms (~10 units) - Business Model

<table>
<tr>
<td rowspan="2"><u>Key Partners</u>
Feed suppliers
Private veterinarians
Artificial insemination service providers
Livestock and agriculture departments
Basic dairy farming equipment suppliers
(Private livestock consultants)
DIP
SCOOPs
Research bodies
Local authorities
NGOs
Dairy processing units
Projects</td>
<td><u>Key Activities</u>
Profitable year-round milk production and sales</td>
<td rowspan="2"><u>Value Proposition</u>
To produce and sell quality milk that can be traced back to Bobo Dioulasso's mini-dairies all year round, with volumes kept as constant as possible.</td>
<td><u>Customer Relationships</u>
Regular milk supply
Proximity to dairies
Professionalisation (concern for customer satisfaction)
Local marketing based on the benefits of local milk
<u>Competition</u>:
Imported milk powder</td>
<td rowspan="2"><u>Customer Segments</u>
Mini-dairies primarily
Direct consumers, MCCs</td>
</tr>
<tr>
<td><u>Key Resources</u>
Peri-urban (urban) land
Livestock buildings and equipment
Quality livestock feed and fodder in abundance
Crop residues (Spontaneous pastures)
Borehole water supplies all year round
Animals crossed with exotic dairy breeds
Salaried workforce
Skills learnt in training centres
Veterinary products</td>
<td><u>Distribution Channels</u>
Direct delivery to dairies (farms located in peri-urban areas, therefore close to processors)
Direct sale to consumers (home milk processing)
Milk collection centres

Highlights:
HB MMDs
Trade fairs
Regular meetings with DPUs (at the start of the rainy season and the hot dry season) to discuss milk prices and delivery arrangements</td>
</tr>
<tr>
<td colspan="3">Cost Structure
Set-up costs: land, pens and buildings, miscellaneous equipment, core group of dairy cows
Running costs: borehole, vehicle (electricity, diesel); AI or purchase of breeding bulls; quality livestock feed and fodder (all year round)
Standard veterinary care
Staff wages and incentives</td>
<td colspan="2"><u>Revenue Streams</u>
Milk buyers: Mini-dairies, private individuals/consumers
Sale of male calves and cull females, and sale of organic manure (market gardeners, etc.)
Grants and project support</td>
</tr>
</table>

Table 7. Mini-dairy farms - BM's agroecological characteristics and intensity level (+: low, ++: moderate; +++: high; - not agroecological)

Elements of agroecology	Agroecological characteristics	-	+	++	+++
1. Recycling	Crop co-products recycled as fodder			X	
	Crop and livestock co-products recycled as OM on farms			X	
	Livestock co-products recycled as OM on local land		X		
2. Input Reduction	Use of livestock feed in the dry season	X			
	Standard veterinary care	X			
	Fluid and fossil fuel consumption	X			
3. Soil Health	Organic fertilisation of farmland				X
	Soil preservation and protection	X			
4. Animal Health	Standard veterinary care	X			
	Traditional veterinary care		X		
5. Biodiversity	Promoting local breeds			X	
	Use of pastures and surface waters		X		
6. Agroecosystem Synergies	Interactions between crops, livestock (and trees)			X	
7. Economic Diversification	Livestock sales, milk sales, organic manure sales				X
8. Co-Creation of Knowledge	Promoting local expertise in agro-pastoral livestock farming				X
9. Social Values and Diets	Production and sale of large quantities of quality milk			X	
10. Fairness in Trade	Women's place and role in the household and dairy economy	X			
11. Connectivity between Stakeholders	Diverse customer base (private individuals, MCCs, mini-dairies)			X	
12. Land and Resource Governance	Involvement in agro-sylvo-pastoral (ASP) resource management		X		
13. Participation	Involvement in livestock farmers' organisations, local authorities and NGOs			X	

3.3 Independent collectors - Business Model and Ae characteristics

Table 8. Independent milk collectors (> 50 units) - Business Model

<table>
<tr>
<td rowspan="2"><u>Key Partners</u>
Agro-pastoral dairy farmers (suppliers)
DIP (especially mini-dairies)
Customers (private individuals)
Local authorities</td>
<td><u>Key Activities</u>
Daily door-to-door milk collection (from 6 am) from a loyal network of dairy farmers, sometimes ending at 11 am
Distribution of collected milk to customers taking from 2 to 4 hours (mainly mini-dairies, sometimes private individuals who take priority in the dry season)</td>
<td rowspan="2"><u>Value Proposition</u>
To earn a living by selling raw milk collected from agro-pastoralists to mini-dairies in Bobo-Dioulasso all year round, with volumes kept as constant as possible, and to private individuals (according to demand).</td>
<td><u>Customer Relationships</u>
Very low running costs (bicycle or motorbike, mobile phone, cans)
Proximity to livestock farmers (supplier network)
Proximity to dairies (deliveries in less than 4 hours - no cold chain)
Flexible milk prices depending on market conditions
<u>Competition</u>:
Milk collection centres
Imported milk powder</td>
<td rowspan="2"><u>Customer Segments</u>
Mini-dairies primarily
Private individuals (who take priority in the dry season)</td>
</tr>
<tr>
<td><u>Key Resources</u>
Motorbike or bicycle
Milk cans (plastic/recycled vegetable oil cans)
Mobile phone
Tracks and roads in good condition (if possible)</td>
<td><u>Distribution Channels</u>
Supplier/customer network specific to each collector
Mobile phone

Highlights: HB MMDs; christenings, weddings</td>
</tr>
<tr>
<td colspan="3">Cost Structure
Purchase, maintenance, fuel for collection/distribution vehicle (bicycle, motorbike), milk cans
Mobile phone subscription or credits</td>
<td colspan="2"><u>Revenue Streams</u>
Buyers: Mini-dairies (sold at 400F/L in the rainy season and 500F/L in the dry season), Private individuals (sold at 600F/L in the rainy season and 750F/L in the dry season)
Affordable quality milk (350F/L in the rainy season and 400F/L in the dry season) from agro-pastoralists</td>
</tr>
</table>

Table 9. Independent milk collectors - BM's agroecological characteristics and intensity level (+: low, ++: moderate; +++: high; - not agroecological)

Elements of agroecology	Agroecological characteristics	-	+	++	+++
1. Recycling	Oil cans into milk cans		X		
2. Input Reduction	Vehicles with little (motorbikes, tricycles) or no fuel (bicycles) consumption	X	X		
3. Soil Health	X				
4. Animal Health	X				
5. Biodiversity	X				
6. Agroecosystem Synergies	X				
7. Economic Diversification	Business centred on milk collection (therefore not diversified)		X		
8. Co-Creation of Knowledge	Knowledge of supplier and customer networks			X	
	Knowledge about milk collection without refrigeration systems			X	
9. Social Values and Diets	Promoting a local resource: milk!				X
10. Fairness in Trade	Informal status (workers with little or no protection if something goes wrong)	X			
11. Connectivity between Stakeholders	Strong connection with suppliers and buyers			X	
12. Land and Resource Governance	X				
13. Participation	Involvement in collective initiatives regarding the dairy industry		X		

3.4 Collection centres - Business Model and Ae characteristics

Table 10. Milk collection centres (around 10 units) - Business Model

<table>
<tr>
<td rowspan="2"><u>Key Partners</u>
Agro-pastoral dairy farmers and their SCOOPs
DIP
DPARAH (veterinarians, zootechnicians, etc.)
NGOs and projects (PDPS, PRAPS 2, CRA, PRCAM, PATEC)
Local authorities (Prefecture, Town Council, Governorate, High Commission, Commission, village chiefdom: land allocation, conflict resolution)
IPROLAIT
Mini-dairies
Research institutions (CIRDES, INERA, CIRAD, Universities)</td>
<td><u>Key Activities</u>
Daily milk reception (and minimum quality control)
Daily milk distribution to mini-dairies with MCC's (or main collector's) tricycle/motorbike
Consultation framework (awareness campaigns, training courses, meetings with livestock farmers)</td>
<td rowspan="2"><u>Value Proposition</u>
Milk collection points (10 operational) spread throughout the Hauts Bassins region close to farmers (and in all seasons), with milk quality control (at least visual; 6 MCCs equipped with milk quality control kits) and daily supply of fresh milk to mini-dairies in Bobo-Dioulasso according to their volume, frequency and quality criteria.</td>
<td><u>Customer Relationships</u>
MCCs close to suppliers (agro-pastoralists and SCOOPs)
MCCs supported by government departments (+NGOs and projects)
Providing a space for consultation and capacity-building for DIP stakeholders
Loyal network of suppliers and customers
<u>Competition</u>:
Independent collectors (who sometimes pay a higher price for milk than MCCs)
Imported milk powder</td>
<td rowspan="2"><u>Customer Segments</u>
Bobo-Dioulasso's mini-dairies using local milk (around 15)</td>
</tr>
<tr>
<td><u>Key Resources</u>
MCC land and buildings
MCC or MCC staff vehicle (tricycle/motorbike)
Milk cans
Quality control kit</td>
<td><u>Distribution Channels</u>
DIP's milk allocation system for processors

Highlights: HB MMDs</td>
</tr>
<tr>
<td colspan="3">Cost Structure
MCC construction and equipment from 'project funds' (land, buildings, tricycle/motorbike, miscellaneous equipment)
Rolling stock maintenance and insurance
MCC staff (incentive on collected milk: main collector, secretary, treasurer, caretaker)
MCC maintenance (cleaner paid 15,000F/month)</td>
<td colspan="3"><u>Revenue Streams</u>
Installation projects.
Margin between selling price to dairies (400 F/L in the rainy season and 500 F/L in the dry season) and purchase price from farmers (350 F/L in the rainy season and 400 F/L in the dry season), i.e. around 50 to 100 F/L.</td>
</tr>
</table>

Table 11. Milk collection centres - BM's agroecological characteristics and intensity level (+: low, ++: moderate; +++: high; - not agroecological)

Elements of agroecology	Agroecological characteristics	-	+	++	+++
1. Recycling	X		X		
2. Input Reduction	Vehicles with low fuel consumption (motorbikes, tricycles)	X			
3. Soil Health	X				
4. Animal Health	X				
5. Biodiversity	X				
6. Agroecosystem Synergies	X				
7. Economic Diversification	Milk collection		X		
	Space for consultation between stakeholders (non-monetised service)		X		
	Visual inspection of milk quality		X		
8. Co-Creation of Knowledge	Knowledge of supplier and customer networks			X	
	Knowledge about milk quality and preservation			X	
9. Social Values and Diets	Promoting a local resource: milk!				X
10. Fairness in Trade	Consultation among MCC members		X		
11. Connectivity between Stakeholders	Connection with suppliers and buyers			X	
12. Land and Resource Governance	X				
13. Participation	Involvement in collective initiatives regarding the dairy industry			X	

3.5 'Local milk' mini-dairies - Business Model and Ae characteristics

Table 12. Mini-dairies using mainly local milk (~15 units) - Business Model

<table>
<tr>
<td rowspan="2"><u>Key Partners</u>
Independent milk collectors
Milk collection centres
Dairy farmers delivering their produce directly to dairies (mini-farms)
Suppliers of raw materials and consumables (sugar, flavourings, ferments, packaging, gas, water, containers...)
Banks
DIP
NEEMA Cooperative, UMPL/B, IPROLAIT
Government bodies: chamber of commerce and industry, agricultural and livestock departments, health authorities
NGOs and projects (PRAPS)
Research bodies (IRSAT, CIRAD, ICS, INERA)
Retailers (shops, kiosks, grocery stores)
Equipment suppliers (testers, packaging equipment)</td>
<td><u>Key Activities</u>
Milk processing into dairy products based on local milk: mainly pasteurised liquid milk and yoghurts, cheese, cosmetics, butter, cream and sour milk + a number of other products on request</td>
<td rowspan="2"><u>Value Proposition</u>
Milk processing and distribution of dairy products made from local milk to meet demand from customers wishing to consume such products for a variety of reasons (taste, nutritional value, eating habits, civic engagement...)</td>
<td><u>Customer Relationships</u>
Supportive processor network (distribution system for collected milk between DPUs, and uniform milk purchase price)
Meeting emerging demand for local milk-based products from Burkina Faso
Quality of products made from local milk
Awareness campaigns (advertising)
Competition: dairies using milk powder (cheaper products) - and/or complementarity (different demand segment)</td>
<td rowspan="2"><u>Customer Segments</u>
Dairy distributors (kiosks, shops, supermarkets, grocery stores)
Consumers buying directly from dairies (all categories)
Consumers enjoying products made from local milk (civil servants...)</td>
</tr>
<tr>
<td><u>Key Resources</u>
Buildings and milk processing equipment
Inputs (raw milk, sugar, flavourings, energy, water, containers)
Expertise in local milk processing and micro-business management (skilled workforce)
Working capital</td>
<td><u>Distribution Channels</u>
Loyal network of distributors (shops, grocery stores, supermarkets, school canteens)
Government contracts (gendarmerie)
Online sales (social networks)
Direct sales if outlet provided by dairy
Highlights: HB MMDs</td>
</tr>
<tr>
<td colspan="3">Cost Structure
Mini-dairy set-up costs (land, buildings, milk processing equipment)
Raw materials and consumables (raw milk, sugar, flavourings, packaging); Energy and fluids (electricity, gas, water, fuel)
Staff wages</td>
<td colspan="2"><u>Revenue Streams</u>
Dairy distributors (kiosks, shops, supermarkets, etc.)
(Direct sales when the dairy has its own outlet)</td>
</tr>
</table>

Table 13. Mini-dairies using mainly local milk - BM's agroecological characteristics and intensity level (+: low, ++: moderate; +++: high; - not agroecological)

Elements of agroecology	Agroecological characteristics	-	+	++	+++
1. Recycling	Recycling whey and other effluents	X			
2. Input Reduction	Use of gas, electricity and water	X			
	Occasional use of milk powder (in the event of local milk shortages)	X	X		
3. Soil Health	X				
4. Animal Health	X				
5. Biodiversity	X				
6. Agroecosystem Synergies	X				
7. Economic Diversification	Dairy product diversification (depending on DPUs)		X	X	
8. Co-Creation of Knowledge	Expertise in processing milk into traditional dairy products and innovative recipes		X	X	
9. Social Values and Diets	Traditional dairy products (dégué, gapal...) and occasional innovations offered to consumers		X	X	
10. Fairness in Trade	Informal status of dairy staff	X			
11. Connectivity between Stakeholders	Connection with collectors, collection centres, livestock farmers' organisations, government bodies, NGOs...			X	
12. Land and Resource Governance	X				
13. Participation	Supportive processor network (distribution system for collected milk between DPUs, and uniform milk purchase price)			X	

3.6 'Milk powder' mini-dairies - Business Model and Ae characteristics

Table 14. Mini-dairies using milk powder (~15 units) - Business Model

<table>
<tr>
<td rowspan="2"><u>Key Partners</u>
Milk powder suppliers
Suppliers of other raw materials and consumables (sugar, flavourings, ferments, packaging, gas, water, etc.)
Government bodies: chamber of commerce and industry, health authorities
NEEMA
Cooperative</td>
<td><u>Key Activities</u>
Processing of milk powder-based dairy products: mainly yoghurts</td>
<td rowspan="2"><u>Value Proposition</u>
Processing and distribution of milk powder-based dairy products (but less diversified), providing good margins thanks to cheaper raw material (milk powder)</td>
<td><u>Customer Relationships</u>
Low production costs (cheap raw material)
Easy acquisition (regularity) and processing of main raw material
Low skill requirements and fewer risks than with local milk
Products made from milk powder are better known and easier to preserve
Competition: dairies using local milk (or complementarity)</td>
<td rowspan="2"><u>Customer Segments</u>
Dairy distributors (kiosks, shops, supermarkets, grocery stores)
Consumers buying directly from dairies (all types)
Consumers with no interest in milk provenance
Army camps and fire brigades</td>
</tr>
<tr>
<td><u>Key Resources</u>
Buildings and milk processing equipment
Inputs (milk powder, ferments, sugar, flavourings, energy, water, containers, etc.)
Expertise in micro-business management</td>
<td><u>Distribution Channels</u>
Loyal network of distributors (shops, grocery stores, supermarkets)
Neighbouring village markets (outskirts of Bobo-Dioulasso), gold panning sites
Direct sales if outlet provided by dairy
Highlights: HB MMDs</td>
</tr>
<tr>
<td colspan="3">Cost Structure
Mini-dairy set-up costs (land, buildings, milk powder processing equipment)
Raw materials and consumables (milk powder, ferments, sugar, flavourings, packaging, etc.); Energy and fluids (electricity, gas, water, fuel)
Staff wages
Transport (product purchase and delivery)</td>
<td colspan="3"><u>Revenue Streams</u>
Dairy distributors (kiosks, shops, supermarkets, grocery stores, restaurants, etc.)
Ceremonies (weddings, christenings, funerals), gold panning sites
(Direct sales when the dairy has its own outlet)</td>
</tr>
</table>

Table 15. Mini-dairies using mainly milk powder - BM's agroecological characteristics and intensity level (+: low, ++: moderate; +++: high; - not agroecological)

Elements of agroecology	Agroecological characteristics	-	+	++	+++
1. Recycling	Recycling whey and other effluents	X			
2. Input Reduction	Use of gas, electricity and water	X			
	Systematic use of milk powder	XXX			
3. Soil Health	X				
4. Animal Health	X				
5. Biodiversity	X				
6. Agroecosystem Synergies	X				
7. Economic Diversification	Dairy product diversification	X	X		
8. Co-Creation of Knowledge	Expertise in processing milk powder into dairy products	X	X		
9. Social Values and Diets	Little variety in dairy products: milk, yoghurt with artificial flavourings	X	X		
10. Fairness in Trade	Informal status of dairy staff	X			
11. Connectivity between Stakeholders	Limited connection with downstream stakeholders (distributors)	X	X		
12. Land and Resource Governance	X				
13. Participation	Limited to downstream stakeholders (distribution)		X		

4 Conclusion

During the two-day workshop, which brought together some forty stakeholders from Bobo Dioulasso's Dairy Value Chain (DVC), all six current BMs for agro-pastoral dairy farmers, mini-dairy farms, milk collection centres, independent collectors, Dairy Processing Units (DPUs) using local milk and DPUs using milk powder were reviewed, discussed, amended and validated by each group of stakeholders.

Interactive Focus Group Discussions (FGDs) took place between participants and facilitators, leading to the consolidation of the existing BMs for the various segments of Bobo Dioulasso's dairy value chain. In addition, this exercise fostered learning and enabled participants to take ownership of their own BM.

Conclusions on the agroecological nature of all 6 BMs:

1) All BMs exhibit Ae characteristics with varying intensity levels, as well as characteristics (or practices) that do not support agroecology.

2) Among milk producers: specific Ae characteristics can be seen for both types of producers (more recycling and interaction between agriculture and livestock among mini-farms, more use of local resources (spontaneous pastures, local breeds, Fulani herder social networks) among agro-pastoralists). The elements of Ae which these two milk production systems refer to differ slightly.

3) Among milk collectors: both occupational groups (independent collectors and collection centres) promote a local resource: milk. MCCs clearly offer greater potential for Ae characteristics, but this potential is not expressed to any great extent (limited range of services => limited connectivity), while independent collectors do not display significant Ae characteristics.

4) Among dairy processors: more Ae characteristics are found among processors using local milk (willingness to diversify products, emphasis on local food traditions, strong links with all stakeholders in the industry) compared with processors using mainly milk powder.

This exercise represents a further step in the process of co-building an agroecological BM for Bobo-Dioulasso's DVC. For the next stage, workshops on "Cost-benefit analyses of agroecological packages for production (+fodder, +organic manure, etc.), collection (+services) and processing (+dairy products)" will be held with DVC stakeholders.

5 References

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