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Women Economic Empowerment Programme

Market Assessment:
Dairy Sector in Taizz Governorate

Exploring
the potential
for Cheese and
Laban value chain

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Published by the United Nations Development Programme,
Economic Restoration Unit
Address: UNDP Yemen
PO Box 551, Sana'a, Republic of Yemen

www.ye.undp.org

Concept and design:
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Background

This report was commissioned by the United Nations Development Programme (UNDP) under its Women Economic Empowerment (WEE) programme, supported by the Government of Japan and implemented by Spark, the Social Fund for Development and the Yemen National Midwife Association. The objectives of the WEE programme are to increase self-reliance opportunities with a focus on vulnerable women generated through emergency employment, value chain development and social business in women-only professions. Under its activity to adapt the One-Village One-Product approach to Yemen and the dairy sector, a market assessment was conducted in 2015 to assess its economic potential for women in key districts of Taizz Governorate.

The contributions of Spark, UNDP, Vision for Development, GIZ, Mr. Mohammed Saeed Al-Somid and Mr. Nanduri Sateesh, dairy sector consultants, are gratefully acknowledged.

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Acronyms

WEEP	Women Economic Empowerment Programme
FAO	Food and Agriculture Organization of the United Nations
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
PSDP	Private Sector Development Programme (GIZ Yemen)
SDP	Small Dairy Producer
SWOT	Strengths, Weaknesses, Opportunities, Threats (Analysis)
UNDP	United Nations Development Programme
USD	United States Dollar (currency)
YEEP	Youth Economic Empowerment Programme (UNDP Yemen)

Tables and Figures

Introduction

The present report focuses on exploring the potential of women-owned traditional farmstead dairy businesses (cheese and Laban[1]) in Taizz Governorate. The WEE programme will support the diversification of rural livelihoods for 500 women beneficiaries from rural villages of four districts in Taizz Governorate: Ash-Shamayatayn, Al Ma'afer, Al Mawasit, and Jabal Habashi.

Accordingly, a detailed field appraisal of the dairy sector including its value chain structure was carried out in these four districts to achieve the following objectives:

- Identify the potential locations for WEE interventions;
- Outline current cheese and laban value chains;
- Determine gaps and required support to further develop the value chains;
- Assess the role of women in cheese and laban production and businesses,
- Offer selection criteria for the 500 beneficiary women; and
- Propose and cost project activities.

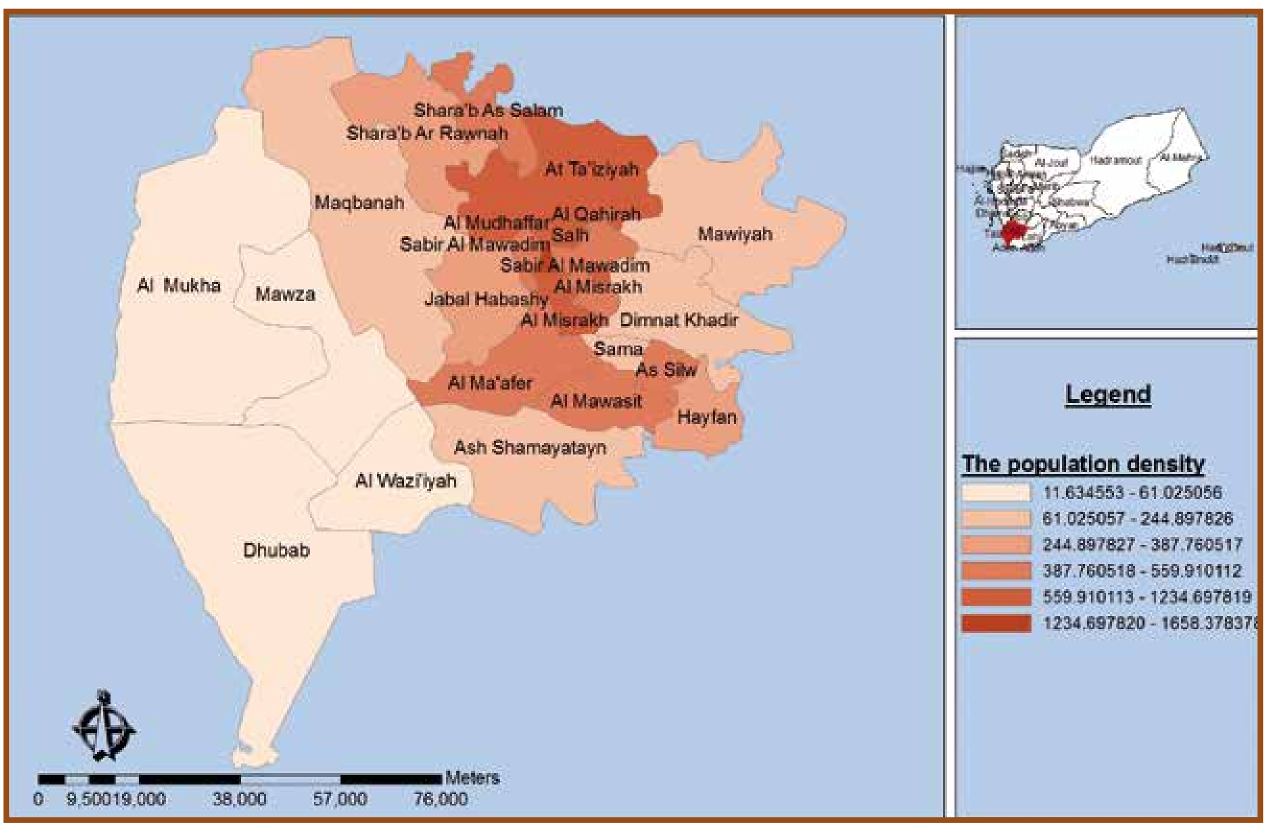


Figure 1: Map of Taizz governorate showing the four targeted districts (1. Ash-Shamayatayn, 2. Al Ma'afer, 3. Al Mawasit, 4. Jabal Habashi).
(Source: National Information Centre, Republic of Yemen)

1 The term 'Laban' refers to a food or beverage of fermented milk. It is traditionally prepared by allowing milk to ferment for around 24 hours and then churning it to remove the butter. The remaining buttermilk can keep for several days at room temperature.

Methodology

The study methodology was based on a Participatory Rural Appraisal (PRA), allowing the communities to express their views in an inclusive manner. Fieldwork involved direct site visits to different locations, separate focus group meetings and consultative discussions with women communities, dairy sector producers and the different actors involved in the value chain (processors, wholesalers, retailers, traders). Meetings were also held with women associations and some women were met during their work.

Specific consultations were held with the local authorities, the Taizz office of the Ministry of Industry and Trade, Chamber of Commerce and Industry, Yemeni Business Club, and the private sector.

Technical discussions were held with bilateral and multilateral agencies such as UNDP and GIZ, in addition to a review of available literature.

This assessment report is based on the feasibility study conducted by SPARK's national consultant, Mr. Mohammed Saeed Al-Somid. It was also informed by a GIZ study from 2013[2].

The Dairy Sector in Yemen

Livestock accounts for 20% of the national agriculture GDP in Yemen, and the dairy production accounts for 28% of the total animal production output. Livestock mainly include cattle, sheep, and camels[3].

Families in the rural areas depend on animal husbandry as their main livelihood with an average of 1-5 cows and 5-50 goats per shepherd. They graze animals such as cows, goats and sheep on diverse rain-fed plants. The production of milk is the primary output, and it is mainly obtained through traditional processes.

According to FAO country statistics, Yemen's total milk production increased by 71% from 2005 to 2011 i.e. from 299,008 tons in 2005 to 417,190 tons in 2011. Cow milk amounted to 71% (301,300 tons); goat milk represented 13% (53,455 tons); sheep milk, 10% (43,004 tons); and 5% for other sources. However, the annual milk yield recorded in 2011 was extremely low at only 6,086 Hg/An[4] (cow), which is far below the corresponding levels in developed countries. For example, the annual milk yield reached 19,450 Hg/An (cow) in Egypt.

Low milk productivity has been mainly attributed to the varying availability of feed. Milking animals are better fed during summer as compared to winter. It appears that milk production both in amount and quality is closely co-related with the availability of green weed that naturally grows in the rainy summer season. Thus, the shortage of good quality feed has been considered as one of the constraints to the development of traditional Small Dairy Producers, "SDPs". Additional constraints include lack of know-how and access to: veterinary services, elementary hygiene practices at the milk production stage and essential equipment for milk handling.

2 "Assessment of Cheese Value Chain in Yemen: A study report to develop farmstead cheese in rural areas of Taizz, Yemen" (2013).

3 FAO, Country Pasture/Forage Resources Profile – Yemen

4 Hectogram per animal

Cheese production in Yemen constitutes the primary activity of the small dairy sector. Typically, the amount of milk processed to cheese by farmers is seasonal as is the supply of milk. The amounts of milk processed to cheese range between 6-12 kgs/day of milk in summer and 2-7 kgs/day in winter. In general, the quantity of smoked cheese produced would be at a range of 1-4 kgs/day, and that of soft cheese produced around 1-2 kgs/day.

The majority of the local cheese consumed in Yemen is sold by SDPs, which are exposed to constant pressures and threats from large-scale commercial cheese producers and importers. Also, the locally-produced cheese has a negative reputation among the consumers for its low quality and hygiene. Hence, the urban cheese market is dominated by imported processed cheese from different countries such as Austria, Poland, Australia, and Morocco. Other types are imported in little amounts such as: cheddar cheese from Australia and New Zealand, soft cheese with vegetable oil from Denmark, cream cheese from Saudi Arabia and feta cheese from Egypt.

The Dairy Sector in Taizz Governorate

Taizz is divided into three geological areas (i) coastal in the west along the Red Sea covering Bab Al-Mandab and Al-Mokha districts, (ii) low land between the coastal and mountain and highland governorates covering Maqbaneh, Mawza and Al-Waziyah and (iii) rocky mountain and highland districts in the middle and eastern parts of the governorate covering the rest the districts[5].

Agriculture and livestock are the primary livelihoods of residents. The number of farmers in Taizz Governorate reaches 155,505, with an average landholding size of an approximate 0.4 ha. Animal raising is the second ranked activity in Taizz and includes cattle (209,417 heads), sheep (345,671 heads), goats and camels (479,007 heads), producing meat and milk.

In rural Taizz, milk production, cheese processing and marketing are the main income sources of small dairy producers. It forms a milk-oriented economic system where farmers and shepherds play a key role. The animals graze in the common rangelands, with their diet being complemented by wheat bran, maize and sesame straw in the winter. The households' incomes are gained from selling young animals, milk and cheese that represent the majority of their weekly income.

According to the Taizz Information Center, while the annual estimated milk demand is 36,278 tons, the annual production only reaches 11,643 tons (32% of demand). This indicates the urgent need to improve the productivity and production capacity of the dairy sector to unleash its income-generating potential.

Taizz is famous for its dairy sector industry and products, and in particular renowned for its cheese which is produced in segmented locations of its rural areas. The cheese types include a farmstead smoked semi-hard cheese ("Taizz cheese") and the fresh type of the same cheese, which is known as "Oob". In the urban areas, Taizz and Oob cheese have a negative reputation on their safety and hygiene, preventing further market access.

5 IFAD Yemen's 'Rural Growth Programme' (http://www.ifad.org/operations/projects/design/110/yemen_lot.pdf).

Targeted Districts

The study focused on different elements of farmstead cheese and laban value chains including production, processing and marketing in four districts of Taizz Governorate. The demographics of these locations are presented in Table 1.

Table 1: Demographic information for targeted districts.

District Name	Area (km2)	Number of Households	Total Population	Population Density (per km2)
Ash-Shamayatayn	617.3	25,587	167,441	271
Al Ma'afer	350.4	16,858	144,928	414
Al Mawasit	216.8	17,334	130,793	603
Jabal habashi	309.0	18,036	145,704	4,712
Total	**1,493.5**	**77,815**	**588,866**	**-**

(Source: National Information Centre, Republic of Yemen)

Dairy Products: Cheese and Laban

In the target area, main local dairy products encompass fresh milk, Laban, Ghee and cheese from cows and goats. Other industrial dairy products (local industries and/or imported) include UHT milk, yogurt, Laban, cheese, ice cream, cream, and flavored milk.

Traditional farmstead dairy products, clustered under cheese and laban production, are detailed below.

1 Cheese

Based on (i) the population engaged in cheese-making, (ii) experience in cheese production; and (ii) accessibility to the local markets, the following villages are recommended for the proposed intervention to improve the cheese value chain.

Table 2: Recommended villages for cheese value chain

District	Area	Village	Population		
			Male	Female	Total
Al Ma'afer	Almshawela	Alkadha	108	166	274
		Almadager	11	26	37
		Alawared	-	-	-
	Alswaa	Byetalatde	80	98	178
Ash-Shamayatayn	Dba'adakhel	Alkharf	19	26	45
	Baneomer	Alshoob asfal	65	78	143
		Alagram	334	487	821
	Dba'alkhregl	Masnama	183	201	384
	Alazaiz	Khodma	75	76	133
		Rgem	226	247	473
		Almaz	42	44	86
Al Mawasit	Alakhmoor	Almakrod	85	115	200
Jabal habashi	Alsharaga	Alafira	1,579	1,867	3,464
	Bneeisa	Aldahr	290	300	590
		Total	**3,037**	**3,731**	**6,828**

2 Laban

Although laban is produced in relatively larger scale than cheese in the target area, its value chain remains underdeveloped and does not include any actors except the producers. This is due to the lack of knowledge and awareness of laban as a potential market product among the producers.

Based on the number of women actively engaged in traditional laban production, the following villages (see Table 3) from the Al Turba district have been selected for the study.

Table 3: Selected Laban producing villages

Village	Population			Livestock Cows (heads)
	Male	Female	Total	
Alturba	5,226	5,015	10,241	630
Alasabeh	2,871	3,984	6,855	603
Dobhan	3,154	3,994	7,148	730
Shargab	1,042	1,168	2,210	220
Bnegaze	765	951	1,716	120
Almsharka	991	1,132	2,123	300
Jabalsbran	315	394	709	70
Alharem	260	320	580	21
Adeem	682	1,016	1,698	73
Alazaiz	6,579	8,620	15,199	750
Total	**21,885**	**26,594**	**48,479**	**3,517**

Production practices, Quality & Control

The raw product – milk – is sensitive and needs adequate quality control measures from its production phase and is detrimental for the quality of the end dairy product (see Figure 2 below illustrating the processes involved in cheese and laban production). The most important quality control measures include: hygiene and safety during the production phase, optimal thermal treatment – pasteurization and sterilization, adequate packing and manufacturing practices.

However, the majority of the small dairy producers observed follow traditional practices from production to the end market. The implications of the current production practices on the end product are further detailed in Table 4. It should be noted that an absolute lack of quality control, safety, and monitoring systems prevail in the target area, from farm to production.

Figure 2: Processes involved in cheese and laban production

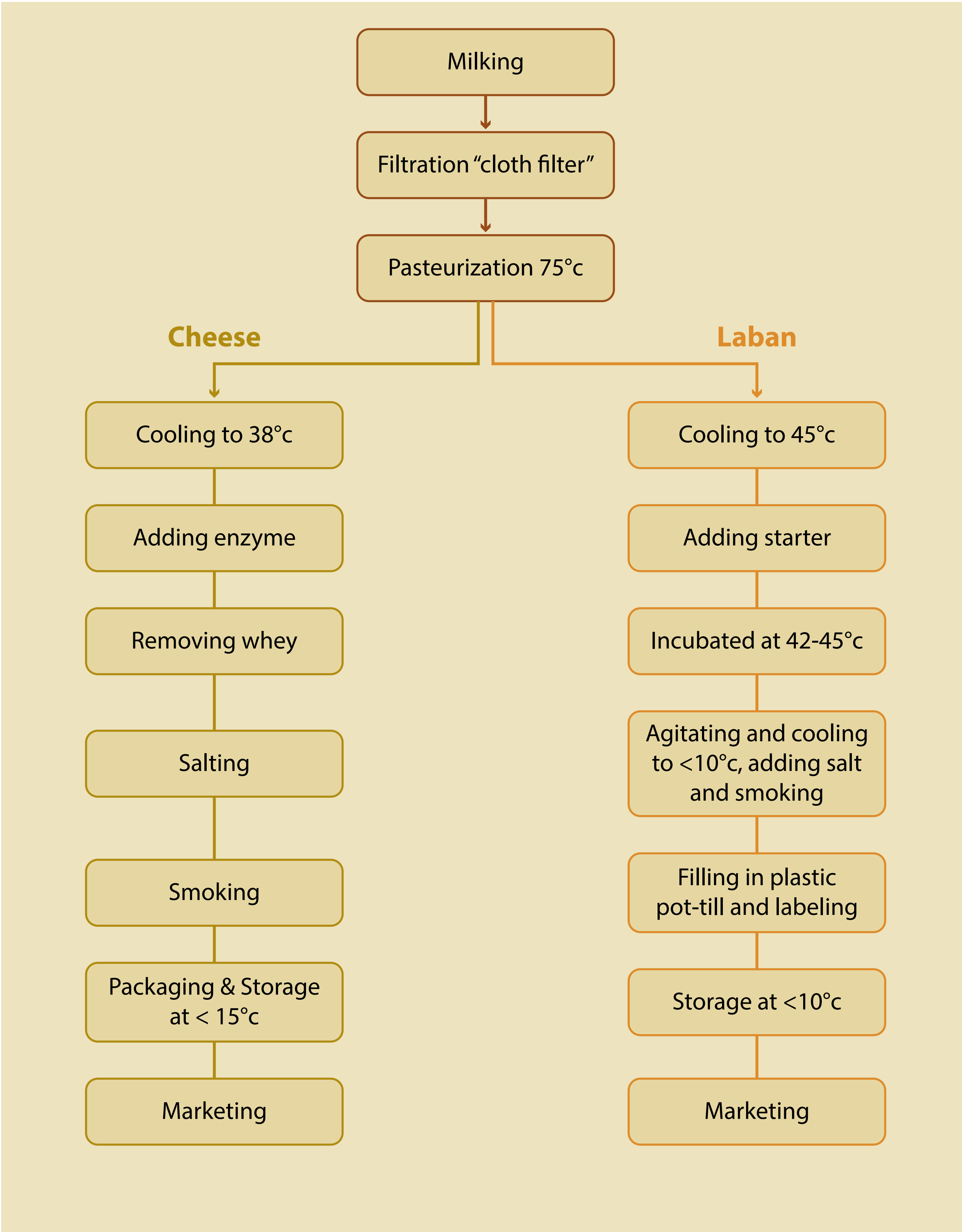


Table 4: Current practices and impact on end dairy products

Stage	Current Practices	Impact on the products
1. Inputs/raw materials		
Cattle	No adequate care, lack of veterinary services, and natural fodder	Effects on quantity of milk production
Milk	Purchased from local producers – wherein deficiencies handling affects the product's hygiene.	Less production, milk contamination
Rennet	Purchased from butchers and infant animals	Unhygienic products, and quality of the product
Calcium Chloride*	Not used	Related to pasteurization
Salt	Added without measurement	Change in the quality of product
Equipment	No refrigeration. Non-sterilized tools from household are used. No special milk containers, pH meter, thermometers.	Product contamination and lower productivity
2. Milking	Manual	Contaminated milk
3. Pasteurization	Not used	Product contamination
4. Addition of calcium chloride	Not used	Lower product quality
5. Enzyme addition	Added manually on approximate basis without considering the quantity of milk, temperature, and time.	Quality of end product, loss of the product, contamination
6. Whey separation	Removing the whey using tools made of palm fronds	
	Less productivity and product contamination	
7. Cheese Smoking	Keeping the cheese directly on the smoke	Burned-out parts on the surface of the product, and lost product. Less production.
8. Product Packaging	In plastic containers open and unclean, preserved in the degree of normal air without cooling	Product contamination and lower quality of the product
9. Selling	Kept in trays or tarpaulin, and exposed	Product contamination an quality of the product

* Calcium chloride plays an important role in the coagulation process and affects curd formation. Thus it optimises the cheese preparation process and compensates for fluctuating calcium content in the milk caused by seasonal influences.

Markets

The products are mainly sold in niche markets[6] in addition to direct street or car selling. There are no retail showrooms or shops in the targeted villages for any of the local dairy products. Details of the main markets in the target area are presented in Table 5 and shown in Figure 3.

Table 5: Current practices and impact on end dairy products

Market name	Location	Accessibility	
		Villages/areas	Population
Al Turba	Ash-Shamayatayn district center. 64 kms from Taiz City	All villages in Ash-Shamayatayn district, parts of Banehammad, Qadas, and Al Ma'afer districts in Taizz, and Almqatera district in Lahij	200,000
Al Nashama	Al Ma'afer district centre, 30kms from Taiz City	All villages of Al Ma'afer district and some areas in Al Mawasit and Jabal Habashi	180,000
Al Samsara	22 kms from Alturba, linking Ash-Shamayatayn and Al Mawasit districts	Most of Ash-Shamayatayn and AlMawasit districts, and some areas in Al Ma'afer	80,000
Al Markes	18 kms from Alturba on the Taizz-Alturba road	Most areas in Ash-Shamayatayn district and some areas in Al Ma'afer and Al Mawasit	65,000
Al Beerain	Between Al Ma'afer and Jabal Habashi	All villages in the has a well known weekly livestock market	65,000
Al Ahed	In Alashoob area of Al Ma'afer district	Alaloom, Baniabbas, Alakhmoor in Al Mawasit district, and Alsnah, Alshooba in Al Ma'afer district	60,000
Nagdkosim	In Almesrakh area in Saber district	Almesrakh area, and some areas in Jabal Habashi	40,000
Al Safia	5 kms from the Alsamsara market on the road to Taizz	Baneomar, Banemohammed, Banesheeba, and Dba'adakhel areas in Ash-Shamayatayn district, and some villages of Al Ma'afer and Al Mawasit	35,000
Al Aeen	Al Mawasit district centre	All villages of Al Mawasit district	35,000
Al Mansoura	In Alazaiz district, on the Taizz-Alturba road, 50 kms from Taiz City	Alazaiz and Alasabeh villages	15,000

6 A niche market is a small market segment and is the subset of the market on which a specific product is focused.

Actors

Actors include: input (raw material) suppliers, local producers or small dairy farmers, processors, intermediary agents, and retailers. With regards to laban, the value chain is still primitive and the product largely used for household consumption only.

a. Inputs suppliers:

Inputs (e.g. cattle cows, sheep and goats) are purchased from local dealers markets in Aldabab, Al Beerain, Al Samsara, Alturba and Alahad. Cattle fodder is either purchased locally and/or from the producer's own agricultural lands. Product additives such as milk powder, calcium chloride, and culture, are directly purchased from the local markets. The commercial Rennet enzyme[7] is not found in the target areas. Although the Rennet enzyme could be purchased from Taiz City, local producers tend to use the enzyme extracted from the stomach of the infant animals which poses a number of health and hygiene concerns.

Refrigerators, milk containers, pH meter, thermometer, and packaging material are available in Taiz City. Local producers still use traditional household tools and equipment for production despite availability of more sophisticated options that could improve quality.

The input supply sector is sufficiently competitive to ensure reasonable prices for the farmers, however the prices dwindle based on the seasonality. Since March 2015, prices have almost doubled due to the ongoing conflict.

b. Producers (small dairy producers):

A total of 66,617 producers exists in the target area and are categorized under: i) cheese producers, ii) Laban producers, and iii) camel milk producers. Cheese producers are found in segmented groups across in the selected villages, the laban producers are from the Al-Turba area and the camel milk producers are present in very small groups.

c. Processors:

There are no separate processors within the cheese and laban value chains. The products are processed directly by the producers. For the processing stage, local producers use household tools and equipment, such as metal containers for the coagulation process and charcoal/firewood for the smoking. There were no cheese smoking platforms observed during the field interviews and visits. Laban is exclusively produced at home using household containers.

d. Intermediary agents:

Most of the dairy products are marketed by the producers themselves in the form of street selling, car-selling and/or in the markets. A few intermediary agents exist between producers and retailers and/or producers and restaurants, however not in significant numbers.

e. Retailers:

Dairy product retailer shops and stalls are present in small numbers in the target area. As mentioned above, products are either consumed by farmers or sold directly by them. Some grocery shops from within the villages buy products from producers and sell these on the market.

7 A commercial form of rennin, rennet, is used in manufacturing cheese to coagulate or thicken milk during the cheese-making process.

f. Wholesalers and Exporters:

There are no wholesale businesses in the traditional cheese and laban value chains; and the local cheese and laban are mainly aimed at local and domestic markets.

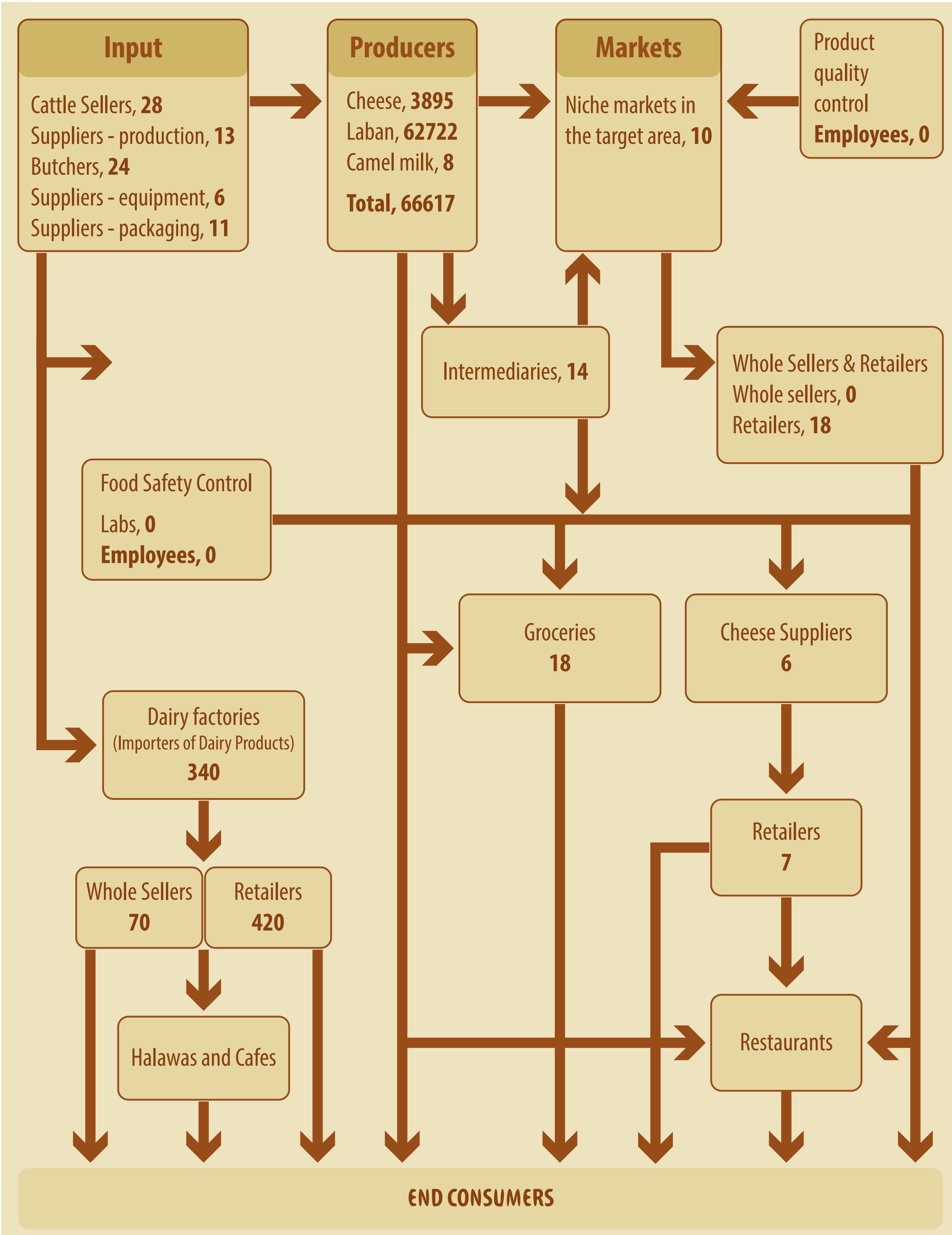
g. Relationships between actors

There are no structured and specific relationships between the value chain actors. The basic principle of trust is the main link between the buyers and sellers, particularly made acute as producers tend to directly sell to consumers. Some of the cheese producers have working networks that include a small number of buyers (restaurants, individuals).

Table 6: Summary of Dairy Value Chain Actors

Value Chain Actors	Function	Number
1. Input Suppliers		
a. Cattle sellers	Purchase cattle from different villages or import them, then sell to the farmers and producers.	28
b. Suppliers of calcium chloride, the culture, milk powder	Located in Taiz City. They sell to retailers or directly to the producers.	13
c. Butchers	Suppliers of the Rennet enzyme (extract from the infant animals)	24
d. Suppliers of process and filling equipment	Located in the main cities (district centers). They sell to retailers or directly to the producers.	6
e. Suppliers of plastic package and packaging material	Located in the main cities (district centers). They sell to retailers or directly to the producers.	11
2. Producers		
a. Cheese producers	Produce local cheese using cow or goat milk	3,895
b. Laban producers	Produce laban using cow or goat milk	62,722
c. Camel milk producers	Produce camel milk	8
3. Processors	Producers are the processors	66,617
4. Intermediaries	Agents between producers and retailers.	14
5. Traders		
a. Retailers	Producers often sell their products directly. However, there are some grocery shops that purchase from the producers to sell it to the customers.	18
b. Wholesalers	Nonexistent	-
c. Exporters	Nonexistent	-

Figure 3: Structure of the Dairy Value chain in the target area



Business Facilities and Services

a. Infrastructure:

An important constrain is the absence of basic infrastructure and services in the target areas. For instance, there are no milk collection centers or points in the villages nor adequate infrastructure facilities such as cattle firms to safeguard the product quality and hygiene. Also, the smoking platforms for cheese are nonexistent and producers smoke the cheese on firewood and charcoal. Storage (coolers and refrigerators) and the product quality monitoring equipment and tools (e.g. milk containers, pH meter, thermometer etc.) are completely absent in the target area.

b. Transportation and Packaging:

In general, farmers transport their product by taxi and/or their own cars to the main markets. There is no systematic way of stocking the products. The packaging consists of using polythene shopping bags and/or small plastic containers. There are no guidelines to safeguard the quality of the product during the packaging phase.

This could be attributed to a low awareness amongst producers of product quality, hygiene, and handling; that also extends to packaging and good manufacturing practices.

c. Market/Business Information Services:

Information on market and business services are vital for the efficiency of the value chain. There is no information made available to the producers on marketing and business opportunities. Producers lack complete knowledge of alternative input products (e.g. Rennet enzyme) and equipment (milk containers and safety equipment). Also, business development and advisory services are absent from the target area.

d. Producer Associations or Cooperatives:

Organized structures (producer associations, cooperatives, etc.) safeguard the small-scale producers and constitute a vital avenue to consolidate the role of producers. These are not only platforms for information sharing and knowledge exchange, but also vital tools for joint ventures.

Agricultural producer associations can be found in the target area, but there are no producer associations and/or cooperatives specifically related to the dairy sector.

e. Research and Extension Services:

The only technical/educational institute that hosts an agriculture department is Alkhiami Institute, located in Al Ma'afer district, however it does not possess curriculum or trainings in dairy or food industries.

The Ministry of Agriculture's Agricultural Research Extension Authority offices are located in the district centres – but their ability to perform their mandate is constrained by the lack of financial and human resources.

f. Financial Services:

Branches of the major Yemeni banks are present but their loan services are restricted for the dairy sector. Microfinance Institutions outreach to the target areas is still limited.

Table 7: Main constraints to increased dairy productivity

Actors	Main Constraints
Input Suppliers	• Inadequate information on the needs of the dairy sector. • Insufficient market information services.
Producers, Processors, Retailers	• Lack of: – Infrastructure facilities and services; – Knowledge of animal husbandry techniques and technology; – Business and market information services; – Knowledge and know-how of laban production; – Financial capital for investment together with the limited financial services offered in the sector; – Access and experience using modern technology; – Awareness of hygiene, product hygiene, quality control and safety; – Structured organizational capacities together with business know-how; – Good management and manufacturing practices for product handling and packaging; and – Knowledge on consumer markets and trends.

Status of Women in the Dairy Sector

Women play a critical role in the dairy sector. They are engaged from farm to production to market sales including cattle rearing and breeding; milk, laban, and cheese production and processing; and often as sellers in the markets. However, the limited production and productive capacities together with minimal technical and business skills currently impede realizing their business potential.

A total of 32,708 women are currently engaged in cheese (30,699) and laban (1,909) production.

Table 8: Women engaged in the dairy sector

District	Women working in the dairy sector		
	Cheese production	Laban production	Total
Ash-Shamayatayn	9,432	690	10,132
Al Ma'afer	8,113	316	8,429
Al Mawasit	6,818	115	6,933
Jabal Habashi	6,336	788	7,214
Total	**30,699**	**1,909**	**32,708**

As noted above, there are no structured organizations (e.g. cooperatives and/or producer associations) in the dairy sector. Women producers work individually on their own venture.

However, during the field visits, women producers expressed a strong interest to organize themselves into producer associations to work collectively and through joint venture mechanisms.

Conclusion and recommendations

The assessment indicates that the dairy sector (cheese and laban) value chain in the target area is very primitive, underdeveloped, and disorganized. Women are an active labour force engaged in the cheese and laban production, yet they are heavily constrained by the lack of facilities and services to upgrade current production and meet a growing market demand.

Table 9: SWOT Analysis of dairy (cheese and laban) value chains in the target area

Strengths	Weaknesses
• Potential dairy sector with experienced labour force. • Knowledge of cheese and laban production at the local level – small dairy producers. • Easily accessible markets. • Taizz cheese – unique and renowned. • Low labour costs and availability of skilled labour. • Availability of pastures and valley for animal feeding. • Traditional knowledge base on dairy products (e.g. cheese and laban) processing.	• Underdeveloped and disorganized Dairy production and processing system with insufficient infrastructure facilities and services. • Inadequacies in dairy supply chain – in particular at the local level. • Lack of knowledge on hygiene, product quality, control, and safety. • Limited access to the modern technology and techniques. • Lack of structured organizational capacities together with insufficient business and technical capacities. • Consumer's perception of hygiene product.
Opportunities	**Threats**
• Improving infrastructure facilities and services. • Efficient dairy sector supply chain management, with focus on market linkages and promotion. • Enhancing the quality of dairy products through trainings and awareness. • Total Food Quality and Safety Management System by adopting good management and good manufacturing practices. • Business and technical capacity building of small dairy producers. • Organized structures e.g. dairy producers associations and or cooperatives.	• High increase in the production and operation costs. • Limited inputs as market closed because of the conflict. • Adopting food quality control regulations without appropriate services, facilities, and technical capacities throughout the supply chain. • Monopoly on the cooperatives in the absence of clear regulations. • Market competition of dairy products.

Although the dairy sector in the target area has a strong potential for economically empowering women for self-reliance, programming should address some of its identified bottlenecks to improve production and diversify livelihoods in the rural areas.

The following set of activities are recommended to support small dairy producers with a focus on women beyond the framework of the existing UNDP-supported Women Economic Empowerment Programme:

- Improve the organizational structure of the value chain:
  - Support the establishment of a Women Dairy Producer Association; and
  - Provide business (administration, management) and marketing trainings;
- Increase the effectiveness of the value chain:
  - Upgrade infrastructure and services through investment and/or provision of capital grants to purchase assets (cattle) and equipment (milk containers, gloves, thermometer, pH meter); and
  - Develop technical capacities in cheese and laban production;
- Enhance the efficiency of the value chain:
  - Strengthen the supply chain management by reinforcing the integrity of the cold chain (with provision of assets, e.g. refrigerators and coolers), processing (cheese smoking platforms, moulds, electronic mixers, cookers etc.) and packaging (storage boxes, tools for packaging etc.);
  - Establish collection centers/points in the villages, product stalls in the main niche markets, and mobile product markets;
  - Adopt the 'Total Food Quality and Safety Management System' promoting adequate management and good manufacturing practices; and
- Foster an enabling environment for the value chain:
  - Facilitate market linkages and product distribution channels; and
  - Pilot joint venture businesses through the women dairy producer associations
- Ensure self-sufficiency and sustainability of the value chain:
  - Strengthen partnerships between women dairy producers and private sector, and among the women dairy producer associations;
  - Increase linkages with the microfinance institutions; and
  - Improve consumer awareness through extensive advocacy/outreach programmes to shape the product image.

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