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# DAIRY VALUE CHAIN AND MARKET ANALYSIS

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Empowering the youth in a sustainable and equitable way  
against COVID-19 through agribusiness.

The Agricultural Development Association (PARC)

& Fundación Promoción Social (FPS)

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Conducted by Consultancy Development Company

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## Overview

According to the Oslo Conventions, the West Bank is classified into areas A, B, and C. Area C mostly consists of agricultural and grazing lands, and constitutes 60%<sup>1</sup> of the total West Bank area and population density and is estimated at 297,986<sup>2</sup> people distributed over 532 residential communities. Palestinian residential communities in area C are characterized by a population density relatively less than the Palestinian communities in areas A and B. Some of the residential communities in area C are independent areas such as villages and towns, and other neighborhoods belonging to communities located in area A.

The infrastructure in area C is under severe restrictions due to occupation; 29% of the constructions in Area C are without plans, less than 1% of area C are planned for the Palestinians development. Most of the Palestinians cannot obtain permits to build or renew their homes, livestock barns, or critical infrastructure. Therefore, the majority of buildings are built without permits, which makes the demolishing and displacing of their residency, by force, a routine action, and hence the prevailing housing style are tents or caves.

Palestinian communities located in Area C are the most vulnerable segment of the Palestinian population in the West Bank. In particular, the demolitions and forced evictions deprive the residents of their homes, undermine their living conditions, leading to deep-rooted poverty and increasing dependency on aid. These actions have been impacting children, and can also be particularly devastating, as they suffer of anxiety, and post-traumatic stress disorder symptoms.

70% of Area C lands is located within the boundaries of the regional councils of Israeli settlements. Therefore, Palestinians are prohibited to use and develop these lands. Moreover, 6200 Palestinians live in 38 compounds that are partially located in Area C and have been declared “firing zones” for military training purposes, increasing the population’s vulnerability and risk of displacement.

The occupation severe restrictions imposed in Area C prevent the development process in the fields of social, infrastructure, water sources, transportation, and agriculture. 70% of the area C residents are not



<sup>1</sup> [https://www.ochaopt.org/sites/default/files/ocha\\_opt\\_area\\_c\\_factsheet\\_August2014\\_arabic.pdf](https://www.ochaopt.org/sites/default/files/ocha_opt_area_c_factsheet_August2014_arabic.pdf)

connected to the water network and are reliant on water transported by tankers, where the average consumption of water is 202 liters/person/day, while the Israeli settler is sevenfold<sup>3</sup>.

## Report summary

The overall assignment is conducted by the Consultancy Development Company, Tubas, and consists of a value chain & market analysis in the dairy sector especially small ruminant dairy products in the West Bank area C with a focus on the Jordan Valley.

This assignment is conducted as part of the "Empowering the Palestinian Youth in Area C in a sustainable and equitable way against COVID-19 throughout the Agribusiness Sector" project, financed by The Spanish Agency for International Development Cooperation (AECID) and implemented by the Social Promotion Foundation (FPS) & the Palestinian Agricultural Association (PARC).

The project aims at increasing the resilience of the vulnerable population in Area C against the impact of COVID-19, by promoting the right to employment of the youth (19-35 years) in the agribusiness sector through the implementation of a set of activities that will take place in a 15-month period (23 April 2021 – 22 July 2022).

The value chain and market analysis of the dairy products will give clear image of the key obstacles, and recommended opportunities for small ruminants' holders in area C of the West Bank. Furthermore, the key constraints and opportunities for the small ruminant value chain will be addressed in order to identify leverage points to improve the chain performance. The functions of the value chain include the purchase and production of fodder, production quality, veterinary health care, flock/breeding management and marketing/sales.

The value chain highlighted that the dairy production is strongly affected by political, security factors and COVID-19 pandemic, including severe restrictions imposed by the occupation on the development of infrastructure, expansion of settlements, violence, road closures, and domination of water and electricity sources. This study aims to derive recommendations for attracting programs interventions that support the value chain and create an improved enabling environment.

Agriculture is a very important sector in Palestine, as it provides jobs around for 5.9% of the Palestinian labor force, and comprises both major and secondary sources of income for many Palestinians. Recently, Palestinian agriculture has contributed to 3.5% of the GDP. Small ruminants are one of the most important sectors of agriculture, and an important source of income to families in Area C.

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<sup>2</sup> <https://www.pcbs.gov.ps/postar.aspx?lang=ar&ItemID=3689>

<sup>3</sup> [https://wafa.ps/ar\\_page.aspx?id](https://wafa.ps/ar_page.aspx?id)

The small ruminant sector size is decreasing. According to the Palestinian Central Bureau of Statistics in 2013, the number of sheep was 670,230, while in MoA<sup>4</sup> census in 2018/2019, it was 616,490, and therefore causing a decline in milk production. Accordingly, the demand of small ruminant products will increase, and consequently the prices. <sup>5</sup>But it is noticeable that the prices during the period 2013 -2019 remained the same with a slight increase of 10%, while in the year 2020 the price was 8-12 NIS/kg, 20 % lower than it was in previous years as a result of the COVID-19 pandemic. On the other hand, the fodder prices increased up to 10%<sup>6</sup> for barley, <sup>7</sup>wheat bran up to 5% in 2020, while in 2021 these prices jumped up to 13% for barley, 15% for concentrated fodder, and 25% for corn.

The small ruminant and dairy production faces many challenges in the four main functions of the value chain; i) Cooperative structure: There is a remarkable weakness in structuring breeders and producers into formal framework, as cooperatives lead to absence of the collaborative work and business approach especially in supply chain and marketing, in addition to poor administrative structure and distribution of responsibilities; ii) Inputs: Limited access to natural recourses (water, grassing land, fodder and electricity), in addition to individual purchases and having many intermediaries in the supply chain, constitute a main challenge that raises the prices of inputs; iii) Production: Challenges of production include general lack of best practices in breeding and processing, poor enabling environment and traditional ways of production; iv) Marketing: Profit margin of dairy products varies, and is low due to limited marketing channels, which are confined in the local market, and weak selling outlets for exporting market, as well as limited business knowledge, poor marketing skills and weak relationships with the private sector.

To face these challenges, the value chain and market analysis recommend to strengthen and activate cooperative work among stakeholders, enhance innovative ideas and initiatives that facilitate the access to natural resources, inputs and markets, promote best practices, and expand women and youth entrepreneurship in the small ruminant sector. Strengthening youth's role in cooperative work through enhancing their participation and membership in the cooperatives to attract the innovative ideas throughout the value chain, especially in marketing and supply chain, such as establishing a silage processing unit owned and run by youth agricultural engineers, in collaboration with MoA and Faculties of Agriculture at the universities, and breeders, in addition to the idea of financing a pioneer sheep farm with youth investments, banks, lending institutions at low interests, and subsidies. For strengthening the women's role, the intervention idea is to lead women to focus on processing different and new

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<sup>4</sup> Ministry of Agriculture statics 2018/2019

<sup>5</sup> CDC survey and interviews

<sup>6</sup> Interviews with grain traders

<sup>7</sup> CDC survey and interviews

products such as yogurt, boiled cheese, labneh, spicy labneh with oil, hard cheese, different shapes of Jameed, and improving packaging for butter and ghee.

## The importance of agriculture

Agriculture is a very important sector in Palestine, as it provides jobs for around 5.9%<sup>8</sup> of the Palestinian labor force and comprises both major and secondary sources of income for many Palestinians. Recently, Palestinian agriculture has contributed to 3.5%<sup>9</sup> of the GDP. Due to its importance, national and international development cooperation actors have recognized the need to reactivate the agricultural sector in Palestine for not only the benefit of the agricultural sector itself, but also for it to become a key instrument in transforming the country's economic development. However, transforming and developing the agricultural sector are challenges considering that adequate infrastructure, agricultural investment promoting environment, and lacking of risk measurements, needs a suitable framework of policies that make the process of transmission and development harmonious with each other.

Small ruminant sector is one of the predominant agricultural activities in the areas of Masafer Yatta, Masafer Bani Naim, the eastern hills of Bethlehem, the Jordan Valley, and some areas adjacent to the separation wall. But the agricultural pattern has changed in Qalqilya Governorate and in some towns of the Jordan Valley and Jericho into the cultivation of fruit trees as grape, palm trees, Guava, Avocado and Mango.

The number of agricultural holdings of livestock in 2013 was 730,894: 79.8% in the West Bank, and 20.2 % in Gaza Strip. Small ruminant and mixed holdings are focused in Hebron Governorate and



amount up to 21.1% of the total small ruminant and mixed holdings in Palestine. 25.3% of the agricultural holders in Area C had received primary education. Holders' aged 40-49 years constitute 29.4% of the total holders in Palestine.

According to the Ministry of Agriculture census in 2018/2019, the number of sheep was 616,490: 91.8% in the West Bank, and 9.2% in the Gaza Strip. Moreover, the number of goats as per the census was 200,261: 95.6% in the West Bank, and 4.4% in the Gaza Strip. 28.1% of sheep and 18.7% of goats are in Hebron Governorate, which is considered the largest percentage among other governorates in raising small ruminants, followed by Nablus governorate reported at 85,386 (13.9% sheep) and 15,928 (0.08% of goats). Then 12.7% in Jenin governorate with a total

<sup>8</sup> [https://info.wafa.ps/ar\\_page.aspx?id=FnFZtGa27819740190aFnFZtG](https://info.wafa.ps/ar_page.aspx?id=FnFZtGa27819740190aFnFZtG)

<sup>9</sup> [https://info.wafa.ps/ar\\_page.aspx?id=FnFZtGa27819740190aFnFZtG](https://info.wafa.ps/ar_page.aspx?id=FnFZtGa27819740190aFnFZtG)

of 78,380 of sheep, and 26,197 of goats (13.1%), followed by Tubas and the Jordan valley with a total of 47,180 (7.7% of sheep), and 7,970 (4% of goats).

Raising small ruminants have two goals: the first is considered as an inherited career; while the second is an economic goal for meat and dairy production. Volume of milk production is estimated at 315,969<sup>10</sup> tons annually, processed to different types of dairy products such as Jameed, white cheese, etc., based on the consumers' behavior in the local market. The food patterns are different between the south and north of the West Bank, and are reflected in dairy processing, wherein small ruminant dairy products consumption in the south of the West Bank is high (Jameed and ghee). In the north, yogurt and white cheese are more frequently used. This led to some sort of specialization in production between the north and south of the West Bank.

## Background

The small ruminant sector is considered one of the most significant and largest sources of income in Area C, due to the limited access to resources and life necessities and attraction of investments which hinders the development of the area. It is also characterized as good wide grazing land, encouraging herders to stay and cling to raising small ruminant.

Area C communities consist of villages, towns, and Bedouin communities, each of which has a breeding model that is slightly different from the other. In the villages and towns, the breeding model characterized by smallholders is called semi extensive model (semi-opened shelter), whilst in the Bedouin area, characterized by large scale, is called extensive breeding, where the ruminants are being sheltered in tents or caves.

The fragile environment of breeding small ruminants, as a result of the strict restrictions imposed by the occupation, harms animal husbandry and production, and production ability. Sheep are exposed to natural factors such as extreme climate, as well as diseases that are uncontrollable in the extensive model, and lead to losses in lambs of about 20-25%<sup>11</sup>, and accordingly profitability drops down. In addition to the poor production infrastructure, especially in the processing area, and lack of water and electricity, dairy production loss is up to 3% with lower quality. Therefore, the profitability is low.

As identified with the focus groups<sup>12</sup> held in the South, Jericho, and Jordan Valley, small ruminant breeding has two economic goals: meat and dairy. Sheep flocks in the Bedouin areas are Awassi has twins' rate of 120%<sup>13</sup> by one birth per year, and milk production that does not exceed 100 liters per year. The other variety is often bred in residential communities, villages, and towns, due to the better and suitable environment for breeding. This breed is called ASAF, and has a

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<sup>10</sup> Ministry of agriculture statics 2018/2019

<sup>11</sup> CDC survey

<sup>12</sup> Focus groups; South of West Bank massafer yatta (Almfagara, Twana; Jericho (ALmarjat); Jordan valley Almaleh and North of Jordan valley

<sup>13</sup> CDC focus group

twin rate of 180%, and milk productivity of 200 liters per season, in addition to three births in two years.

The lambs are sold in the weaning age<sup>14</sup> of 1.5-3 months at 18-25 kg of weight for a price of 200-230 JD approximately. Lambs of more than 50 kg are sold at a price of 6.5 – 7.20 JD/kg according to the season, while milk is processed to a variety of products, based on the consumers' food pattern, which differs between the southern and northern areas.

There is a percentage of losses in production due to bad processing environment, in terms of applying food safety and the minimum processing requirements, such as infrastructure, electricity, water, and equipment, due to the lack of a proper development plan. In addition, resisting the attacks of the occupation and settlers, and the strict restrictions imposed on Area C is a clear challenge for farmers and herders. However, in area-C towns and villages losses are less than those in the Bedouin areas, because the processing units have more requirements of public health and safety set in place.

Dairy products derive from the main raw product which is processed to different products. Milk processing contributes to 76%<sup>15</sup> of the revenue in breeding farms. Milk production in the targeted area is very low as the average of production/ewes/season does not exceed 90 L in the south and 150 L<sup>16</sup> in the north, due to:

- Seasonal production concentrated in the months of February, March, April, and May due to reproduction seasonality.
- Selection and breeds: There is no correct selection in the herds of sheep and goats, since we see a high percentage of low or nonproductive animals. The breed itself plays an important role in the milk production; The Asaf breed, for instance, produces more milk than the local breeds.
- Feeding and breeding systems: The extensive system that only depends on grazing lands during the milking season affects negatively the quantity and quality of milk, as it does not meet the nutrients needed by ewes to produce good quality and higher quantity.
- Weakness in cooperation and commercial relationship with the private sector.
- Poor management (planning and vision), in addition to the absence of business approach.
- The fragile breeding environment: The breeder is not connected to water, electricity, or traffic networks.
- Climate change, limitation of access to grazing lands, and overgrazing, which decrease the vegetation cover.

## Study area

This study targets area C communities in the whole West Bank in Palestine especially focusing on The Jordan valley. Based upon the discussion with PARC team to analyze the

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<sup>14</sup> Focus group and CDC interviews

<sup>15</sup> Ministry of Agriculture statics 2018/2019

<sup>16</sup> CDC survey



dairy chain, the study will highlight the chain functionality and analysis of the market. The value chain and market analysis is within the frame of "Empowering the Palestinian Youth in Area C sustainably and equitably against COVID-19 throughout the Agribusiness Sector" project. The targeted areas of this study are:

1. Tubas (Jordan Valley) Governorate: includes 14 communities: Bardalah, Kardalah, Ein albayad, Humssa, Almaleh, Yarza, Alhadedeah, Samra, tayaseer, Ibzeaq, Atoof, Alras Alahmer and Makhoul
2. Hebron, Bethlehem Governorates.
  - 2.1. Hebron Governorate includes 9 communities in Alramadeen-Althahrea, 17 communities in Road 317, 10 communities in Musafir Yatta, 6 communities in Bedouin area, and 4 communities in Musafir bane Nuaem and Idna.
  - 2.2. Bethlehem Governorate: includes random groups of breeders in the east hills of Bethlehem.
  - 2.3. East Jerusalem: The communities located in AlAezarya and surrounding Maale Adomim and Alkhan.
3. Nablus Governorate: includes 3 communities in Kherbet Tana, Alnasaryah and Jeftlik.
4. Jericho Governorate: includes 6 communities in Almoarjat, Fasayel, Marj najeh Marj Gazal, Zobydat and Noweameh.
5. Jenin Governorate: includes the communities and villages close to the separation wall.

The number of sheep and goats according to Preventive Vaccination Unit at MoA<sup>17</sup>:

Governorate	No. of Sheep	%	No. of Goats	%
Jenin	78,380	0.13	26,197	0.13
Tubas	47,180	0.08	7,970	0.04
Tulkarm	22,741	0.04	2,245	0.01
Nablus	85,386	0.14	15,928	0.08
Qalqilya	19,995	0.03	3,000	0.01
Salfeet	10,722	0.02	5,898	0.03
Ramallah	42,731	0.07	31,781	0.16
Jericho	34,877	0.06	26,232	0.13
Jerusalem	36,172	0.06	9,229	0.05
Bethlehem	46,050	0.07	34,419	0.17
Hebron	192,256	0.31	37,362	0.19

## Methodology

This study highlights the stakeholders, value chain, and market analysis identifying and assessing the main challenges faced by the small ruminant dairy sector in Area C. Several approaches<sup>18</sup>

<sup>17</sup> Ministry of agriculture statics

<sup>18</sup> Qualitative and quantitative (Survey, focus, group and interviews).

were used in collecting and validating information, such as breeders survey, interviews and focus group. The methodology tools were developed through a technical offer that has been submitted to PARC, including secondary data, approx. 37 structured and semi-structured interviews, household surveys in 7 communities, and focus group discussions with all key stakeholders, to validate the data collected and discuss the study results (detailed info in Annex II).

The main objective of this study is to promote innovation/entrepreneurship of the common value chains in the targeted areas through assessment of the current agribusiness sector situation.

The specific objectives of the assessment are:

1. To identify the key constraints and opportunities for the dairy value chain.
2. Identification of leverage points to improve chain performance (focus on fodder, production quality, veterinary health care, flock/breeding management and marketing/sales).
3. To identify and analyze the marketing systems and the main actors in the dairy and meat sector
4. Establishing a productive institutional, legal, and administrative ecosystem for cooperatives
5. Developing systems and tools for the provision of training support services for cooperatives
6. Promoting new and innovative forms of cooperatives

This value chain mapping and analyzing process consists of 5 steps:

1. Data collection and analysis (interviews, desk research and input stakeholders/sector analysis)
2. Chain mapping (actors, functions and relationships) & market analysis
3. Survey among 10 dairy and meat producers in selected communities
4. Analysis of opportunities and key constraints
5. Validating the findings of the VCA through stakeholders' focus groups

### Stakeholder analysis

During the period October 20<sup>th</sup> - November 5<sup>th</sup>, the Consultancy Development Company conducted a stakeholder analysis for the small ruminants and the dairy sector at the level of private and public sectors. It conducted 20 face-to-face or telephone interviews for NGOs, feed

traders, dairy traders, breeding leaders, and Ministries. The general objective of this analysis and interviews is to identify the obstacles facing the small ruminants dairy sector and highlight the development opportunities.

Through the conducted analysis, and in close to consultation with the MoA office in Tubas, the following key obstacles in the livestock sector have been identified: i) the input (fodder, water); ii) production process (incl. animals' health and product quality); iii) output (marketing/sales); iv) the organizational structure/management of cooperatives. Therefore, a decision was taken to assess these functions in the value chain thoroughly.

#### Value chain & market analysis

The study of the value chain of small ruminant dairy products in areas C will be an additional value to the chain, from production inputs to production and consumption. During the period of the value chain analysis, 10 stakeholders (breeders, local NGO and veterinary entities) have been interviewed and consulted, through structured and semi-structured interviews and bilateral consultations. Mapping and analysis of the value chain included the key constraints, opportunities, actors and recommendations. The process of the value chain had a major focus on the dairy production, starting with inputs, goat and sheep breeding, milking, collection, storing, traditional and advanced processing, quality management, packaging, marketing and sales, etc.

The recommendations will provide a guideline to the PARC strategy to reach the core objective of "Empowering the Palestinian Youth in Area C sustainably and equitably against COVID-19 throughout the Agribusiness Sector" project.

#### Household survey

The household survey was conducted on October 30<sup>th</sup> and November 1<sup>st</sup>, through conducting interviews with 7 communities in 5 governorates in the West Bank<sup>19</sup>. The surveys were conducted in 20 communities divided over 7 governorates (Hebron, Bethlehem, East Jerusalem, Jericho, Nablus, Jenin, and Tubas). The questionnaires addressed all relevant functions of the value chain, including the availability and access to fodders, production quality and quantity, farm management and good practices, sales/marketing, and the effectiveness of the cooperatives. In addition, the survey included baseline data to determine the socio-economic situation of the farmers (flock size, household size, mortality of sheep/goat, etc.).

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<sup>19</sup> Breeders survey in Hebron governorate, masafaer yatta (Almfagra, Twana, Um Alkheer & Alrakeez); Jericho (Almarajat), East Ramallah and Tubas governorate (Almaleh & North of Jordan valley).

## Focus group

Three focus groups were held during the period from 25<sup>th</sup> of October to 2<sup>nd</sup> of November in the West bank, with a total of 33 participants (8 men and 25 women) of the main actors in the small ruminants sector, in order to assess the women's role in the dairy value chain at the social and economic levels, and women's decision in farm and household management. In addition, the focus group highlighted the obstacles and opportunities in the dairy value chain.

## Enabling environment

There are opportunities for the development of the value chain functions within agricultural holdings and the food production environment in the vulnerable communities of Area C. Development opportunities in the dairy value chain functions will serve the livestock sector and dairy products with positive impacts on the economic and social aspects. Due to occupation severe restrictions, the enabling environment is suffering many challenges, such as limited access to the minimum requirements of life such as electricity, water, transportation, or even building infrastructure, as well as weakness in implementation mechanisms of Palestinian governmental policies and laws that serve areas C and livestock value chain and encourage investments. Based on the recent ministries council policy to encourage investment, the environment is still favorable for investments and development to serve the small ruminant and dairy sector.

Furthermore, among the influencers on the enabling environment are external funds through donor institutions that initially focus on humanitarian aid, then development projects, and finally on market system projects. But the support did not focus on advocacy to support and protect the projects served infrastructures, from occupation, confiscation, and destruction of water tanks and Solar energy, portable bathrooms, and the needs for development plans for these areas.

Key obstacles within the enabling environment for small ruminant breeders<sup>20</sup>:

- a. The targeted locations have dry desert climate and environment, especially in the South of the West Bank.
- b. The areas suffer from lack of water. There are no water networks and the costs of transporting water tanks are very high, as 1 cube of water amounts 25 NIS. They depend on collecting rain water.
- c. The electricity resources are private power generators or solar panels.
- d. Almost all the house structures are tents or caves.
- e. Most of the targeted areas are very far from the urban gatherings, as there are no roads and those existing are very difficult and rugged. The transportation means are tractors and 4-wheel drive vehicles, and incur high fuel costs, as each transport may cost from 40-150 NIS.
- f. Limited access for the health and veterinary services providers to these areas.

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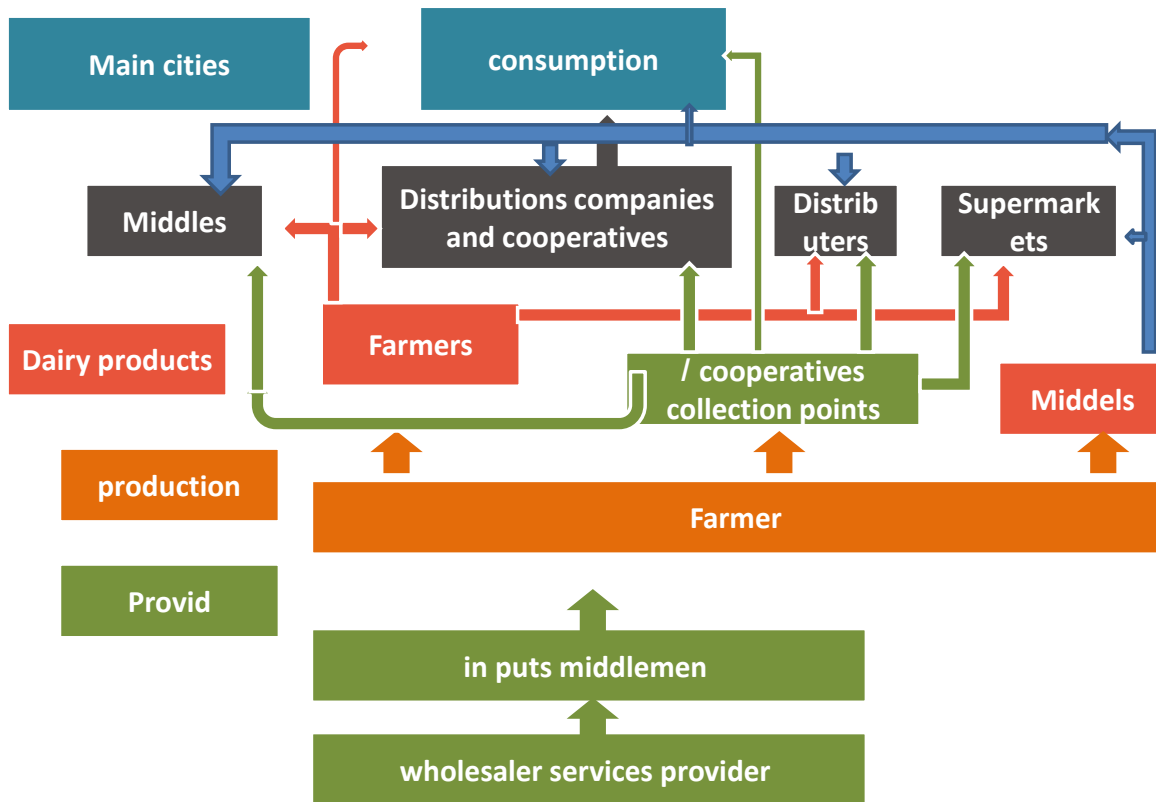
<sup>20</sup> CDC interviews and focus groups

- g. The closures and Israeli restrictions restrict the access of veterinary technical support and extension services.

Opportunities to enable the environment for small ruminant breeders:

- ❖ Strengthening relations with the private sector to adopt small ruminant products in global markets.
- ❖ Facilitating access to electricity resources through a photovoltaic (PV) system.
- ❖ Encouraging the partnership between agricultural cooperatives and the private sector.
- ❖ Strengthening the relationship with global influencers and building alliances with influential federations and associations in Europe and America, to influence and advocate on the occupation government to allow implementing development plans for Area C.
- ❖ Increasing the profitability in the dairy sector through boosting marketing and production, and reducing costs.
- ❖ Women play an important role in the processing of products. High potential women groups can be supported in production, packaging and marketing of products

## تطوير رسم بياني لسلسلة القيمة VC Mapping العمليات الأساسية



## Value Chain

### Challenges in the value chain

There are challenges facing dairy production all throughout the value chain, starting from the cooperative structure to the final consumers, as shown in the table below.

Overall, the lack of structuring of breeders into formal and informal groups limit the potential of cooperative work (which negatively affects their power to reducing the inputs prices by bulk purchasing and developing the linkage with the private sectors for marketing, and to influence the decision makers to improve the laws and enable the environment to encourage investment).

In addition: i) the inputs movement difficulties and unavailability due to the restrictions imposed by the occupation will raise final prices; and ii) the occupation violations preventing herders access to grazing areas or burning it as a result of military training.



Weakness of cooperative work in the dairy sector of small ruminants, especially in marketing	Production inputs are imported from areas behind the 1948 green line, through one or more intermediaries. Therefore, prices are raised up to 15%.	General lack in the best practices of dairy processing, attention to hygiene, appropriate conditions for keeping products, and the safety period of using medicines	Products are sold locally, either directly to the wholesalers and supermarkets, or directly to the customers, without knowing the markets outside their regions or export markets. Narrow marketing channels that are confined to the local markets.
Weakness in the spirit of cooperative work, and presence of the one-man-show model in carrying out tasks and representing the association	Limited access to natural resources such as grazing areas, poor density of vegetation cover as a result of being deliberately burned by the occupation, and water resources.	Limited marketing channels for raw milk due to seasonality of production, transportation difficulties, and bad flock management.	Dairy products profit margins vary according to the market channels which achieve more profit from the farm gate.
Lack of a business approach and weakness in commercial relationship with the private sector.	Weakness in quality control implementation mechanisms for production inputs.	Poor enabling environment and primitive production, traditionally and manually.	The quantities of dairy products exported outside Palestine are few, whereas the exporting to Gulf countries or the occupied territories behind the 1948 green line comes as initiatives through NGOs or some of the traders but on a small scale
Cooperative works are voluntary and depend on the members of the cooperative board	Weakness in implementation mechanisms of government financial policies such as income tax, tax refund, compensation, and agricultural lending policy.	Small ruminant breeders have multiple tasks without outsourcing.	Limited business knowledge, marketing skills, poor business mentality, and weak structure of cooperatives make the farmers find difficulties in selling their products to the private sector.
Poor management, vision and strategic planning.	Absence of the donors' role in advocacy and influence on the occupation government to protect their interventions in developing area C,		There is no variety of markets and limited geographical areas.

	especially the infrastructure, and to facilitate access to natural resources as grazing lands and water.		
	Individual purchasing of production inputs, due to the lack of implementation mechanism for bulk purchasing		

### The value chain opportunities

	Cooperative structure	Input	Production/ Health	Marketing /Sales
Enhancement of collaboration work spirit among small ruminant breeders in a business approach framework, especially in marketing dairy products.	Creating or developing an effective entity with a clear framework that enhances the collective purchasing and marketing of inputs/outputs.	Raising awareness among producers and breeders of the best practices in production, the importance of the production environment, and the impact of using medicines, in terms of side effects and safety periods, through workshops to be conducted by the Vet Department at MoA	Changing production and products styles through MoA extension services	
Developing and restructuring cooperatives senior positions, including the roles and responsibilities of each position and promoting voluntary work.	Strengthening the government institution's role in monitoring and quality control for agriculture inputs.	Strengthening milk collection centers and stimulating the private sector to contract with farmers for purchasing raw milk and building a demo farm.	Enhancing marketing channels of direct selling to the end consumer, through direct selling campaigns and promoting field visits between customers and producers.	
Building a bridge of trust between the private sector, breeders, and producers by developing procedures, methodology, and		Introducing mechanization into production processes and enabling the working environment	Increasing the dairy products value through abandoning the traditional packaging into advanced levels.	



implementation mechanisms that guarantee the contractors' rights.			
Developing strategies, risk management, and business plans for cooperatives within the business approach framework.		Strengthening marketing links between producers and consumers, and developing marketing skills	Increasing the family consumption of small ruminant products by developing advertising campaigns targeting families in the West Bank
		Enhancing specialization in production along the value chain and creating an entity with an agricultural investment that carries out packaging and marketing operations	Promoting the marketing channels in/out of Palestine.

### Organizational effectiveness cooperatives

In the last two decades from 2000 to 2020, many cooperative and charitable organizations were established aiming to develop the agricultural sector and the services provided. The number of cooperative societies working in the small ruminant sector is 141<sup>21</sup>, constituting 41.2% of the operating cooperative, as well as some charitable organizations. The organizations' structures are formed of a board of directors elected by the general assembly, under the supervision of the competent ministerial institution: 1) The organizations focus on reducing production costs and increasing profits through collective purchase and marketing together; 2) They have an economically viable cooperative initiative that actively contributes to improving the economic conditions of the members; 3) Practices of good governance and management principles.

But it is noticed that there is some weakness in the organization structure, especially, the organizations that were established upon a donor's request or covering humanitarian aid projects. Many cooperatives share a reasonable level of motivation among members to work together. However, more than 85<sup>22</sup>% of cooperatives subsequently experienced poor performance due to a lack of vision, resources, leadership, and unsuccessful business plans. This resulted in a loss of momentum and motivation towards self-help. Therefore, the Ministry of Labor or the competent authority has closed many cooperative societies or has not renewed their license.

<sup>21</sup> <http://www.cwa.pna.ps/uploads/REPORTS/16030115654.pdf>

<sup>22</sup> Breeder survey

Several stakeholders interviewed for this assessment, including the Department of Agriculture, have indicated that most cooperatives are viewed as charitable organizations by the donor community, rather than as for-profit institutions. It is therefore the current model that has to shift to a more profit-oriented, donor-oriented approach, by supporting cooperatives with a business-oriented approach. They also mentioned some successful models that carry out collective purchasing and marketing, such as the Al-Mentar cooperative, which buys milk, processes it, and markets it, as well as Alaqaba cooperative that provides veterinary and marketing services, for the following reasons: 1) They have an active (elected) paid board of directors, 2) The members pay an annual fee for services received, 3) The co-ops pay back a certain amount of profits to the members and a certain percentage of the profits is used for the development of the cooperative 4) The active and paid employees of the cooperative are responsible for the management, production quality, and sales/marketing.

The success of a cooperative depends on the common goal or "cooperative spirit". Unfortunately, Cooperatives often rely on funding from donor organizations, rather than collecting financial contributions from their members. Lack of knowledge, experience, and models that show how cooperatives can operate successfully as businesses; undermines the need for motivation and confidence.

#### Production Inputs

Production inputs including feed, veterinary services, medicines, transportation, electricity, water, and labor pose a major challenge to ruminant breeders. According to the majority of stakeholders interviewed, value chain inputs (feed) remain the biggest challenge, followed by veterinary medicine.

The limited areas of grazing lands due to factors such as desertification, overgrazing, expansion of settlements and land confiscation, led to a scarcity of raw materials for fodder production. Thus, the cost of feed accounts 55%-65%<sup>23</sup> of the total cost of raising small ruminants.

Breeders follow the extensive system of small ruminant rearing that depends on grazing lands; few of them are partially dependent on agricultural lands. Usually, the grazing period is between Feb.- Aug., depending on the rainy season and geographical nature. The rest of the year (autumn and winter), they depend on feeding grains so that the average consumption 270kg<sup>24</sup>/year of grains and 250 grams of hay per sheep.

Small ruminant fodder consists either of concentrated or mixture of concentrated fodder and grains. But the majority of breeders have used a mixture of barley, maize, wheat, and hay. The coping mechanism of cost reduction by breeders is to feed less or a lower quality of feed.

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<sup>23</sup> CDC survey and interviews

<sup>24</sup> Breeder survey

95%<sup>25</sup> of the fodder in the West Bank is imported from other countries through Israeli importers. Therefore, it constitutes the highest cost in raising small ruminants, as more than 95% of the grain and more than 85% of the concentrated fodder is imported (British Department for International Development, 2014). According to the Food and Agriculture Organization, 500,000 tons of fodder is imported on an annual basis. Only 5% of the fodder is produced locally and sold to individual farmers. The salesperson/traders and breeders usually agree to provide fodder before the reproduction and production periods. Breeders will pay off with high interests after the production, since they are charged high-interest rates. The depth and repayment cycle can only be addressed through access to capital.

#### *Fodder purchasing chain*



#### **Analysis of fodder purchasing chain:**

- **First ring: Israeli Importers:** This business is monopolized by Israeli importers. They prevent competition through pre-set schedules and roles. Prices are linked to international prices and are affected by exchange rates and transportation risks. Most of the goods are sold in the port to Israeli traders and a small number of Palestinian counterparts.
- **Second ring: Israeli and Arab fodder traders:** They purchase large quantities of fodder and store their inventory in warehouses and silos near the port. The prices are determined by traders at 15%<sup>26</sup> mark-up, and payment is done with short-term cheques (max one month).
- **Third ring: Israeli middlemen and Palestinian traders:** They purchase feedstuffs from the above mentioned second ring and supply them to the local traders in the West Bank with a 7% mark-up. Payments are made through cheques or in cash.
- **Fourth ring: Arab wholesalers:** They purchase the feedstuffs from the dealers and sell them with about 10% mark-up. Payments are made through short-term cheques or in cash.
- **Fifth ring: Arab sub-traders:** They purchase the feedstuffs from wholesalers and sell them to farmers adding a 7% mark-up, against payments of two-month cheques or in cash.
- **Seventh ring: Farmers:** They have two options to buy: The first is to buy from wholesalers in large quantities saving 13% (7% mark-up of the sub-dealers and 6% packaging). Second option is to buy from sub-traders (retailers) in small quantities at higher prices (adding 50 NIS as transportation cost). Initial payment is in cash while the balance is paid by installments when selling final products.

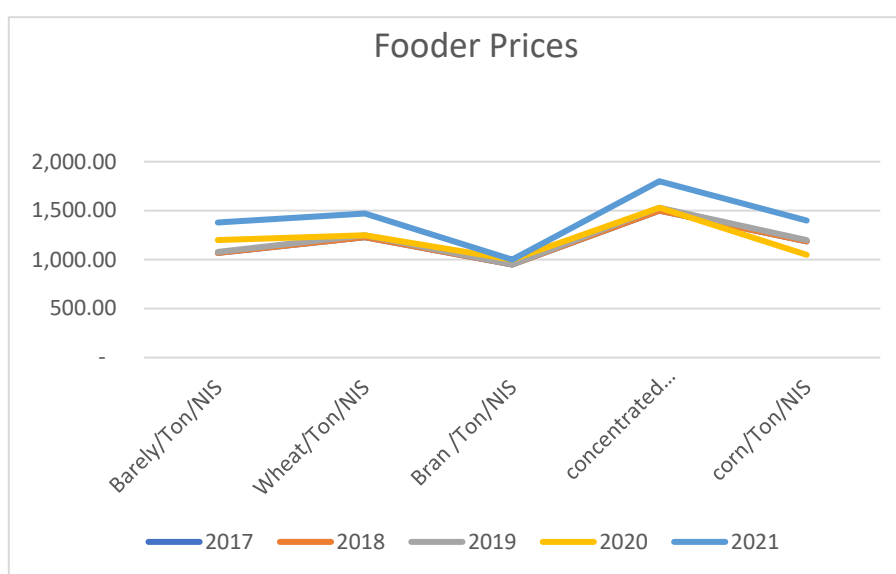
<sup>25</sup> Fodder traders' interviews

<sup>26</sup> Fodder trader interview

### Need to finance

Small ruminant breeders need capital to reduce purchasing production inputs costs resulting from loan interests, which make prices high. Access to finance is very limited for small farmers as banks refuse to give loans and lending institutions are reluctant to do so. Limited financial services/loans are provided to the cooperative as well. The Agricultural Credit Corporation was established and is in operation. It provides loans of up to NIS 70,000<sup>27</sup> at an interest rate of no more than 3%. However, breeders are reluctant to get the loans due to lack of knowledge, and cultural and religious beliefs that just allow to borrow money without interest.

The following chart shows the increase in fodder prices in the latest years:



### Key obstacles

- Reliance on imported fodder and Israeli middlemen who charge high commissions.
- Lack of capital among farmers and cooperatives. Most producers purchase the fodder on an individual basis from merchants and agree to re-pay after the production process, and are charged at high interest rates.
- Limited access to open rangeland for grazing small ruminants, especially for producers using the extensive model
- VAT / double taxation
- Scarcity of water due to the difficulty in reaching and due to Israeli military regulations (starting from Oslo II, article 40), that prevent digging artesian wells in Area C or the implementation or rehabilitation of any (water) infrastructure.

<sup>27</sup> Interview with a member of the institution management board

The agricultural projects in Palestine are family businesses. There are three patterns of agricultural employment: 1) depending on the family members employment in an unpaid work perspective, where all family members participate in the implementation of all agricultural activities and fieldwork such as grazing, milking, vaccinating, etc... Women are unique in milk processing. Occasionally, in other works such as shearing wool, some breeders seek the assistance from community members or relatives as voluntary work or skilled labor at 10 NIS/sheep<sup>28</sup>; 2) The second employment pattern: Breeders hire laborers for grazing based on monthly wages of 1500 - 1800 NIS<sup>29</sup>; 3) The last employment pattern is based on a 30% of the production return through an agreement with X family. This is sometimes followed in the large-scale flocks in villages and towns in areas C.

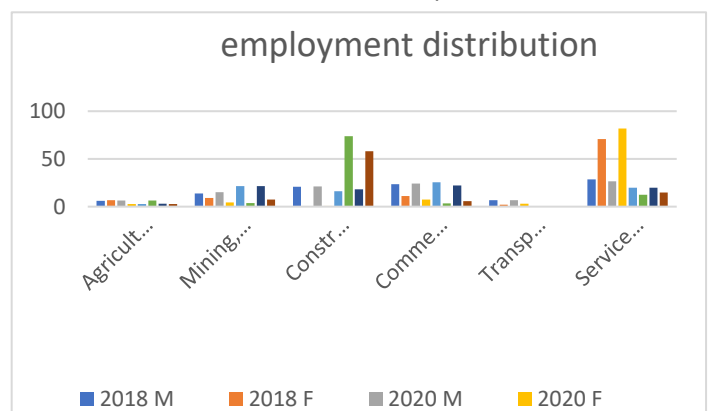
The breeders reported that there is no shortage of manpower if the need arises. Therefore, labor is available in small ruminant breeding, but is sometimes cramped and confined to the Bedouin communities and villages in Area C.

### Youth & Labor force

Statistics<sup>30</sup> show that the percentage of youth (15-29 years) in Palestine is 30.0% of the total population, distributed per age groups as follows: 37.4% are within the age group (15-19 years), and 62.6% within the age group (20-29 years), whereas (40-29%) of the young people are in the labor force. The highest unemployment rate among individuals is in the age group (20-24 years) by 44%, compared to 36% among individuals of (25-29) years.

Youth unemployment is an increasingly urgent and local problem. A recent PCBS report on the first quarter of 2017 stated that 53% of young people in Palestine were unemployed; the highest rate of unemployment was between the graduates of natural science by 70%

<sup>31</sup>The percentage of youth workers in the agricultural sector in 2017 was 3.4% (less than the services sectors including (Professionals, Technicians, Associates and Clerk, services, trade, Elementary Occupations, manufactures), while in 2018 it was 6.3 (6.2% M, 6.8% F), compared to 35% working in the services, commerce and restaurants, and hotels sector. In 2019 the agriculture youth employment was 3.2% (3 M, 2.9F) while increased in trade activities 21.9%). Finally the youth employment in 2020 has been increased from the



<sup>28</sup> CDC interviews

<sup>29</sup> CDC interviews

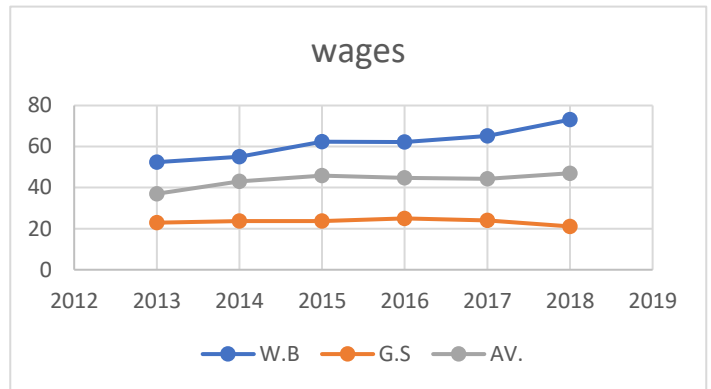
<sup>30</sup> <https://www.pcbs.gov.ps>

<sup>31</sup> [https://www.pcbs.gov.ps/pcbs\\_2012/Publications\\_AR.aspx](https://www.pcbs.gov.ps/pcbs_2012/Publications_AR.aspx)

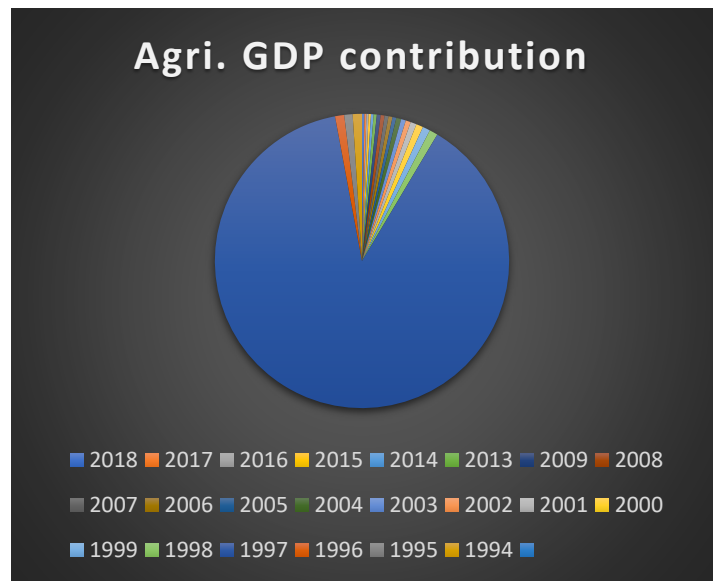
previous year up to 6.2%( M 6.6%,F 2.6) , wherein it is notice that female work in agricultural activities is continuously decreasing due to difficult work and ownership.

According to the Palestinian Central Bureau of Statistics “The Performance of the Palestinian Economy, 2018” issued in May 2019, the agricultural sector workers in 2018 were 51,500, 37,000 were from the West Bank and 14,500 from the Gaza Strip, while the number of workers in the agricultural sector in 2013 was 82,700, 59,900 from the West Bank and 22,800 from the Gaza Strip. The drop-off in agriculture labor is due to:

- Unfair daily wage: According to the Palestinian Central Bureau of Statistics “The Performance of the Palestinian Economy, 2018” issued in May 2019, the average daily wage in the agricultural sector in 2018 was 47.0 NIS: in the West Bank it was 73.1 NIS/day, and 21.1 NIS/day in the Gaza Strip, while the daily wages in agriculture is lower in comparison to other sectors and higher in settlements or areas behind the 1948 green line, at 150 -200 NIS/day.



- Low contribution to GDP: According to the Palestinian Central Bureau of Statistics “The Performance of the Palestinian Economy, 2018” issued in May 2019, the agricultural activities contribution in GDP was 4.8% in the Gaza Strip, compared to 2.6% in the West Bank, which is a relatively low percentage compared to other sectors, especially the services sector and the trade sector. While in the mid-seventies the agricultural sector contribution in the GDP was 36%, then decreased to 25% in the eighties, and in 1994 it declined to 13.4%. This percentage continued to decline till it reached 3.5% in 2018.



## Access to Market

Access to local and international markets of the dairy products in the current specifications is considered a major issue facing small and large holders and traders, due to the high

concentration of production within the same period, and the variation of quality among breeders. This variation needs a lot of technical procedures and training to overcome, in addition to the fact that the majority of breeders are not organized within effective and well-defined marketing systems. Therefore, prices are low, and this makes smallholders' families ensure low income.

In general, the marketing channels of dairy products are limited in the local market through middlemen (local traders), directly from the farm, wholesalers, supermarkets. Moreover, there are weak market channels for exporting where small quantities are exported out of Palestine and to areas behind the 1948 green line, linked to the Israeli restrictions of Palestinian goods. These are obstacles that directly affect the sustainability of the market and the development of new channels.

Local market channels (local market), which represent most of the marketing channels, face significant challenges in quality control due to production conditions and the processing environment.

Dairy products traders in the export market are considered weak players as a result of some challenges facing the producers and traders. Nevertheless, one of the dairy products with modest penetration in foreign markets is boiled cheese, but in small quantities. As for Jameed and others, the demand for Syrian and Jordanian products is stronger than that for Palestinian products. With regards markets in the areas behind the 1948 green line, the occupation government prevents the marketing of the products, and disclaimed all economic conventions and agreements signed with the State of Palestine, despite that some quantities are sold to these areas through the direct purchasing by residents individually from the West Bank markets.

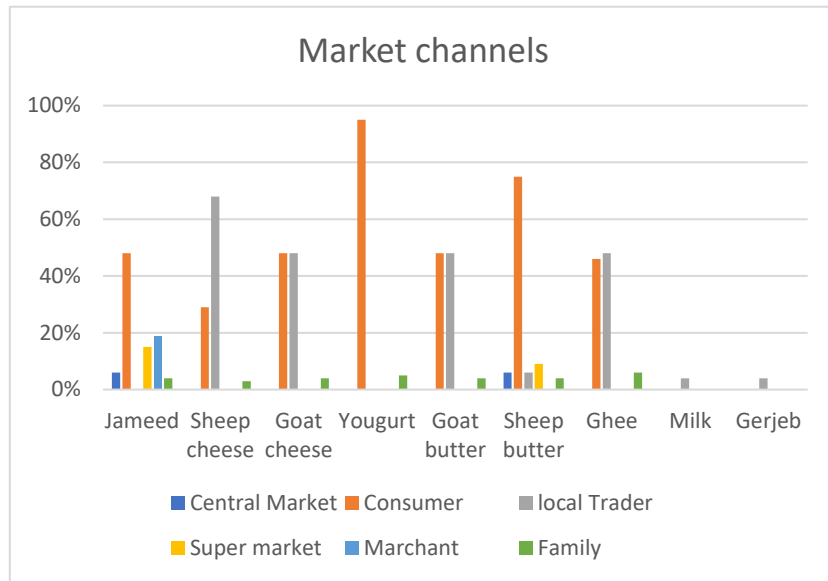
### Market Channels

Market channels are considered the core of the market and main means of communication in the market between the producers and consumers, dairy products are marketed in the West Bank markets through multiple marketing channels in each governorate. These marketing channels have not developed or increased significantly, nor did they have investors in the dairy products trade. They are limited among few people who inherited this career from forefathers, and just invest in existing links.

The governorates of Hebron and Nablus are the dairy trade centers fed from the other governorates traders and breeders by market oral contracts. These markets are specialized according to consumer demand and food habits, as in Hebron and Bethlehem consumers prefer Jameed and dairy by-products, while in Nablus consumers prefer white cheese.

The final consumers get their demand of dairy products through wholesalers, supermarkets retailers, and street traders or directly from the farm. Moreover, there are weak market channels for raw milk through milk collection centers of cooperatives or individual dairy producers for the whole quantities.

The graph below shows the rate of utilization of the market channels by breeders. It's clear that the middlemen represent 39%<sup>32</sup> of total channels, followed by the direct marketing from the farm.



### Market Shares

The consumer's food habits and demands focus on the products processed from small ruminant milk. These habits make the dairy products have good ranks in the market demand due to the absence of competition, especially in Jameed, and dairy by-products. However, cow and sheep cheese are sharing the market as there is high competition among both products, especially in the daily consumption. But for family storage, the demand for sheep cheese is more than 70%<sup>33</sup>.

Yogurt market from sheep, goat, cow's milk is shared. The market share of small ruminants' yogurt is almost 25%<sup>34</sup> of the market due to the unavailability of the product all year around in the markets. Yogurt and cheese processed from small ruminants' milk have an entire market share in terms of consumers' demand according to seasonality consumption. While the milk table has an full market share of 100% of cow's milk.

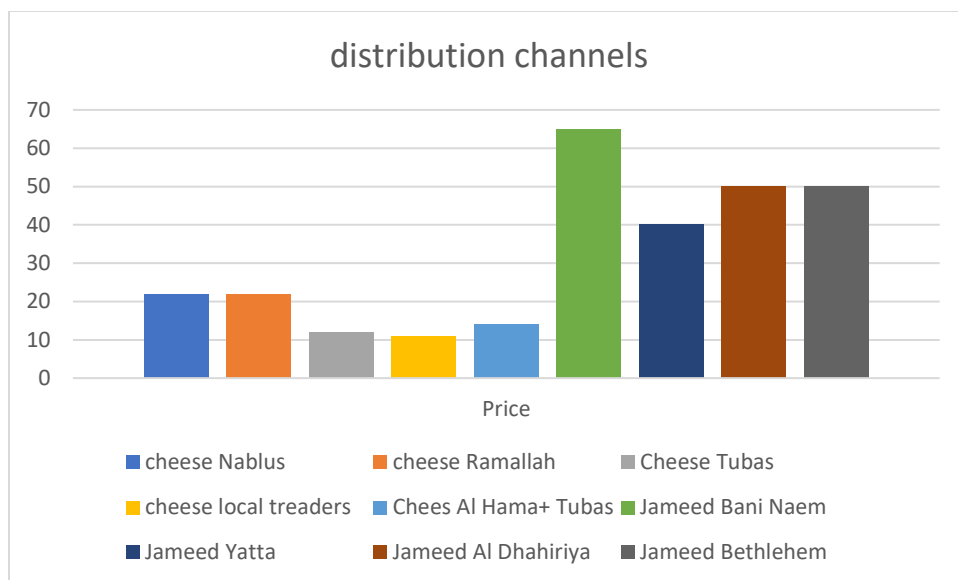
However, dairy products shares in the local and territorial markets are varied between producers and traders in terms of quality, price, and season as the following chart illustrates:

<sup>32</sup> CDC survey

<sup>33</sup> CDC survey

<sup>34</sup> CDC interviews





The top five products traded are (in order of market share):

- ❖ Fresh white cheese
- ❖ Yogurt (Laban)
- ❖ Labaneh (labaneh baladeyeh)
- ❖ Jameed (solid Yogurt), mostly in the south and Ramallah area
- ❖ Fresh milk

Main marketing challenges

- Seasonality production
- High price due to high production cost
- Unfair competition
- Local and territorial demand
- Poor and not attractive packaging
- Weak marketing skills
- Israeli restriction on outreaching wider areas

The seasonality of production is an issue that is directly related to poor flock management and weak farms and products infrastructures, in terms of the availability of proper shelters and cold stores.

The availability of suitable shelters for sheep makes the breeder able to manage flock reproduction, and thus distributing milk throughout the year without being dumped in a specific period, in addition to the availability of cold storage places that keep cheese for longer periods without the producers being forced to sell at low prices for fear of damage.

## Competitive advantages and disadvantages

The dairy products in the north and south of the West Bank are linked to the food habits of residents. There are inherited eating habits that make cheese a main meal on the Palestinian table, especially in the morning, and is used in foods as sambossek and pastry. Moreover, Jameed is an essential ingredient in mansaf; mansaf is considered one of the frequent food items on the Palestinian table and at weddings.

What distinguishes small ruminants' dairy products is that they are processed traditionally using sheep and goat milk. Moreover, they are free from preservatives and processed in the traditional handmade methods, and meet the consumer's desire taste according to food habits in each area. Furthermore, white cheese prices are more suitable than the factory-processed cheese with its excellent texture, while factory cheese is made from cow milk with a soft texture that consumers do not prefer. In addition, factory cheese is considered for daily consumption, while sheep cheese is seasonally purchased, and its shelf life is longer than the factory cheese.

Concerning Jameed and by-products characterized as home-based processing from small ruminant milk, they have no competitor in the West Bank, except the ones imported from Jordan that can be found and available on store shelves in small quantities, in addition to the consumer's preference for the local product.

The disadvantages for small ruminants' cheese, and other dairy products, is that they are not available all year round and the packaging is inappropriate, in addition to the instability in quality and savor sometimes.

## Production & farm management

In the past decade, due to the lack of grazing lands and the high prices of fodder, the model of small ruminants breeding has been shifted from the traditional and extensive to semi-intensive in the towns and villages of Area C. The model slightly differs from the extensive and traditional model, but in the Bedouin areas, the model of breeding remained the same. The small ruminant sector has two types of holdings: small agricultural holdings (less than 50 <sup>35</sup>heads of sheep and goats), and large agricultural holdings (usually more than 50 heads).

These holdings are classified to three models of breeding systems: intensive and modern breeding system, semi-intensive system, and traditional or extensive system. Extensive breeding is characterized by low production due to poor and traditional living conditions and inherited experiences passed down from one generation to another, leading in a lack of knowledge of good practices. It also depends on grazing lands and sheltering sheep in caves or tents. While the intensive breeding system (rarely used) includes raising small ruminants in shelters, good quality feed and modern breeding techniques.

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<sup>35</sup> Breeders' interviews

Due to the inherited food habits and the awareness of the Palestinian consumer about the products of small ruminants and their importance, there is a need to increase and develop dairy processing, to produce larger quantities to cover the demand. Therefore, it is necessary to move from the primitive processing stage to the modern, in terms of hygiene and packaging.

To increase the quality and quantity of dairy and meat production, farm management and good practices among small ruminant breeders must be improved and shifted from primitive to the modern system. Small ruminant's breeders and stakeholders reported that animal production in the areas behind the 1948 green line and Palestine differed greatly. Despite the fact that the West Bank and the 1948 areas have the same ecosystem, in 1948 area the twin's rate is double, and the milk quantities and milking days are higher. Several stakeholders have highlighted the need to increase animals' health and production through professional farm and flock management. The quality of rams can be improved through good election, fodder (higher feeding), improved veterinary services, and artificial insemination. Farm management can be improved through good reproductive management practices, separation of flock based on production period, mobile clinics, and demo farms. Interventions in reproduction, health, breeding, and protection can reduce flock mortality (now 20-30%).

The assessment in Area C showed that small ruminant breeders rely on their own accumulated experience in treating diseases and selecting appropriate medicines, and following the veterinarian's prescriptions from the private or public sector, or those appointed by co-ops on project basis. The demand for veterinary medicines is increasing in the breeding season (May, June, October, November, and December). Throughout the study, we found that farmers have limited awareness about the safety period of medicine and that a small portion of the breeders adhere to it. Breeders purchase veterinary medicines from veterinary clinics or pharmacies, either in cash or on account after selling the product. Most of these medicines are imported at high prices compared to regional markets.

Common diseases among farms are:

- ❖ Udder diseases
- ❖ Infertility diseases and abortion
- ❖ Brucellosis and Foot and Mouth Disease
- ❖ Chick pox.
- ❖ Septicemia (Intestinal poisoning)
- ❖ Malnutrition (Eclampsia)

Reproduction triggers (Sponges and Hormones): Breeders use sponges and hormones excessively to increase the pregnancy chances, and they are unaware of the side effects on the health of their animals and use them in an unregulated manner from February to June. Moreover,

they purchase them from vet stores or pharmacies within the cost 20-30 NIS<sup>36</sup>. Reproduction triggers cause some infectious diseases that spread quickly and widely and might cause death to small and large ruminants. Therefore, there is an annual preventive program through the veterinary departments, in which free vaccines are distributed, but the breeder has to purchase other vaccines.

#### *Artificial Insemination*

Lately, some of the farmers switched to artificial insemination to improve the breeds by their own. This technique is provided by private veterinarians and PLDC through international support programs. But in recent years, such programs have not been funded, and therefore a few breeders have continued artificial insemination. In the Bedouin areas, they do not use reproductive trigger or artificial insemination.

The artificial insemination achieves good results in the production as a high percentage of twins and better variety of sheep were observed. Artificial Insemination faces many obstacles such as:

1. The rams used in insemination is personally selected, and lack of reproduction records and a medical clearance certificate.
2. Insemination operations are done without planning or clear strategy
3. The original breeds receive no special care and are not inseminated by rams of the same breeds.
4. Special centers to improve breeds do not exist.
5. The artificial insemination trend used is based on donors' funds.

#### **Key obstacles**

- Multitasking for sheep breeders, from sheep raising to marketing, without outsourcing some sections in the value chain.
- Linkages are weak between small ruminant breeders and stakeholders, small ruminant breeders confined to a limited network of relationships.
- Lamb mortality is high up to 20%<sup>37</sup> due to the fragile infrastructure and poor nutrition
- Small quantities of raw milk are sold directly. This model is within the framework of institutional initiatives. In general, small ruminants' breeders do not sell raw milk directly due to transportation difficulties, in addition to the buyer's lack of commitment to purchase. Sometimes, they prefer to sell the products semi-processed due to lack of financial resources.

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<sup>36</sup> Vets' storage interviews

<sup>37</sup> CDC survey and interviews

- The majority<sup>38</sup> of small ruminant breeders sell lambs at weaning age from 2 to 4 months at a price of 200 JD due to the fragile infrastructure and lack of funding.
- General lack of knowledge of good practices (hygiene, feeding, health, separation milk/meat sheep)
- The dependence of breeders on their own experiences in buying medicines and curing their animals.
- Some of the vaccines distributed outside the public veterinary departments are of poor quality.
- The breeders are reliant on the accumulated experience in treating small ruminants, as well as their excessive using of antibiotics.

## Gender

Most of the agriculture projects are family businesses run by the family members (occasionally, workforce from outside the family is hired).

Women are considered the agriculture sector engine since they are in charge of more than 65%<sup>39</sup> of the work, undertaking tasks as milking, cleaning, feeding, and vaccinating, in addition to the dairy processing. The dairy processing is gender-sensitive, where women process the milk into cheese, yogurt, labneh, Jameed, and labneh with oil. Women process milk usually inside their tents or houses or in processing units. Based on an analysis carried out by the consulting company, the profit margin<sup>40</sup> for yogurt is 12%, labneh is 15%, and labneh balls with oil is 20%.

But most of the flocks are owned by men, meaning that in farm management (development, expansion, and marketing -including negotiating prices, distribution channels, selling inside/outside the communities-), there is an almost non-existent role for women.

Access to information and extension is not difficult for women in Area C. The Ministry of Agriculture, Extension Department, provides extension services from a gender equality perspective framework. They have female agricultural engineers providing the services in addition to other civil society and humanitarian institutions that have female employees supporting the women in the dairy sector. However, some social determinants and norms favor men to receive an extension service.

With regards to income and sales, women's work is mainly unpaid with fewer women being able to manage the income and save following the man's approval. Women in the focus group reported that the spending decision is made by men in most cases; they decide where and how to spend and invest the benefits, while women play a marginal role in this aspect.

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<sup>38</sup> CDC interviews

<sup>39</sup> Focus groups

<sup>40</sup> CDC analysis

From a social perspective, women living in Area C are confined in farms working, processing, and taking care of the household/family chores, limiting their interactions with their communities, which is also limiting their perspective on the value chain whole picture.

#### General obstacles facing women in agriculture

- Customs and traditional norms sometimes restrict women's individual running of the agriculture activities, starting with purchasing inputs and ending with marketing products. This problem exacerbated by the fact that these customs and norms became convictions and many women believe in them.
- The weakness of women's ownership of agricultural capital, especially agricultural lands and farms, due to the lack of access to their rights of inheriting lands from the father's or husband's side.
- Access to financial resources is limited due to the lack of guarantees for women, such as lands being registered by their names.
- Increasing production costs and thus reducing the level of profits, because most women are not able to do many jobs that require great physical effort, which leads to hiring male workers to do these jobs.
- Weakness in women's ability to deal with men from outside the family or the village in purchasing production supplies or marketing products, especially when dealing directly with wholesalers. This can lead to being exploit in terms of prices.
- Weakness in women's affiliation to specialized agricultural cooperative societies. They do not even occupy senior positions as boards of directors of these associations, which hinders the access of their voices and thus solving their problems.
- The inability of women farmers to become members of agricultural cooperative societies, due to the high "costs" of fees.
- Weakness of women's role in decision making positions at household and community levels, due to weak women's capacity and social norms.

#### Opportunities

- Encouraging women farmers to claim their rights of inheritance in agricultural land, as owning and registering the land in their names, this can lead to benefit from many agricultural projects or facilitate their access to the necessary financing, as the relevant institutions require that the land be registered in the name of the person requesting the service.
- Encouraging women to apply best practices and standards in dairy products that will reduce the impact of the price fluctuation problem and the control of traders.
- Increase women's awareness of supply chain suppliers and marketing channels through communities' associations and cooperatives.
- Improving women's capabilities at social and economic levels.
- Enhancing women's affiliation to cooperative and community associations.

- Increasing women's awareness, in terms of technical and social aspects related to production techniques, and keeping pace with other developments in production methods, and new products and varieties that can be introduced to the production process, in terms of social aspects to increase her self-confidence and how to deal with others, in addition to notifying them of their rights and how to claim such rights.
- Expanding the formal agricultural extension process, both in terms of quantity (number of extension agents), or in terms of type (specializations of extension agents and their gender).
- Establishing sufficient and competitive storage and refrigeration units in cooperatives, in order to absorb part of the surplus production in seasons. This helps in stabilizing prices in the market.

## Environment

The small ruminant farms in Area C, especially in the Bedouin areas, are located in the mountains and valleys which are characterized by fragile infrastructures that do not have transportation, electricity, and water networks due to the occupation restrictions imposed that do not allow to build, excavate or paving roads. Moreover, breeders do not have traffic connections to their farms except through soil roads or through the use of bypass streets that the occupation established for settlements and military training centers.

The farm structures have consisted of tents and caves for family housing and sheltering sheep. These barns do not affect nature in terms of using cement and excavations, which is necessary for establishing farms and houses.

The majority of breeders in the Bedouin areas use water tanks to water sheep. Water is put away in basins that are exposed to evaporation on summer days, but in winter and spring, they depend on rainwater through valleys and natural water ponds that partially cover the needs of sheep. Some of the breeders in Area C use old wells to collect rainwater, whereas the rest of the water need is covered through water tanks. In urban areas such as Ain al-Bayda, Bardala, and Kardala, rainwater is used in addition to local water networks, but when water is scarce, they use water tanks.

The Bedouin areas use primitive and traditional methods in lighting: few of them have solar energy, while some have generators. At daylight times, they depend on sunlight, while in villages and towns they use the local electricity network with electric meters, controlled by the village councils. 70% of the breeders expressed that they couldn't use machines in production and processing, due to the lack of electricity resources and high costs of generators fuel.

The production inputs in raising livestock are fodder and straw, which in the end, will be converted to manure. Since feeding sheep depends on grazing, sheep manure in the grazing lands would be as a natural fertilizer for herbs. Later on, at the barns the manure is piled in the bran's

floors, or collected and sold to the vegetable and fruit farms. This is only done in towns and villages. Also, the processing wastes are thrown close to the barns, and there are no plans or practices set for them.

Due to the restrictions imposed by the occupying power and the systematic policy of displacing the citizens of Area C, by narrowing grazing areas and confining them to a narrowed area, in addition to the deliberate burning of grazing lands, overgrazing increases leading to a diminished vegetation cover, and consequently lack of fertility of pastures, in addition to exposing them to erosion factors and stripping.

## COVID-19 impact

In light of the global pandemic, and following the emergency law declared in Palestine, supermarkets, restaurants, butcheries were closed, transportation was stopped, and movement was almost paralyzed. This had a negative impact on sectors of employment, production and marketing, and services, and, therefore on family household income.

The peak of the pandemic was in the period of March to July 2020. This period was the season of small ruminants' production (dairy and meat), as seen above. Emergency law and continuous closures had direct effect on markets demand/supply and channels. Some of these channels were totally shut down as the supermarkets, central markets, and consumer channels. The market supply increased and demand decreased; canceled market shares led to relying on the local trader's marketing channels, which, in turn, led to an increase in supply, and thus cheese prices dropped by approximately 15%.

Moreover, the production inputs, especially small ruminant fodder and fodder supply, was affected by the methods of payments in which the breeds had to prepay, contrary to what was done previously. Prices did not rise till July 2020 because most small ruminants depend on grazing. In this period, sheep feed depends on grass only, and there was stock of imported foddors in the traders' stores. But after July, the fodder prices<sup>41</sup> rose up to 10% and in 2021 they rose to 15% as the increase in demand and shipping costs have also increased up to 30%.

Small ruminant sector employment has not been affected since the sector depends on labor from within the family, but the provision of veterinary services was negatively affected due to the limited movement, causing delay in fulfilling the services and increasing their fees.

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<sup>41</sup> CDC interviews



## Innovative Idea

Fodder cost constituted 65%<sup>42</sup> of the total cost of small ruminants breeding. In light of the limited water resources and narrowed grazing lands, there were initiatives at the institutions level, as well as individuals, to try and experiment ways that produced some ideas as producing alternatives fodder (barley hydroponic or silage production), or a new variety of dairy products (hard cheese), which reduced the costs of feed by 12% and increase profitability.

Barley hydroponic: Few farmers, charities, and cooperative societies have been reiterating the experiment of cultivating barley due to its positive impact on the profitability of breeders, as its return on investment is 46%<sup>43</sup>. It also reduces the cost by 12%<sup>44</sup>, in addition to the good quality of fodder that is reflected on sheep productivity of milk and lambs. This idea has been applied in societies where there are sources of electricity and water because of the need to control the appropriate conditions for cultivation, in terms of temperature and humidity. And this is most difficult part to implement in Bedouin societies, but it can be applied in villages and towns with the need to enhance expertise in this field.

Silage<sup>45</sup>: It is the process of converting vegetable and fruit farm wastes, such as corn and dates, with some additives to good quality animal fodder that has reflections on fodder cost, by reducing it 15% and have a return on investment that exceeds 100%, in addition to providing sheep with good quality fodder that leads to an increase in production. This experiment was carried out by individual farmers in Al-Jaftlik, where the fodder was fermented in plastic drums or ground pits, in addition to the presence of equipment for chopping plant residues and packaging.

Hard foreign cheeses<sup>46</sup>: Processing hard cheese that has long shelf life through certain processing stages and conditions. It has a financial return of 15% in addition to its exclusiveness in the market as local production. This idea was applied for years in the Palestinian Livestock Development Center.

## Recommendations for youth interventions

### Selection of beneficiaries

- It is strongly recommended to work with the youth in the south of the West Bank, Hebron, Bethlehem, and the Jordan valley Governorates, because of the added value of their basic

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<sup>42</sup> CDC interviews with MoA

<sup>43</sup> CDC Feasibility study

<sup>44</sup> CDC Feasibility study

<sup>45</sup> CDC Feasibility study

<sup>46</sup> Interview with PLDC

knowledge in breeding ruminants and processing dairy products. Moreover, the existence of cooperatives and processing units' medium scales contributes in marketing dairy.

- It is highly recommended to work with those who have innovative ideas, preferably in the field of alternative fodder, and those who have new technologies in breeding sheep and processing byproducts.
- According to the high-rate return of investment in breeding small ruminants, especially in the Jordan valley and Jericho, we strongly encourage to work with youth who have the ability to establish small ruminants farms.
- It is highly recommended to work with the youth in proper legal framework.

#### Proposed small ruminant dairy products interventions

As a result of some gaps and problems facing the small ruminant sector in the various functions of the value chain, following the traditional method of production, and based on profit margins, we recommend that the interventions focus on the following topics:

- It is strongly recommended to encourage dairy processing projects that specialize in packaging, as the overlap in final products functions and absence of the specialization in packaging reduces the profit return. The opportunity is to create entities carrying out packaging and filling the products by trained skilled labor.
- To focus on the idea of recycling the farm's waste to produce compost, for which the profit margin is estimated at 40%.
- There are new varieties of dairy products, such as hard cheese, that we strongly recommend to produce.
- The low productivity of flocks that rely on grazing lands creates the ideas to establish farms that depend on grains fodder, through facilitating access to fodder sources by establishing entities, which increase the fodder share for each head and increase productivity.

#### Action plan pre-selection

Support aimed to engaging youth in a participatory creation and business planning process, which may help them in refining, clarifying and rearticulating their ideas, aspirations and business objectives. This should be done as an outcome of an individual assessment for their business idea and a SWOT analysis.

#### **Step 1 Generation of ideas**

Innovative ideas are the core factor of entrepreneurship. Every youth will derive these ideas from different sources. Generating ideas for an entrepreneur means discovering a business idea or developing an idea into a working business concept. This idea can be a plan, proposition, opinion, or belief. The informed entrepreneur gets better opportunities to identify upcoming opportunities. Generation of ideas will be through:

- Brainstorming: A way to get new ideas and potential solutions. It is a method where like-minded youth participate in the discussion and provide their inputs. There may be constructive criticism at times but there are no dominances and inhibitions. This method has a good success rate when efforts are focused on dairy production, market area, or the supply chain inputs.
- Focus groups: Workshop with those who possess accurate information about the concept of a certain idea, where they present this information in a structured form, and then the productive idea is conceptualized creatively as per the market need. It also helps in examining the idea.
- Problem analysis: The goal is to generate new ideas. Consumer's opinion is sought by providing them with a list of problems encountered, in general, and asking them to identify and discuss products in that category that have a particular problem. Thus, it helps find a new product or develop the practices or the products.

### **Step 2. SWOT analysis**

SWOT analysis should address the need for access to input resources and the market. By analyzing the strengths, weaknesses, opportunities, and threats of the dairy sector challenges, pioneers will easily address their own needs.

### **Step 3. Market readiness assessment**

A market readiness assessment should address the steps of improvement in the value chain prior to entering the market. All needs related to improvement of access to fodder and water, increase productivity and quality, health care .and processing will be addressed.

### **Step 4. Develop business plans**

The business plan is an important and strategic tool for entrepreneurs. The business plan focuses on the specific steps needed for them to make their business ideas established and successful. Moreover, it helps them achieve short-term and long-term goals.

The business plan will include the human resources needed, production (product type, final shape, inputs, specifications, and machinery), and also analysis of the market in order to

determine the demand and supply of the dairy products. Identifying the sales volume of dairy products, distribution, the competitors' strategies, pricing, market share, consumers, and finally addressing cash flow and return, should all be part of the plan as well.

### **Step 5: Networking with the private sector and financial resources**

Through the multiple functional linkages of the dairy value chain, the challenges facing the small ruminant sector, and youth employment, it is necessary that these links are connected to each other in the presence of specialization in tasks for each function. In addition, pioneers should be introduced and linked to services providers such as inputs suppliers, extension services and markets and financial resources, with a necessity to create a business legal framework.

### General recommendation

It is recommended to focus on:

- ❖ Facilitating access to electricity resources through photovoltaic (PV) system.
- ❖ Encouraging the partnership between agricultural cooperatives and the private sector.
- ❖ Increasing the profitability in the dairy sector, through boosting the marketing and production, and reducing costs.
- ❖ Women play an important role in the processing of products. High potential women groups can be supported in production, packaging and marketing of products
- ❖ Enhancing collaborative work spirit among small ruminant breeders in a business approach framework, especially in marketing dairy products.
- ❖ Creating or developing an effective entity with a clear framework that enhances the collective purchasing and marketing of inputs/outputs.
- ❖ Raising the awareness of producers and breeders of best practices in production, the importance of the production environment, and the impact of using medicines in terms of side effect and safety periods, through workshops to be conducted by the Vet Department at MoA
- ❖ Changing production and products style through MoA extension services
- ❖ Developing and restructuring cooperatives senior positions, including the roles and responsibilities of each position, and promoting the voluntary work.
- ❖ Strengthening the government institution's role in monitoring and quality control for agriculture inputs
- ❖ Strengthening milk collection centers and stimulating the private sector to contract with farmers for purchasing raw milk and building a demo farm
- ❖ Enhancing marketing channels of direct selling to the end consumer through direct selling campaigns, and promoting field visits between customers and producers.
- ❖ Building a bridge of trust between the private sector, breeders, and producers by developing procedures, methodologies, and implementing mechanisms that guarantee the contractors' rights.
- ❖ Increasing the dairy products value through abandoning the traditional form of packaging into an advanced form.

- ❖ Enhancing specialization in production along the value chain, and creating an entity with an agricultural investment that carries out packaging and marketing operations
- ❖ Developing strategies, risk management, and business plans for cooperatives within the business approach framework.
- ❖ Encouraging women to apply best practices and standards in dairy products that will reduce the impact of the price fluctuation problem, and the control of traders.
- ❖ Improving women's capabilities at social and economic levels.
- ❖ Enhancing women's affiliation to cooperative and community associations.
- ❖ Increasing women's awareness, in terms of technical and social aspects, related to production techniques and keeping pace with other developments in production methods, and new products and varieties that can be introduced to the production process, in terms of social aspects to increase her self-confidence and how to deal with others, in addition to notifying them of their rights and how to claim such rights.
- ❖ Expanding the formal agricultural extension process, both in terms of quantity (number of extension agents), or in terms of type (specializations of extension agents and their gender).
- ❖ Establishing sufficient and competitive storage and refrigeration units in cooperatives, in order to absorb part of the surplus production in seasons. This helps in stabilizing prices in the market.

## Interventions

Proceeding from the obstacles facing the small ruminant dairy sector, and the opportunities that can be used to be as tools for developing this sector and improving employment opportunities along the chain, these can be as interventions at several levels, locally and globally. Some of them have a long-term impact, while others require a collective and international effort to achieve an impact. The interventions mandate will be in several areas: advocacy and lobbying, organization and structures, inputs of the supply chain and marketing.

Intervention area	Intervention		Description	Target beneficiaries
Organizing and structuring breeders	Strengthening and activating cooperative work among breeders	Individual level	Increase the awareness of collaborative works among breeders and strengthen collaboration work spirit in a business approach framework especially in marketing dairy products through conducting workshops with CAW <sup>47</sup> partnership. The workshops will target members of cooperative and charitable associations to increase breeders' pertinence of cooperatives and charitable association	Breeders in the Jordan valey
		Cooperative level	Raising cooperative capacities in planning, management, generating business ideas, and developing business plans within the business approach, in addition to restructuring cooperatives senior positions including the roles and responsibilities of each position, and promoting the voluntary work among the cooperative and charitable association members	Alaqabeh Cooperative, Almintar Cooperative, Aljeftlik Cooperative
			Building a bridge of trust between the private sector, breeders, and producers by developing the commercial relationship between them through grants to open new market channels locally and internationally, contracting process by developing procedures, methodologies, and implementation mechanisms that guarantee the contractors' rights	Breeders, women groups and cooperatives in Karadalah, Aljeftlik and Almintar
		Youth level	Strengthening the youth role in cooperative work through enhancing their participation and membership at the cooperatives, to attract the innovative ideas throughout the value chain, especially in marketing and supply chain	Agriculture engineers

<sup>47</sup> Cooperative work agency

Production and management interventions

Intervention area	Intervention		Description	Target beneficiaries
Production and management	Enhancing alternative fodder production	Youth & breeder level	Silage production is considered an important non-traditional production process; silage fodder is an alternative fodder with higher nutrient value produced from farm residues and agricultural wastes that will replace part of the traditional and processed fodder. Silage processing is one of the means of protecting stimulating agriculture by reducing fodder cost and increasing fodder quality, and protecting the environment also from pollution resulting from neglecting agricultural residues in villages and farms. The idea is to establish a silage processing unit owned and run by youth agricultural engineers in collaboration with MoA, Faculties of Agriculture at the universities, and breeders. This partnership aims to develop the product and conduct laboratory test, then market it commercially.	Area C in the Jordan valley district, especially Aljeftlik and Jericho are rich in vegetable farms residues, palm leaves and corn plants. These are considered good material resources for producing Silage. For example, corn wastes are estimated annually at more than 6000 <sup>48</sup> tons. Moreover, a breeder's group in Aljeftlik has equipment for collecting and shredding agricultural waste, in addition to a filling machine that packs the products in vacuum bags. Moreover, this breeder's group has good experience in the production process.
	Establishing a demo farm  Promote producing dairy products that have good profitability	Women & youth	The idea is to finance a sheep farm with investment from youth, banks, lending institutions with low interests, and subsidies. The farm, under formal frameworks, will be run and owned by youth, where best agricultural practices are applied, in addition to consolidating the idea of artificial insemination in the demo as well as Introducing mechanization into the production processes, and raising the breeder's awareness of best practices through organizing field visits to it and through training. This farm will have a financial benefit returns through the sale of milk and dairy products, sheep, mothers, and rams. According to the dairy product profit margin, the idea of the intervention is to lead the youth and women to focus on processing yogurt, boiled cheese, labneh, labneh with spicy and oil and hard cheese,	Jordan valley, especially Aljeftlik  Youth & Women

<sup>48</sup> Mosa hjazean interview /breeder's leader

	and long shelf life at the commercial level.		different shapes of Jameed, and improving packaging for butter and ghee.	
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### Marketing interventions

Intervention area	Intervention		Description	Target beneficiaries
Marketing dairy products	Strengthening and introducing marketing channels	Strengthening milk collection centers	Stimulating the private sector to contract with farmers for buying raw milk. The profit margin from selling milk is more beneficial and the raw milk market seems to have grown, due to the dairy plant that has been established in Tubas. The increase of raw milk demand will be covered through existing milk collection centers that need a development process to be ready for supply. The development process needs to transform the approach from voluntary work to a business run by youth, where the development process lies on developing the collection means, such as milk tanks and milk testers, in addition to milk collection jars	North of Jordan Valley, Almiintar and Aljeftlik
	Strengthening and introducing marketing channels	Enhancing export dairy products	The intervention idea is to promote exports of dairy products with the aim of increasing the Palestinian share in the export markets, through working with private sector companies to export dairy products especially cheese, Jameed and dairy by-products made by women. In addition, an analysis of the export potential and the market attractiveness index (MAI) shall be conducted, and based on market information, then choosing the most strategic market based on the market information as per the consumers' trends, product quality standards, importers, and the supply chain.	Alaqabeh cooperative, Kradala cooperative and women groups in the Jordan valley
	Stimulating and increasing domestic demand		Increasing local consumption through local and national purchasing campaigns, to raise awareness and educate the public about the quality of traditional Palestinian products, to urge consumers to buy local products where the idea of the intervention focuses on organizing awareness activities and workshops to motivate Palestinian consumers and companies to prioritize the purchase of dairy products in order to achieve a better economic and social good wellbeing for the community and for inhabitants of Area C	Whole West Bank



	Facilitating measures to expand women's entrepreneurship in the dairy sector		<p>The idea is to prepare a product portfolio, price list, and determining the product packaging in terms of the required packaging specifications that will be used by cooperatives or women's groups to identify potential buyers to enable distributors meet market requirements. Moreover, conducting an assessment of women groups status, in terms of production capacity, production facilities, legal status, human resources, challenges, and required support, as well as encouraging cooperatives or women groups to improve their production in order to meet demand. As a result of this assessment, commercial mediation services will be facilitated by cooperatives through direct training in selling to market outlets, conducting workshops and educational visits on the standards required by specifications, standards, and validity Environment health, in addition to providing a one-to-one coaching and mentoring by a professional technical and marketing team.</p>	Jordan Valley, Hebron
	Enhancing youth role and ownership in marketing and supply chain	Youth & women	<p>Due to fodder high prices and profit margins gained by middlemen and traders throughout the supply chains (exceeding 10%,) and the lack of inputs collective purchase initiatives, especially purchasing fodder through cooperatives, charitable associations or a group of breeders, in addition to the weaknesses in marketing in terms of packaging, quality control, and marketing channels, as well the absence of commercial vision in collective purchase approach, the proposed idea is to establish a formal commercial entity owned by youth and to be financed by investments of subsidies, grants, and financial institution or banks loans with low interests. These investments will return financially by running the collective purchase process at competitive prices, and marketing dairy products locally and internationally after improving the packaging. The quality control will be implemented through Environmental Health and Standards Institution by conducting workshops to raise producers' awareness of the dairy products hygiene and applying the public health conditions.</p>	Graduated Youth

