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Supporting Effective Jobs Lending at Scale: The Case of Uzbekistan Livestock Sector Development Project (LSDP)

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and Abdimalik Kertaev



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Abdurazak Khujabekov, Teklu Tesfaye, and Abdimalik Kertaev



JOBS

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Supporting Effective Jobs Lending at Scale: The Case of Uzbekistan Livestock Sector Development Project (LSDP)¹

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LIST OF ABBREVIATIONS

AgGDP	Agriculture Gross Domestic Product
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FM	Financial Management
GDP	Gross Domestic Product
GOU	Government of Uzbekistan
GRM	Grievance Redress Mechanism
IFI	International Financial Institution
IMF	International Monetary Fund
LLC	Limited Liability Company
LSDP	Livestock Sector Development Project
MoA	Ministry of Agriculture
PFI	Participating Financial Institution
SCVLD	State Committee of Veterinary and Livestock Development
SOE	State-Owned Enterprise
SSCU	State Statistic Committee of Uzbekistan
TA	Technical Assistance
TOR	Terms of Reference
UZS	Uzbekistan Soum
VCD	Value Chain Development
WBG	World Bank Group

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EXECUTIVE SUMMARY

Livestock is one of the major livelihood support systems and a social safety net in Uzbekistan. It constitutes about 50 percent of the agriculture gross domestic product (AgGDP) and accounts for about 27 percent of the agricultural employment,² including in primary production and along livestock value chains. Yet, it is characterized by low productivity, poor husbandry, and a lack of access to technology, finance, and market. Addressing these constraints would increase production and productivity, thereby contributing to food security and nutrition. It also contributes to diversification, increased income, and creation of more and better paying jobs, including for women, youth, and returning migrants. Cognizant of this, the government of Uzbekistan (GOU) designed and implemented the Livestock Sector Development Project (LSDP) co-financed by the World Bank and European Union (EU).

The development objective of the LSDP is to develop a private-sector-led and vibrant livestock sector that contributes to increased production and productivity, income, food and nutrition security, economic diversification, and inclusive, equitable and sustainable economic growth. The project aims to achieve these by supporting (a) livestock sector public investment framework and public services and (b) livestock value chain modernization, through improving access to finance for livestock farmers and agri-businesses. The 'livestock value chain modernization' (credit line) component of the LSDP constituted the lion's share of project financing. The credit lines financed capital and recurrent investments that helped beneficiaries expand existing businesses and create new ones, which in turn helped them increase production and productivity and create new jobs, hence becoming the focus of the job diagnostic.

At the time this job diagnostic was conducted, through the credit lines, the LSDP financed a total of 508 sub-loans distributed in all 13 regions of Uzbekistan. Beneficiaries of the credit line investments were diverse, including large-scale private commercial farms, limited liability companies, joint ventures, smallholder farmers (*dehkans*), family-owned companies, joint venture limited liability companies, and unitary enterprises. Through the credit lines (sub-loans), beneficiaries financed several sub-projects in different livestock sub-sectors (in this assessment, livestock is considered as a sector while dairy, poultry, and so on are considered as sub-sectors), including dairy production, dairy processing, small ruminant (meat) production, beef processing, poultry production, animal feed production and other types of livestock production. Credit line investments helped beneficiaries expand existing businesses and create new ones and thereby increase production and productivity, as well as create new jobs, including direct, seasonal, women, and indirect jobs, in all regions of Uzbekistan.

Tashkent and Samarkand are the two regions with the largest number of jobs created. They also constitute the largest share of the credit line portfolio. Dairy production is where the largest number of new jobs is created followed by poultry production, dairy processing, and beef processing. It is also where the largest number of women jobs has been created, followed by beef processing, dairy processing, and poultry. The number of jobs created per US\$1 million investment varied across the sub-sectors. It is the highest in small ruminants (meat) production, followed by beef processing, and fisheries/aquaculture. The number of women jobs created per US\$1 million investment also varied across the sub-sectors and it is the highest in animal feed production, followed by beef processing, and meat production. Differences in the number of jobs created by sub-sector and by region, in the number of jobs created per US\$1 million are not robust. They are more a

² State Committee of the Republic of Uzbekistan on Statistics.

result of the difference in the number and size of credit line beneficiaries and investments, respectively, rather than differences in the demand for and supply of labor.

Through credit line investments, different types of jobs (direct, indirect, seasonal, and women) have been created in all regions of Uzbekistan and the numbers varied. However, regional differences in the number of jobs created were not robust. The differences are largely due to differences in the number and size of credit line beneficiaries and investments, respectively. Evidence derived from this assessment showed that including credit line investments in livestock operations ensures the creation of different types of new jobs. However, to measure jobs and maximize the jobs impact of credit line investments, future livestock operations with credit line investments should- (a) define methodologies to monitor job creation during project design; (b) be inclusive ensuring that all types of beneficiaries, including smallholder farmers are included in credit line investment programs; (c) adopt a value chain financing approach; (d) be accompanied by robust technical assistance; and (e) allocate sufficient resource to build the capacity of financial institutions participating in credit line investment programs.

CHAPTER ONE: ECONOMY, AGRICULTURE AND LIVESTOCK SUBSECTOR

Uzbekistan is a lower-middle-income country aspiring to be an upper-middle-income country by 2050. The structure of its economy has not changed significantly since its independence, with agriculture, industry, and services each contributing a third to the gross domestic product (GDP) (Asian Development Bank Country Partnership Strategy 2019–2023). Uzbekistan's GDP increased rapidly from US\$39.3 billion in 2010 to US\$81.8 billion in 2016, before declining to US\$50.5 billion in 2018 in current US dollar terms. In the first half of 2019, GDP growth accelerated again to 5.8 percent from 4.9 percent, largely due to significant investments financed by international financial institutions (IFIs) and substantial increases in directed lending to state-owned enterprises (SOEs) by the GOU. An estimated 9.6 percent (3.2 million) of Uzbekistan's population (33 million people) lived below the US\$3.2/day poverty line in 2019, which is the international definition for lower-middle-income countries. About 80 percent of the poor live in rural areas and derived their livelihoods largely from agriculture. Due to the COVID-19 outbreak, poverty in Uzbekistan is projected to increase after a long-term decline (Uzbekistan Agri-food Job Diagnostic 2020).

Agriculture is the largest sector and employer of Uzbekistan's economy and plays a significant role in economic diversification, increasing household income, and reducing poverty and inequality through productivity increase and job creation. In 2019, for example, it accounted for 28 percent of GDP and 27 percent of the total employed labor force. Along with overall economic growth, agricultural GDP grew at an average annual rate of 6.5 percent during 2012–2017. Global empirical evidence shows that growth in agriculture leads to two–three times greater poverty reduction than growth in any other sector, and the largest impact has originated from being employed in agriculture (Uzbekistan Agri-food Job Diagnostic 2020). It also shows that jobs in agriculture are among the most poverty reducing and inclusive. However, low agricultural productivity remains a lingering concern due to farmers' limited knowledge of modern production and management systems, thereby limiting the sector's impact on poverty reduction in general and its role in job creation (Uzbekistan Agri-food Job Diagnostic 2020).

Livestock constitutes about 13 percent of GDP and 50 percent of the agriculture gross domestic product (AgGDP) and employs about 27 percent of the agricultural employment³, including in primary production and along the value chains. In 2019, the number of people employed in livestock and livestock-derived jobs in Uzbekistan was 420,000 (Uzbekistan Agri-food Job Diagnostic 2020). Livestock constitutes 45–67 percent of the household income in rural areas and it plays a significant role in maintaining the food and nutrition security of the rural people. Within the livestock subsector, cattle represent the largest share of the livestock value-added. In 2019, out of the total livestock value-added, cattle contributed 76 percent, sheep and goat 9 percent, eggs and poultry meat 7 percent, fish 2 percent, bees and rabbits 0.5 and 0.3 percent, respectively, and other livestock products 6 percent. Within cattle, dairy makes up for 45 percent of the livestock gross value added. Dairy, poultry, and aquaculture are the relatively fast growing and modernizing value chains. Rabbit production is a newly emerging value chain, which is receiving significant government attention. Karakul pelts and honey production are also receiving government attention (Livestock Subsector Development Strategy and Investment Plan 2021). The government has prioritized the development of the livestock sector to ensure food security and nutrition, economic diversification, and stimulate rural employment.

³ State Committee of the Republic of Uzbekistan on Statistics.

Most jobs in the livestock subsector in Uzbekistan are created in dairy, beef, meat (small ruminants), and poultry production. The most labor-intensive subsector of livestock production is dairy production, which requires milking, feeding, and animal caring. For example, in 2018, in Uzbekistan, more than half a million workers (man/year) were found to have been involved/employed in livestock production (Table 1). This employment is, however, often informal, and part-time (seasonal), tailored for subsistence rather than commercial activities.⁴

Table 1.⁵ Employment breakdown by livestock type in Uzbekistan (2018)

Livestock type	Number of animals (thousands)	Labor requirement norms (man/year)	Estimated number of workers (thousands)
Cattle	12,841	0.02	256.3
Dairy cows	4,626	0.05	231.3
Small ruminants	21,581	0.0012	25.9
Poultry	86,375	0.0005	43.2
TOTAL			556.7

Source: SSCU 2019.

Diversification of Uzbekistan's agriculture away from cotton and wheat has triggered acceleration of the development of the livestock subsector. This in turn has led to a significant increase in the livestock population of the country, thereby contributing to increased production and productivity and creation of large number of permanent jobs. An estimate of the dynamics of growth in the livestock population and job creation in the last decade shows that by 2030, the number of permanent jobs (considering internationally accepted labor requirement norms) in the livestock subsector will increase by 167 percent or by 706,000 (Table 2).

Table 2. Job outlook in the livestock subsector of Uzbekistan by 2030

Livestock species	2019	Aggregate growth 2008 to 2018	2030	Labor requirement norms, man per year	2030
	Number of animals (in thousands)		Estimated number of animals (in thousands)		Estimated number of workers (in thousands)
Cattle	8,215	155.38	12,764.7	0.02	255.29
Dairy cows	4,626.8	130.33	6,000.0	0.05	301.49
Small ruminants	21,576.1	152.63	32,931.4	0.0012	39.52
Poultry	86,393.6	253.75	219,226.9	0.0005	109.61
TOTAL					705.92

Creation of additional jobs through increase in the livestock headcount directly depends on increase in the number of farmers involved in livestock production. *Dehkan* households play a significant role in this regard. The reason is that *dehkans* constitute the largest share and contribute significantly to the country's agricultural sector growth in general and livestock production in particular. According to statistics, in 2020,

⁴ World Bank Uzbekistan Agri-Food Job Diagnostic.

⁵ World Bank staff estimate based on the data from the State Statistic Committee of Uzbekistan (SSCU) and Ministry of Agriculture (MoA).

4,981,500 *dehkan* farms were registered, which led to a significant increase in the share of *dehkan* farms in the production of agricultural products (Table 3).

Table 3. Livestock distribution (in thousands) by form of management in Uzbekistan (2019)

Livestock Species	Forms of Management			Total	Dehkan (% of Total)
	Commercial farms	Dehkans	Others		
Cattle	591.2	11,732.7	160.5	12,484.4	94
Cows	199.9	4,223.2	40.7	4,463.8	95
Sheep and Goats	2,458.8	17,836.8	1239.7	21,535.3	83
Poultry	11,191.8	45,076.2	24,262.2	80,530.2	56

Source: SSCU 2019.

With increase in the number of *dehkans*, the number of animals also increased, which in turn meant an increase in the production of livestock products, as well as regular provision of the population with vital products such as milk, meat, and eggs. Evidence available shows that the number of livestock and poultry in the country has increased sharply. In 2020, compared to 2000, the number of cattle increased 2.65 times, cows 2.10 times, sheep and goats 3.04 times, poultry 5.91 times, and horses 1.89 times. This has implications on job creation in the sector as a significant number of *dehkans* (self-employed) are involved and will continue to be involved in livestock production.

The Livestock Sector Development Project

The World Bank Group (WBG) is supporting the government of Uzbekistan's medium-term objective⁶ of creating up to 500,000 new jobs annually in three focal areas: (a) private sector growth; (b) agricultural competitiveness and cotton sector modernization; and (c) public service delivery. The second is disaggregated to include (a) facilitating a market-led modernization of the cotton sub-sector to increase productivity, including measures to prevent forced labor; (b) agricultural modernization; and (c) diversifying agriculture toward higher value, more jobs and less water-intensive horticultural crops and livestock (Uzbekistan Agri-food Job Diagnostic 2020). It is in view of this that the GOU designed and implemented the LSDP with financial support from the WBG and European Union (EU) Delegation in Tashkent.

The LSDP is a five-year investment project (2018–2022) with a total project financing of US\$243.8 million, including US\$30 million from IBRD, US\$120 million from IDA, US\$16 million from EU (grant), US\$39.7 million from GOU contribution, and US\$38 million from beneficiary contribution. The development objective of the project is to improve the productivity of livestock farmers, and their income and access to market, thereby developing a private-sector-led and vibrant livestock sub sector that contributes to economic diversification and ensures inclusive, equitable, and sustainable economic growth in Uzbekistan. The primary beneficiaries of the project are livestock farmers, including *dehkans* and agribusiness enterprises.

The project design includes two technical components and a project coordination, management, and monitoring and evaluation component. The technical components include the following: Component 1: livestock sector public investment framework and public services, which has two subcomponents: (a)

⁶ Uzbekistan, Cabinet of Ministers Action Plan for the Development of the Economy - World Bank Country Partnership Framework. Washington. Accessed January 2020. www.worldbank.org/curated/en/537091467993490904/pdf/105771-CAS-P153590-OUO-9-R2016-0098-Box360260B.pdf

strategy, policy, and public investment framework and (b) strengthening livestock sector public services. Component 2: livestock value chain modernization, which has two subcomponents: (a) credit line for private investments and (ii) value chain development and smallholder market inclusion. Component 3: project coordination, management, and monitoring and evaluation supports financial management (FM), procurement, and environmental and social safeguard compliance, including grievance redress mechanism (GRM) and impact evaluation. The project is being implemented in all 13 regions of Uzbekistan.

CHAPTER TWO: OBJECTIVES AND METHODOLOGY OF THE STUDY

Objectives

The LSDP, through the access to finance (credit line) component, financed sub-projects in livestock production with the objective of modernizing the livestock sub-sector. It did so by providing sub-loans to beneficiaries through participating financial institutions (PFIs), largely banks but also micro-finance institutions. The credit line investments improved the access to finance of beneficiaries (farmers and agribusinesses), thereby helping them expand their businesses, increase production, productivity, and income, enhance commercialization, as well as create new jobs. Jobs created included direct, women, seasonal, and indirect jobs. Direct jobs include jobs that have been created in the premises of the farms and/or agribusinesses whereas indirect jobs include jobs that have been created through backward and forward linkages. Indirect jobs also include consumption linkages when producers spend more on consumption of livestock and livestock products near their homes with their newfound income.

The jobs impact of the LSDP has not been properly identified, monitored and measured to date. This is because job creation was not part of project design. Thus, the objective of this assessment is to assess the number of jobs created because of project interventions, particularly in relation to credit line investments. The reason for focusing on credit line investments is that the project is largely a credit line project. Findings of the assessment will help identify the jobs impact of livestock operations with credit line components and draw lessons as to how to define jobs indicators, establish base line values, and monitor and evaluate jobs impacts in a comparable and systematic way in future livestock operations with credit line components.

Methodology

Sample size

The LSDP is largely a credit line project with 86 percent of the project proceeds financing credit line investments (sub-loans). The rest of the project funds are invested in capacity building of public institutions aimed at improving investment frameworks and policies, and on value chain development (VCD) sub-projects aimed at ensuring inclusion of smallholders' (*dehkans*) into the livestock value chains. The latter is being financed through the EU Grant, whose implementation was just starting when the jobs diagnostic was conducted. Thus, the jobs diagnostic focused only on credit line investments and assessed the number and types of jobs created because of project interventions.

At the time the job diagnostic was conducted, through the credit line investment, the project financed a total of 508 sub-loans in the various livestock value chains, including in dairy production, dairy processing, beef processing, small ruminant (meat) production, poultry production, and other types of livestock production. Beneficiaries of the credit line investment were found in all 13 regions of Uzbekistan. Since it was not possible to cover all credit line beneficiaries in the regions amid severe travel and contact restrictions caused by the COVID-19 pandemic, the team decided to select credit line beneficiaries from selected regions/provinces. Thus, the team selected the following regions/provinces: Tashkent, Namangan, Samarqand, and Khorezm. The assumption behind purposively targeting the four regions is to achieve representation of the four territorial zones of the Republic of Uzbekistan. The four regions, besides representing the various territorial

zones, comprise over 58 percent of all the project credit line beneficiaries who consumed more than 60 percent of the total amount of sub-loans allocated to the credit line component of the project.

The total number of credit line beneficiaries in the selected regions was 211. However, the types of livestock production activities financed through the credit line investments in the selected regions did not include credit line beneficiaries that were involved in ‘other types of livestock production’ activities such as silk, horses, camels, deer, ostriches, and so on. Thus, the team decided to include credit line beneficiaries from other regions who had invested in ‘other types of livestock production’ activities. Accordingly, a total of 66 credit line beneficiaries who had invested in ‘other types of livestock production’ activities were purposively selected and became part of the interview, increasing the sample size to 277. In analyzing the jobs impact of the LSDP, however, with an aim to present the full picture, the assessment consulted and drew jobs data from the ‘Technical Audit Report’ that was prepared in June 2019 under the theme ‘Analytical report on the results of the technical audit of the credit line financed sub-loans of the livestock sector development project’ that covered all credit line beneficiaries in all regions of Uzbekistan. Thus, the assessment (jobs diagnostic) results covered data on all 508 credit line beneficiaries.

Types of data, data collection, and analysis methods

Two types of data were used in this study—primary and secondary. Secondary data were collected using document reviews, including aide memoires, project progress reports, and technical reports, whereas primary data were collected through telephone-based interviews using a semi-structured interview guideline and a telegram-based survey using questionnaires developed for that purpose.⁷ Focused discussions have also been held with selected credit line beneficiaries, employees of farms run by the credit line beneficiaries, as well as project staff and staff of PFIs. Data collected were then analyzed (statistical analysis) using quantitative as well as qualitative methods.

All sampled credit line beneficiaries who were interviewed went through the same interviewing process, consisting of the following questions with regard to ‘before’ and ‘after’ the project intervention:

- Herd size (number of livestock) - separately for cattle, small ruminants (sheep and goats), horses, camels, fish (number of ponds), beekeeping (number of beehives), poultry, and sericulture
- Loan size (in US\$), including the type of activity the fund is used to finance, for example, procurement of pregnant heifers, parent stock, genetic materials, equipment, forage production, farm machinery, and so on.
- Number of employees by categories, including on-farm and management/administration, disaggregated by full-time and seasonal as well as by gender.

Due to travel restrictions and social distancing requirements that were imposed due to the COVID-19 pandemic, all interviews were conducted via telephone (voice call and text message), using Telegram (voice call, file exchange, and text message), WhatsApp (voice and text message), Messenger, zoom conferencing, and e-mail. Data collected were then analyzed.

⁷ Conversations with LSDP beneficiaries were conducted mainly via telephone but also via Telegram and WhatsApp messengers, zoom conferencing and e-mail messaging.

Types, definition, and measurement of jobs

The LSDP helped create different types of jobs, including direct, women, indirect, and seasonal jobs. Direct, women, and seasonal jobs are jobs that have been created directly in the premises of the beneficiaries (on the farms and agribusinesses) whereas indirect jobs are induced jobs that have been created outside the premises of the beneficiaries. These include, for example, people involved in selling inputs, such as medicines, feed, and so on to credit line beneficiaries and those that were involved in providing services, such as, transporting milk (from surrounding dairy farms) to dairy processing plants; people who bought animals, for example, culled animals, day-old chicks, and so on from credit line beneficiaries and started their own businesses; small stores and street vendors that have been set up to sell products that are produced by credit line beneficiaries and so on. Obviously, measuring such jobs is not easy as it requires a well-defined methodology, including properly identifying those that have been involved in the business, designing well-thought interview questions, and conducting interviews and discussions with those who have been involved in the businesses, and continuous monitoring of their businesses and activities. Jobs creation was not part of the project design and due to travel restriction posed by the COVID-19 pandemic, it was not possible to do so. Thus, the figures reported on indirect jobs created are responses obtained from credit line beneficiaries interviewed (results of the telephone survey) and hence provide an estimate and should be interpreted as such. Going forward, practical approaches need to be taken in measuring indirect jobs in livestock operations with credit line investments.

CHAPTER THREE: RESULTS AND DISCUSSION

The LSDP is largely targeted at credit line and the job diagnostic targeted credit line investments (credit line beneficiaries). This is because credit line investments enabled beneficiaries to expand existing businesses or create new ones and thereby create new jobs by financing capital and recurrent investments. Credit line beneficiaries were found in all 13 regions of Uzbekistan (Table 1). Types of livestock production activities (sub-sectors) that benefitted from credit line investments were diverse and included the following: dairy production, dairy processing, small ruminants (meat production), beef processing, poultry production, feed production, silk production, fishery/aquaculture, bee keeping, camel production, horse production, and rabbit production.

At the time the job diagnostic was conducted, credit line investments financed a total of 508 sub-loans (the number of sub-loans is the same as the number of credit line beneficiaries) worth US\$139.6 million. They were supplemented by beneficiary contributions, which amounted to US\$79.3 million, increasing the total credit line investment (project finance plus own contribution) to US\$218.9 million (Table 1). Credit line beneficiaries were diverse, including large-scale private commercial farms, limited liability companies, joint ventures, *dehkans*, family-owned companies, joint venture limited liability companies, and unitary enterprises. Private commercial farms constituted the largest share of credit line investments whereas very few (only 5) *dehkans* benefitted from credit line investments. The latter was mainly because of collateral requirements as well as financial capacity to provide own contribution, which *dehkans* were not able to meet. Besides, PFIs did not have diversified loan products that could address or are tailored to the needs of *dehkans* and hence their limited participation.

The Tashkent and Samarkand regions constituted the largest number of credit line beneficiaries followed by Fergana and Namangan. The size of credit line investment (measured in US\$) was the highest in Tashkent followed by Samarkand. Jointly, Tashkent and Samarkand constituted more than one-third of the credit line investment portfolio of the project. Khorezm and Namangan also have a relatively large number of credit line beneficiaries, although the size of credit line investments is small. Navoiy is the least in terms of the number of credit line beneficiaries whereas Jizzakh is the least in terms of size of credit line investments. The relatively large number of credit line beneficiaries as well as the size of credit line investments in Tashkent and Samarkand is largely due to the presence of a relatively good network and large number of PFIs (Table 4).

Table 4. Credit line beneficiaries, credit line investments and share of credit line investments by region

Region	Beneficiaries (no)	Credit line investment (US\$, thousands)			Share of total credit line investment (%)
		Project financing	Beneficiary contribution	Total	
Andijan	20	5.9	2.2	8.1	4.3
Bukhara	38	6.1	3.8	9.9	4.5
Fergana	45	11.9	6.2	18.1	8.8
Jizzakh	15	1.7	0.8	2.5	1.3
Karakalpakstan	14	4.2	1.8	6.0	3.1
Kashkadarya	22	4.1	2.2	5.3	3.1
Khorezm	69	8.4	5.6	14.0	6.2
Namangan	64	10.8	6.0	16.8	7.9

Region	Beneficiaries (no)	Credit line investment (US\$, thousands)			Share of total credit line investment (%)
		Project financing	Beneficiary contribution	Total	
Navoiy	8	5.7	3.8	9.5	3.6
Samarkand	76	22.1	10.4	32.5	14.9
Syrdarya	36	8.3	6.5	14.8	6.3
Surkhandarya	37	10.7	6.0	16.7	7.9
Tashkent	74	38.3	23.8	62.1	28.2
Total	508	139.6	79.3	218.9	100

Through credit line investments that financed sub-loans, beneficiaries were able to create a total of 25,441 new jobs, including 7,093 direct, 1,710 women, 9,369 seasonal, and 8,979 indirect jobs (Table 5). Dairy production created the largest number of jobs followed by poultry production, dairy processing, and beef processing. The number of women jobs created is the highest in dairy production followed by poultry, dairy processing, and beef processing. The reason behind the relatively large number of jobs created in dairy production, including for women, is the labor-intensive nature of the business. Most of the activities in dairy farms are done manually, including milking; providing food and water to cows and ensuring supplies remain well stocked so that the cows never go hungry; and using tools to move feed, cows and other equipment to the appropriate areas on the farm in an efficient manner. Most of these activities are often undertaken by women, resulting in a large number of jobs for women. It could also be because of the migration of most men to cities and neighboring countries leaving the farms with no option than to hire women. This finding is consistent with existing data (SSCU 2019) as well as the findings of other studies, which showed that dairy production is a business where a relatively large number of women jobs have been created (Mueller, Acero, and Estruch 2017).

Table 5. Credit line beneficiaries, investments, types of jobs created, and jobs created per US\$1 million investment by sub-sector

Sub-sector	Credit line beneficiaries (no)	Investment (US\$, thousands)	Direct (no)	Women (no)	Seasonal (no)	Indirect (no)	Total (no)	No of jobs created per US\$1 million investment				
								Direct	Women	Seasonal	Indirect	Total
Dairy	307	55,719.6	2778	757	4,783	2,763	10,324	50	14	87	50	699
Poultry	43	29244.4	1012	206	1,076	1,976	4,046	35	7	37	68	139
Dairy processing	51	28,586.4	1121	229	1,256	1,752	4,129	39	8	44	61	144
Beef processing	52	37.3	917	183	975	1262	3337	25	5	26	34	89
Meat production	34	3,034.7	285	32	340	1,403	2,028	94	11	112	462	668
Others	16	5,170.2	139	44	148	142	429	27	9	29	28	83
Feed production	5	464.8	65	18	51	29	145	140	39	110	62	312
Total	508	139.6	7,093	1,710	9,369	8,979	25,441	52	12	69	66	188

The number of jobs created per US\$1 million investment is the highest in dairy production followed by small ruminants (meat) production. This is perhaps because of the labor-intensive nature of both dairy and small ruminant production. The relatively large credit line investments in relation to the few credit line beneficiaries in small ruminant production could have also contributed to this. Dairy and small ruminant production are intensive in their nature, calling for increased demand for labor to undertake activities such as milking, production/collection, feeding, herding, slaughtering, shearing, castrating, marketing, and so on. This is consistent with the findings of other studies which showed that dairy and small ruminant production are labor intensive and that the demand for labor per unit of investment is significantly high (Mueller, Acero, and Estruch 2017). The number of jobs created per US\$1 million investment is also high for fisheries/aquaculture (included in the 'others' category in the Table 5), although the number of credit line beneficiaries is relatively small. This could be due to the increased demand for associated services that require labor, for example, transport, wholesale, and supply of inputs such as feed, ice, and so on. Available studies also show that the demand for labor per unit of investment increases with increased investments in aquaculture, supporting the finding of this assessment that a larger number of jobs are created per US\$1 million investment in the subsector (Karimov, 2008).

Credit line investments accompanied by technical assistance and trainings, although not to the required level, helped credit line beneficiaries increase production and productivity, as well as income. They have also contributed to the increased total value of livestock products sold by beneficiaries. Livestock productivity increased by 143 percent (milk) (from 5–6 liters/cow/day to 17–20 liters/cow/day) and 375 percent (meat) and the total value of livestock products sold increased by 142 percent (for dairy and dairy products) and by 412 percent (for meat and meat products). The income of beneficiaries also increased by 209 percent: 76 percent of beneficiaries reported to have been satisfied with the process of participation in the credit line program of the project. With increased production, productivity, sales, and ultimately incomes, beneficiaries indicated their desire and willingness to expand (size) and improve (productivity) their businesses by investing in primary production, for example, purchase of additional pregnant heifers and in the acquisition of advisory services, for example, veterinary services as well as in value addition, for example, dairy processing. This will have tremendous impact not only on production, productivity, and income but also on employment, hence creating scope for more job creation.

Dairy production

Dairy production covers the lion's share of the credit line portfolio, that is, the largest number of credit line beneficiaries and size of credit line investments. Essentially, it involves import of pregnant heifers from abroad and procurement of farm machineries, including tractors, combine harvesters, bailors, and so on both from abroad and locally, using the proceeds (sub-loans) obtained from PFIs. The project financed a total of 307 dairy sub-loans that facilitated the import of a total of 32,156 pregnant heifers and the procurement of several farm machinery units with a total investment of US\$55.7 million, all of which are capital investments. The sub-loans also helped beneficiaries finance recurrent activities, including utilities, wages, technical assistance (for example, veterinary services) and procurement of animal feed and medicine for dairy cows.

Through credit line investments, dairy farms were able to expand existing businesses and create new ones, thereby creating a total of 10,324 jobs, including 2,778 direct, 757 women, 4,783 seasonal, and 2,763 indirect jobs. Region-wise, relatively, a large number of jobs have been created in Namangan followed by Tashkent,

Khorezm, and Fergana. Jizzakh has the least number of jobs created (Table 6). Given that the nature and type of dairy farms is almost the same in all the regions, except for their size, that is, some are bigger in size than others, regional differences (in terms of jobs created) are largely due to the size of the dairy farms and are hence not robust. The larger the size of the dairy farm, the more the labor requirement, including for women and seasonal labor, and hence the larger the number of jobs created.

The total number of jobs created per US\$1 million investment is 199, including 54 jobs that have been created directly in the beneficiaries' premises of which 15 jobs were for women. Karakalpakstan has the highest number of jobs per US\$1 million investment followed by Kashkadarya, Surkhandarya, Khorezm, and Fergana while Tashkent has the least number of jobs created. This is mainly due to the size of credit line investment in Tashkent, which is relatively smaller. The rest of the regions have between 200 and 250 jobs, except for Jizzakh, which has 183 jobs, and the difference is not significant.

Table 6. Credit line beneficiaries, investment, and type and number of jobs created in the dairy production sub-sector by region

Region	Beneficiary (no)	Investment (US\$, thousands)	Jobs created (No)					No of jobs created per US\$1 million investment				
			Direct	Women	Seasonal	Indirect	Total	Direct	Women	Seasonal	Indirect	Total
Namangan	53	8374.5	480	119	998	576	2054	57	14	119	69	245
Samarkand	52	4475.0	277	87	418	241	936	62	19	93	54	209
Tashkent	42	17067.7	484	110	675	390	1549	28	6	40	23	91
Khorezm	52	4058.3	276	84	521	302	1099	68	21	128	74	271
Bukhara	29	2927.0	183	47	315	182	680	63	16	108	62	232
Fergana	29	4225.7	295	59	508	293	1096	70	14	120	69	259
Andijan	16	3554.7	206	49	355	205	766	58	14	100	58	215
Kashkadarya	3	246.2	25	9	43	25	93	10	37	175	102	378
Surkhandarya	22	2410.2	201	67	346	200	747	83	28	144	83	310
Syrdarya	19	2565.0	163	45	281	162	606	64	18	110	63	236
Jizzakh	1	60.0	3	0	5	3	11	50	0	83	50	183
Karakalpakstan	7	1544.0	168	79	289	167	624	109	51	187	108	404
Navoiy	2	311.3	17	2	29	17	63	55	6	93	55	202
All	307	55.7	2778	757	4783	2763	10324	54	15	92	53	199

'G'ULOMBOY IKROMBOY' Dairy Farm

The farm has a total of 500 heads of cattle, and 107 hectares of irrigated land. It received a sub-loan worth US\$126,800 and had own funds amounting to US\$140,000; 33 heads of red and white Holstein Friesian pregnant heifers were imported from Latvia. The heifers passed the acclimatization period very well. The farm also purchased two BelarusKPP-3,000 combine harvesters and one MTZ-80 tractor.

The farm signed direct delivery contracts with the suppliers who also provided training in the farm territory. The training had a positive impact on five more neighbor farmers who expressed a desire to sign import contracts

with the same company. Besides harvesting forage, the farm is getting yields of corn grains at the 35 tons/ha rate and wheat grains at the 6 tons/ha rate in the 107 hectares using machinery. The farm also provides harvesting services to other farmers by charging UZS 500,000 per hour.

Before the start of the project, the farm had seven permanent workers. As a result of the sub-loan, the farm hired seven additional staff; all of them were qualified specialists, including a veterinarian (young guy), technicians - four sales assistant women and two female cooks, two cattle women, and 7 male tractor drivers who are members of the permanent staff and 25 seasonal workers (roughly half of whom are women). These seasonal workers are hired during the harvest season. The farm's milk fat level is 4 percent and average milk production from one cow is around 26 liters per day. The farm has a total of 500 heads of cattle, including 150 dairy cows which produce around 3,900 liters of milk every day. The internal daily use of milk in the farm is around 40 liters so the remaining, 3,860 liters is sold for UZS 3,200 per liter to a dairy plant, which is located 60 km away from the farm.

Salaries of the farm's permanent workers are individually fixed and range from UZS 1 million to UZS 3 million per month depending on the skill set and professional value of each worker. Staff benefits include one high pedigree calf a year for each worker and some forage from the farm stock. According to the farm, staff have started to appreciate the advantages of receiving a calf with higher pedigree in comparison to monetary rewards.

If there is a decline in milk volume, the farm manager talks first to the milking ladies to find out if there is any problem with the health or nutrition of the cows. The farm's main focus in the work environment is hands-on capacity building and providing workers with as much practical knowledge as possible while prioritizing retention and rewarding of those workers who demonstrate best efforts in applying the acquired knowledge.

Note: US\$1 is equal to UZS 10,142.56.

Beef processing

Beef processing is the second largest in terms of both number of credit line beneficiaries as well as portfolio, following dairy production. It involved the purchase of equipment that beef processing companies and slaughterhouses used to process beef. Through the credit line, the project financed a total of 52 sub-loans worth US\$37.3 million. This has led to the creation of a total of 3,337 jobs, including 917 direct, 183 women, 975 seasonal, and 1,262 indirect jobs.

A relatively large number of jobs have been created in Tashkent followed by Samarkand and Khorezm. Surkhandarya has the least number of jobs created in the beef processing sub-sector (Table 7). The total number of jobs created per US\$1 million investment is 89, including 25 jobs that have been created directly in the beneficiaries' premises of which 5 jobs were for women. Surkhandarya has the highest number of jobs per US\$1 million investment followed by Khorezm and Namangan. Samarkand has the least number of jobs created per US\$1 million investment. The relatively low number of jobs created per US\$1 million investment in Samarkand is because of the relatively small size of credit line investment in relation to the large size of credit line investment.

Given that the nature and type of beef processing companies and slaughterhouses are almost the same in all the regions, except for differences in their sizes, that is, some are bigger in size than others, regional differences in terms of the total number of jobs created as well as the number of jobs created per US\$1 million

investment are not significant. They are rather largely due to differences in size of the companies and slaughterhouses and are hence not robust.

Table 7. Credit line beneficiaries, investment, and type and number of jobs created in the beef processing sub-sector by region

Region	Beneficiary (no)	Investment (US\$, thousands)	Jobs created (No)					No of jobs created per US\$1 million investment				
			Direct	Women	Seasonal	Indirect	Total	Direct	Women	Seasonal	Indirect	Total
Samarkand	16	7.1	256	48	288	378	970	36	7	41	53	17
Tashkent	22	23.9	543	100	494	634	1771	23	4	21	27	74
Khorezm	9	3.4	57	20	111	137	325	17	6	33	40	96
Namangan	4	2.4	49	11	72	82	214	20	5	30	34	89
Surkhandarya	1	0.5	12	4	10	31	57	24	8	20	62	114
All	52	37.3	917	183	975	1262	3337	25	5	26	34	89

Rosher Joint Venture Production Complex

The Rosher Joint venture operating in the Surkhandarya region has experience in meat processing since 2000. In November 2018, in the framework of the LSDP project, the company received a loan of US\$203,000 from Xalq Bank for 84 months at a 6.5 percent interest rate. The loan funds have been used to procure Chinese meat processing equipment. Besides, the beneficiary used his own funds amounting US\$203,000 to purchase and install meat freezing and storing devices making the total cost of the project US\$406,000.

The number of permanently hired staff is 12, including four women with two mini-van drivers and two expeditors. The seasonal work starts in May and continues until the end of September and for this period additional 10 people (seasonal labor) are hired.

The procured equipment has the capacity to process up to 2.8 tons of meat in one 8-hour shift and up to 5 tons in two 8-hour shifts. But currently the operating load capacity is one ton per day. The technology saves up to 30 percent electricity in comparison with its Russian counterparts.

Commodities. The enterprise mainly uses meat of bulls aged between one to three years, which are slaughtered at the enterprise slaughterhouse. About 50 percent of the meat is produced in two specialized bull-fattening farms, 15 percent is procured from four poultry farms, 20 percent of the meat is procured from Samarqand and Tashkent markets, and 15 percent is procured from local markets. Spices and other food additives are imported from Russia and/or procured in Tashkent.

There are over 15 types of produced goods in the enterprise, including smoked sausages (10 percent of total produced goods), semi-smoked sausages (50 percent), and boiled sausages (30 percent) as well as other types of weenie sausages, meat delicacies (bull's tongue and smoked chicken fillet). Produced goods are distributed within the radius of 150–180 km which covers more than 300 retailer shops and 10 supermarkets in 14 districts of Surhandarya. The enterprise takes care of delivering most of its own goods to these places.

Financial performance of the enterprise. As mentioned above, the enterprise has its own bull-fattening farms and prepares young bulls for slaughter, costing around UZS 55,000 per kg of slaughtered meat. The operating profit of the enterprise after covering all costs and taxes (EBIT margin) is 25 percent.

Issues. The loan is for seven years but the enterprise manager thinks it would be appropriate to prolong it up to 10 years since it took more than a year after the loan was approved to complete the equipment import, delivery, and installation and this duration was not stipulated in the business plan.

The issue of certification. There is no Halal certification agency in Uzbekistan and by estimates it will cost around US\$27,000 to obtain a Halal certificate from a foreign agency. The enterprise is in export negotiations with partners from Tajikistan but their main requirement is that the meat goods have Halal certificates.

Plans. In future, there are plans to upgrade the bull-fattening farms into a modern livestock complex and multiply the enterprise's revenue by expanding beyond the limits of Surkhandarya, including exporting to Tajikistan. They are willing to continue cooperating with the project in an expanded role.

Note: US\$1 is equal to UZS 10,142.56.

Dairy processing

This involves producing and/or collecting milk from farms and processing them into different dairy products. The project sanctioned a total of 51 sub-loans that financed the procurement of dairy processing lines/equipment worth US\$28.6 million. While some of the dairy processing plants had their own dairy farms, most did not have their own farms, and hence got involved in collecting milk from surrounding farmers. Those involved in collecting milk used either (a) collection of raw milk directly from farmers (and then transporting it to the processing point) and/or (b) collection of milk at milk collection centers (and then transporting it to the processing point).

Surkhandarya has the largest number of credit line beneficiaries followed by Tashkent and Samarkand. However, in terms of size of credit line investments, Tashkent ranks first followed by Surkhandarya, Samarkand, and Syrdarya. The rest of the regions have a significantly lower number of credit line beneficiaries (less than 10). Through the sub-loans they received, the dairy-processing credit line beneficiaries were able to create a total of 4,129 jobs, including 1,121 direct, 229 women, 1,256 seasonal, and 1,752 indirect jobs. Tashkent ranks first in the number of jobs created, followed by Surkhandarya, Syrdarya, and Samarkand. This ranking also holds true for jobs created for women. The relatively large number of jobs created is attributed to the relatively large number of credit line beneficiaries as well as the size of credit line investments, which was also high in these regions compared to others.

The total number of jobs created per US\$1 million investment is 144, including 39 jobs that have been created directly in the beneficiaries' premises, 8 jobs for women, 44 seasonal, and 61 indirect jobs. Bukhara, although ranked last in the jobs created, has the highest number of jobs per US\$1 million investment. This has to do with the significantly low number of credit line beneficiaries. A comparison of Bukhara with Navoiy reveals that although they have the same number of credit line beneficiaries, the size of the credit line investment in Navoiy is relatively higher, thereby pushing the number of jobs created per US\$1 million investment downwards (Table 8). The difference between regions in the number of jobs created as well as jobs created per US\$1 million investment is not robust. This is mainly due to the number of credit line beneficiaries and the size of investments.

Table 8. Credit line beneficiaries, investment, and type and number of jobs created in the dairy processing sub-sector by region

Region	Beneficiary (no)	Investment (US\$, thousands)	Jobs created (No)					No of jobs created per US\$1 million investment				
			Direct	Women	Seasonal	Indirect	Total	Direct	Women	Seasonal	Indirect	Total
Samarkand	10	4,515.4	131	31	196	273	600	29	7	43	60	133
Tashkent	14	8,892.6	305	66	276	386	967	34	7	31	43	109
Khorezm	3	1,207.8	22	6	41	57	120	18	5	34	47	99
Bukhara	1	76.1	6	0	7	9	22	79	—	92	118	289
Fergana	9	2,460.5	119	31	133	186	438	48	13	54	76	178
Kashkadarya	2	597.1	27	5	30	42	99	45	8	50	70	166
Surkhandarya	27	5,570.0	247	34	277	386	910	44	6	50	69	163
Syrdarya	4	3,644.0	184	21	206	288	678	50	6	57	79	186
Navoiy	1	1,623.0	80	35	90	125	295	49	22	55	77	182
All	51	28,584.4	1,121	229	1,256	1,752	4,129	39	8	44	61	144

‘BIO NATURAL FOOD’ LLC

The company runs its business in the sub-sector of dairy processing, mainly producing different types of cheese. The company received a loan in the amount of US\$1,297,675 (for seven years). It used the loan, along with US\$436,428 of own investments, to construct a dairy processing plant with a daily capacity of 40 tons of milk. The dairy processing equipment was delivered in June 2018. Currently, the plant is operating at a 30-ton daily capacity rate. The plant does not have its own farm, but rather collects milk from producers. About 55 percent of all processed milk at the plant is collected from farms of the Tashkent Province while the remaining 45 percent is collected from the neighboring Syrdarya Province.

The procurement price of the collected milk fluctuated in the range of UZS 3,900–4,100 per liter. In total, 17 farmers provide the plant with raw milk. Five of them are quite large dairy farms providing 4,200–8,400 liters daily and the remaining ones have a capacity of around 1,000 liters every day. The distance between the plant and partner farms in the Sardoba District is 150 km and the milk is transported by 4,200-liter-capacity Isuzu milk trucks. The revenue of the company in 2018 was UZS 19 billion, and in 2019, it reached UZS 21 billion; within nine months of 2020, the revenue had already reached UZS 25 billion and the net profit for this period was UZS 141 million. But according to the chief accountant, in 2019, they suffered UZS 1,616 million net foreign exchange loss. So, the estimated return of investment period from this project is seven years as indicated in the business plan.

Due to participation in the project, the number of permanent staff of the plant has reached 55, including 15 women. The salary of the staff ranged from UZS 1.2 million to 4 million per month while it was UZS 630,000– to UZS 2 million before participation in the project.

The plant is producing 42 different types of dairy products, mainly of cheese as well as bio kefir. About 80 percent of the products are distributed in Tashkent among 38 branches of Korzinka and 30 branches of Makro and 20 percent are delivered to more than 100 smaller-size stores in neighboring areas.

Note: US\$1 is equal to UZS 10,142.56.

Poultry production

Poultry production is the second in terms of distribution of credit line beneficiaries (regional coverage), following dairy production. All regions have credit line beneficiaries who invested in poultry production even though the numbers are relatively low compared to dairy production, that is, less than 5 except for Samarkand (8), Tashkent (8), and Khorezm (6). Credit line investments in Khorezm were low even though it had a relatively large number of credit line beneficiaries. Given the urban/peri-urban nature of commercial poultry production, the fact that there are relatively a large number of credit line beneficiaries particularly in Tashkent and Samarkand makes sense since these two are the largest cities/urban settings in Uzbekistan.

Through the credit line investments, the project financed a total of 43 sub-loans in poultry production worth US\$29.2 million. The types of poultry production that benefitted from credit line investments include egg production (layer), meat production (broiler), and breeding (day-old chick) production, the latter being the least practiced. Evidently, only two of the credit line beneficiaries were found to have been involved in breeding (production of day-old chicks) for commercial purposes. The rest were involved in breeding activities but for own consumption. Beneficiaries used the sub-loan to finance the procurement of equipment and production lines.

Through the sub-loans they received, credit line beneficiaries (poultry farms) were able to create a total of 4,064 jobs, including 1,076 seasonal, 1,976 indirect, and 1,012 direct jobs. The total number of jobs created for women was 206. More number of jobs have been created in Samarkand, followed by Tashkent, including jobs for women. The regional difference is to do with the number of credit line beneficiaries and the size of investments, which are higher in regions with a large number of jobs created. Besides, the nature and types of poultry farms, predominantly commercial with the objective of egg and meat production, are largely the same in all regions, except for differences in their size, that is, some are large while others are small.

The total number of jobs created per US\$1 million investment is 139, including 35 direct, 7 women, 37 seasonal, and 68 indirect jobs. This is the highest in Jizzakh, followed by Namangan. Both regions have, however, a relatively lower number of credit line beneficiaries as well as a small size of investments. Andijan with one credit line beneficiary has the lowest number of jobs created (Table 9). Yet again the regional differences do not have anything to do with the demand for and supply of labor but with the number of credit line beneficiaries and the size of credit line investments.

Table 9. Credit line beneficiaries, investment, and type and number of jobs created in the poultry sub-sector by region

Region	Beneficiary (no)	Investment (US\$, thousands)	Jobs created (No)					No of jobs created per US\$1 million investment				
			Direct	Women	Seasonal	Indirect	Total	Direct	Women	Seasonal	Indirect	Total
Namangan	3	470.9	28	8	58	106	192	59	17	123	225	408
Samarkand	8	7,608.0	214	46	225	419	858	28	6	30	55	113
Tashkent	6	5,100.1	186	78	174	326	686	36	15	34	64	135
Khorezm	6	1,654.3	74	10	77	129	280	45	6	47	78	169
Bukhara	3	1,581.0	86	9	91	168	345	54	7	58	106	218

Region	Beneficiary (no)	Investment (US\$, thousands)	Jobs created (No)					No of jobs created per US\$1 million investment				
			Direct	Women	Seasonal	Indirect	Total	Direct	Women	Seasonal	Indirect	Total
Fergana	3	2,539.6	51	9	54	100	205	20	4	21	39	81
Andijan	1	256.0	21	0	22	41	84	82	0	86	160	128
Kashkadarya	2	1,298.9	54	17	57	105	216	42	13	44	81	166
Surkhandarya	4	2,115.0	102	7	109	199	410	48	3	52	94	194
Syrdarya	1	1,685.2	50	0	53	98	201	30	0	31	58	119
Jizzakh	1	250.0	25	5	27	49	101	100	20	108	196	414
Karakalpakstan	2	1,800.1	105	10	112	205	422	58	6	62	114	234
Navoiy	3	2,885.2	16	7	17	31	64	6	2	6	11	22
All	43	29.2	1012	206	1076	1976	4064	35	7	37	68	139

UMID LLC Poultry Production Complex

The farm received US\$977,000 loan from the project. The loan amount, including US\$327,000 own funds, was used to procure the following assets:

- i) 4 refrigerators of 32-ton overall capacity with three modes of operation
- ii) 5 sets of incubator equipment along with meat processing lines imported from Urumqi, China
- iii) 55,000 heads of high-pedigree day-old chicks imported from Europe.

While at the start of the sub-project the number of staff was 537, by the end of 2019, it reached 593 with the creation of 46 additional jobs. The number of seasonal workers in the farm has reached as many as 1,500, which is an increase of 300 from the 1,200 employed before the start of the project.

Egg production has been growing gradually and consistently. The total number of eggs produced in the farm in 2017 was 10.5 million, and in 2018 this number increased to 12 million pieces, and 12.3 million in 2019. For the first nine months of 2020, 11.4 million eggs were produced while as many as 14 million pieces are expected to be produced by the end of 2020.

Poultry meat production by the farm complex has been consistently increasing as well. In 2017, 3,495 tons of live-weight meat was produced. In 2018, the farm produced 5,769 tons and 5,917 tons in 2019. In 2020, the production has already reached the level of more than 5,562 tons of live-weight poultry meat.

The average salary of the staff increased by more than 70 percent, with the average salary increases ranging from UZS 1,000,000 to 1,700,000.

The farm is selling its commodities to 103 business entities throughout Uzbekistan. At the same time, however, due to negative consequences of the COVID-19 pandemic, including restrictions for activities by restaurants and other public places, 1,500 tons of poultry meat has been stored in the farm refrigerators for an extended period.

The lack of quality of fodder of local production, its relatively high price, and obsolete specialized laboratory have triggered increased dependency of the poultry sub-sector on imported fodder. The share of imported fodder in the farm's fodder procurement structure has reached an unprecedented 90–95 percent. About 90 percent of grains is imported from Kazakhstan; corn grains are mainly imported from Ukraine and soybeans are almost exclusively of a Russian import. Essential vaccines are procured from Austria, while majority of feed additives are imported from Hungary and the Netherlands.

Based on preliminary agreements, the local government was supposed to subsidize UZS 9,000 for every one of the 55,000 imported high-pedigree chicks, but no payment has been wired to the farm's account although four months have passed, says the General Manager of the plant.

Note: US\$1 is equal to UZS 10,142.56.

Small ruminant production

Small ruminants (sheep and goats) are reared primarily for meat production although there is a practice that they are also reared for breeding purposes (sheep and goats) as well as milk production (goats). The project financed a total of 34 sub-loans worth US\$3 million. Sub-loan beneficiaries used proceeds of the project for the purchase of small ruminants (sheep and goat) that they used for meat production as well as breeding, the latter being the least practiced.

Through the sub-loans they received, credit line beneficiaries were able to create a total of 915 jobs, including 340 seasonal, 290 indirect, and 285 direct jobs. The total number of jobs created for women was 32. The total number of jobs created per US\$1 million investment is 301, including 94 jobs created directly in the beneficiaries' premises out of which 11 jobs were for women. Relatively, a large number of jobs were created in Kashkadarya followed by Samarkand and Jizzakh. Surkhandarya has the least number of jobs created even if it had the same number of credit line beneficiaries as Khorezm (Table 10). As has been explained before, the difference among regions in the number of jobs created has to do with the number and size of credit line beneficiaries and investments, respectively, rather than a difference in the demand for and supply of labor.

The total number of jobs created per US\$1 million investment is 302, including 94 direct, 11 women, 112 seasonal, and 96 indirect jobs. This is the highest in Kashkadarya followed by Surkhandarya and Samarkand. Surkhandarya, however, has relatively the lowest number (1) of credit line beneficiaries as well as the smallest size of investments. Khorezm with one credit line beneficiary has the lowest number of jobs created (Table 9). Just like others, regional differences are mainly due to differences in the number of credit line beneficiaries and the size of credit line investments.

Table 10. Credit line beneficiaries, investment, and types and number of jobs created in the small ruminant's sub-sector by region

Region	Beneficiary (no)	Investment (US\$, thousands)	Jobs created (No)					No of jobs created per US\$1 million investment				
			Direct	Women	Seasonal	Indirect	Total	Direct	Women	Seasonal	Indirect	Total
Namangan	2	170.0	13	0	7	26	26	76	0	41	35	153
Samarkand	10	886.9	83	2	97	263	263	94	2	109	94	297
Tashkent	2	152.0	11	2	20	48	48	72	13	132	112	316
Khorezm	1	250.2	10	0	15	38	38	40	0	60	52	152
Kashkadarya	12	822.5	125	22	149	401	401	152	27	181	154	488
Surkhandarya	1	60.0	8	0	10	26	26	133	0	167	133	433
Jizzakh	6	693.1	35	6	42	113	113	51	9	61	52	163
All	34	3,034.7	285	32	340	915	915	94	11	112	96	302

Other types of livestock

This includes fish/aquaculture, camel production, horse production, apiculture, and deer, rabbit, and ostrich production. Camels are reared for their milk and breeding purposes whereas horses are reared for their meat

and breeding purposes. Deer and rabbit are reared for their meat production whereas ostrich is reared mainly for egg but also meat production.

The total number of credit line beneficiaries involved in these subsectors is 16. Because of this, all 16 beneficiaries were interviewed, including those located beyond territories of the four selected regions. The sub-loans financed were worth US\$5.1 million. Credit line beneficiaries used proceeds of the project for the purchase of live animals, for example, camels, horses, and fish (fingerlings) and equipment.

Through the credit line investments, beneficiaries were able to create a total of 429 jobs, including 148 seasonal, 142 indirect, and 139 direct jobs. The number of jobs created for women is 44. The number of jobs created per US\$1 million investment is 83, including 27 jobs that have been created directly in the beneficiaries' premises, of which 9 jobs were for women. Relatively, a large number of jobs were created in Jizzakh mainly because of the relatively large number of credit line beneficiaries followed by Tashkent and Bukhara. Namangan, although relatively had a larger size of credit line investment, has the least number of jobs created (Table 11).

Table 11. Credit line beneficiaries, investment, and type and number jobs created in other types of livestock by region

Region	Beneficiary (no)	Investment (US\$, thousands)	Jobs created (No)					No of jobs created per US\$1 million investment				
			Direct	Women	Seasonal	Indirect	Total	Direct	Women	Seasonal	Indirect	Total
Namangan	1	120.0	5	0	3	4	12	42	0	25	33	100
Samarkand	1	56.0	6	1	10	11	27	107	18	179	196	482
Tashkent	3	793.0	33	10	35	31	99	42	13	44	39	125
Bukhara	3	922.3	22	5	30	31	83	24	5	33	34	90
Fergana	1	1,952.5	8	4	7	8	23	4	2	4	4	12
Jizzakh	5	606.5	35	15	39	35	109	58	25	64	58	180
Karakalpakstan	2	720.0	30	9	24	22	76	42	13	33	31	106
All	16	5,170.3	139	44	148	142	429	27	9	29	27	83

Feed production

Animal feed is one of the most important constraints of livestock production in Uzbekistan. There are very few companies that are involved in animal feed production locally. Livestock farmers rely on international companies (through their local dealers) that import annual feeds directly from abroad (mainly from Russia) and sell them domestically. The role of the project in contributing to/building the local animal feed production capacity is thus commendable although very limited.

The project financed a total of 5 sub-loans worth US\$465,000. Sub-loan beneficiaries used proceeds of the project for the purchase of feed ingredients and farm machineries. Through the sub-loans, animal feed producers were able to create a total of 145 jobs, including 51 seasonal, 29 indirect, and 65 direct jobs. The

total number of jobs created for women was 18. Tashkent followed by Khorezm has the largest number of jobs created. The number of jobs created per US\$1 million investment was 312, including 140 jobs that have been created directly in the beneficiaries' premises and 39 jobs for women. Tashkent has a large number of jobs created as well as the number of jobs created per US\$1 million investment followed by Khorezm. This is perhaps because Tashkent has a relatively large number of credit line beneficiaries (2) compared to Khorezm. The difference in the total number of jobs created as well as the number of jobs created per US\$1 million investment is because of the size of credit line investment, which is relatively larger in Tashkent followed by Khorezm than other regions (Table 12).

Table 12. Credit line beneficiaries, investment, and jobs created in the animal feed production sub-sector by region

Region	Beneficiary (no)	Investment (US\$, thousands)	Jobs created (No)					No of jobs created per US\$1 million investment				
			Direct	Women	Seasonal	Indirect	Total	Direct	Women	Seasonal	Indirect	Total
Namangan	1	90.0	5	0	20	4	29	56	0	222	44	322
Tashkent	2	134.9	33	10	15	12	60	245	74	111	89	445
Khorezm	1	149.9	22	5	10	8	40	147	33	67	54	267
Kashkadarya	1	90.0	5	3	6	5	16	56	33	67	56	178
All	5	464.8	65	18	51	29	145	140	39	110	62	312

CHAPTER 4: CONCLUSION AND RECOMMENDATIONS

Conclusion

Credit lines investments of the LSDP improved the access to finance for large-scale commercial farmers and agribusinesses. Very few smallholders (*dehkans*) benefitted from credit line investments. Through credit line investments, beneficiaries were able to expand existing businesses and create new ones. Beneficiaries were able to procure live animals, farm machinery, equipment, and production lines. These had helped beneficiaries increase production and productivity; increase volumes and value of livestock products sold; increase incomes; and create new jobs.

Credit line investments helped beneficiaries create different types of jobs, including direct, women, seasonal and indirect jobs. All types of jobs were created in the different sub-sectors and in all regions of Uzbekistan. Dairy production is the sub-sector with the largest number of jobs created followed by beef processing, dairy processing, and poultry production. This is true for the different types of jobs, including direct, women, seasonal and indirect jobs. Feed production is the sub-sector with the least number of jobs created.

Tashkent, Samarkand, Fergana, and Namangan are regions where a relatively large number of jobs have been created. However, regional differences in the number of jobs created are not robust. The difference is largely due to the difference in the number and size of credit line beneficiaries and investments, respectively. The larger the number of credit line beneficiaries and the larger the size of credit line investments, the larger the number of jobs created.

The number of jobs created per US\$1 million investment varied across the different livestock sub-sectors. It was the highest in small ruminants (meat production) followed by beef processing and fisheries/aquaculture. The number of women jobs created per US\$1 million investment also varied across the sub-sectors and it was the highest in animal feed production followed by meat processing and meat production. Just like the difference in the number of jobs created in the different sub-sector and regions, the difference in jobs created per US\$ 1 million investment by sub-sector and region is not robust. It is largely due to the difference in the number and size of credit line beneficiaries and investments, respectively.

Recommendations

This assessment showed that inclusion of credit line investments in livestock operations helps create different types of new jobs in the various sub-sectors of livestock. It also demonstrated that jobs can be created in upstream, mid-stream, and downstream and that they can be inclusive. To ensure the creation of more and diverse jobs through inclusion of credit line investments in livestock operations, however, it is essential to ensure the following:

- (i) **Inclusiveness:** Ensuring smallholders' (*dehkans* in this case) participation in credit line investment programs is essential. Very few *dehkans* participated in the credit line investment program of the LSDP, even though their number is significant (close to 5 million) and they produced more than 90 percent of the livestock products, including milk and meat and almost 50 percent of the egg production. This has had its own impact on the number of jobs the LSDSP help create. *Dehkans* participation in credit line investment programs could have increased the number of jobs created, and significantly indeed. Future operations with credit line investment programs should be

inclusive by devising ways and means through which smallholder farmers will be able to participate.

- (ii) **Value chain financing:** The credit line investment program of the LSDP financed upstream, mid-stream, and downstream activities, not value chain financing. The number of jobs created would have been significantly larger had the credit line investment program of the LSDP followed the value chain financing approach. Value chain financing will help create more jobs, including in transport, trade, breeding, and input provision as well as veterinary services. Future operations should thus strive to promote value chain financing as much as possible and as conditions allow.
- (iii) **Technical assistance:** The credit line investment program of the LSDP was not accompanied with sufficient resource allocation for technical assistance. This resulted in limited access to technologies, technical know-how, and training on husbandry techniques, which in turn led to poor animal health and limited use of genetic potential. Technical assistances will help beneficiaries increase production and productivity, and ultimately income. This will in turn help beneficiaries expand their businesses and hence create more and different types of new jobs. Future operations with credit line investment programs should thus allocate sufficient resources for technical assistance.
- (iv) **Diversified loan products:** The credit line investment program of the LSDP did not have diversified loan products. PFIs had limited experience and knowledge in availing diversified loan products, if any. This has resulted in limiting the access to finance of many potential borrowers, including *dehkans*. Future operations with credit line investment programs should aim at building the capacity of financial institutions by allocating sufficient resources, including technical assistance so that they have the knowledge and skill to diversify loan products.

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