This project is financed by the European Union

Technical Assistance of the Programme in Support to the Employment and TVET Reforms

EuropeAid/131668/C/SER/JO Service Contract No.2012/310-685

This project is implemented by a GOPA led consortium

Strategic plan of the Agriculture Sector in Jordan

January 2014

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Overview of the Agricultural Sector in Jordan

0.1 Importance of Agriculture

Agriculture is considered, in all countries, a basic pillar of economic and social development. During the past three decades, agriculture has started to play a major role in the protection of the environment, including the protection of bio-diversity and ensuring an environmental balance that would secure sustainable use of resources and preserve them for future generations.

These principles have been used as a basis for agricultural strategies for many countries. Strategies no longer focus on the economic dimension of development alone, but emphasize the social and environmental dimensions as well.

In Jordan, despite of the sector's moderate contribution to GDP, It is still considered the base for integrated rural development, a source of income and employment for rural and Badiya (semi-desert) people and a generator of activities in the other economic sub-sectors, especially the industrial and services ones. It also plays a central role in food security and trade balance improvement.

The above considerations should not overshadow the need for economic efficiency in utilizing agricultural resources. Efforts must aim at building the agricultural economy on the basis of comparative advantage and competitiveness in price and quality.

0.2 Types of Agricultural Products

Agricultural products in Jordan consist of the following types[1]:

- Field crops; wheat, barley, lentils, chick-peas, maize, clover trefoil, vetch-common vech, and others.
- Vegetables; among which are tomatoes, squash, eggplants, cucumber, potatoes, cabbage, cauliflower, hot pepper, sweet pepper, broad beans, string beans, peas, Jews mallow, water melon, onion dry, and others.
- Bearing trees; citrus fruits, olives, grapes, fig, almonds, peach, apple, date palm, bananas and others.
- Live stock; consisting of sheep, goats, cattle, and poultry.

0.3 Land

Jordan has a land area of about 89.300 km2, 90% of which receives rain fall of 200 mm or less. The topography of the land can be classified as follows:

- Jordan Valley; which accounts for 2.25% of the total country area.
- High lands; which accounts for 19.94% of the total country area.
- The Badiya; which accounts for 77.37% of the total country area.

The arable land is estimated at 8.9 million Dunums which accounts for 10% of the total area of the country. Out of this area, only 3.6 million Dunums are utilized which is around 40.5% of the arable land and 4% of the total area of the country[2].

[1] Department of Statistics, Annual Agriculture Surveys/ taken from the Jordan Statistical Yearbook 2(

0.4 Rainfall

The following table shows the average annual rain fall in the different climate areas[3]:

Climate area	Average annual rainfall (mm)	Area (km2)	Area (Percentage of the total area)
Semi-desert (Badiya)	Less than 200	80800	90.5
Dry area	200-300	4900	5.5
Semi-dry area	300-400	1700	1.9
Semi-humid area	More than 400	1900	2.1
Total		89300	

0.5 Water

Water is the most important resource for agriculture. Jordan is among the poorest countries in the world in terms of water resources, therefore, priority should be given to structural investments through eliminating water loss for household usage, expanding water harvesting projects, and the use of technology in enhancing irrigation systems.

Water sources in Jordan consist of the following:

Water sources	Quantity (million m3
Surface water	300
Renewable ground water	370
Treated water	180
"Peace Treaty" water	90
Al Disi Basin (non-renewable ground water)	100
Desalination of ground water	60
Total	1100

From the above quantities, agriculture consumes 650 million m3 which accounts for 60% of the total resources.

0.6 Contribution of the Sector in GDP and Exports

The real GDP growth of the Kingdom was 2.7% in 2012. The contribution of the agricultural sector in the GDP in 2012 stood at 3.9% down from 4.5% in 2011.

The following table shows the contribution of economic sectors to GDP at constant basic price in 2010-2012[4]:

Contribution of economic sectors to GDP at constant basic prices			
Sector	٢٠١٠	٢٠١١	٢٠١٢
Agriculture, Hunting, Forestry, & Fishing	4.4	4.5	3.9
Mining and Quarrying	1.8	2.1	1.7

[2] Akef Al Zoubi, Agricultural policies in Jordan 1952 - 1996
[3] Ministry of Agriculture, Agricultural sector development program 2001-2010
[4] Central Bank of Jordan, Annual report, 2012

Contribution of economic sectors to GDP at constant basic prices			
Sector	٢٠١٠	٢٠١١	٢٠١٢
Manufacturing	20.2	20.4	20.2
Electricity and Water	2.4	2.5	2.6
Construction	5.9	5.4	5.3
Restaurants & Hotels	١١.٤	١١.٤	١١.٩
Transport, Storage & Communications	17.0	17.0	17.2
Finance, Real Estate and Insurance Services	23.0	23.0	23.6
Producers of Government Services	13.6	13.6	13.6
Other Services	0.2	0.2	0.0
Total	100.0	100.0	100.0

The performance of the indicators related to agricultural sector in 2012 showed that the value of agricultural exports increased by 7.8% compared to an increase of 17.4% in 2011.

0.7 Employment in the Agricultural Sector

The percentage distribution of Jordanians employed age 15+ years **economic activity** in 2011 shows that the agriculture, forestry & fishing constitute 1.7% of Jordanians employed in all economic activities in the country[5]. In 2012, this percentage reached 2%[6].

The number of net created jobs for the agriculture, forestry and fishing in 2011 was 769 persons which constitute 1.4% of net created jobs in all economic activities; number of persons who got new jobs in this sector was 1388 and those who left their jobs were 620 persons[7].

Total number of non-Jordanian workers holding work permits in the agricultural sector in 2012 was 85,880 (84924 males and 956 females); the majority of whom are Egypti This number far exceeds the number of non-Jordanians holding permits in other economic activities[8].

Total number of socially ensured persons in the Kingdom in 2012 reached 994,711 persons; 872,392 Jordanians and 122,319 non-Jordanians. The distribution of socially ensured persons according to economic activity indicates that number of socially ensured employees in the agriculture activity reached 5131 in 2012[9].

The total number of socially insured Jordanians and non-Jordanians working in the agriculture activity and the monthly average wage is shown in the table below[10]:

Sex	**Jordanians**			**Non-Jordanians**		
	Number	**Total wages**	**Average wage**	**Number**	**Total wages**	**Average wage**
Male	2732	1182418	433	1963	426216	217

[5] DOS statistics
[6] Department of Statistics, Jordan statistical Yearbook, 201
[7] Department of Statistics, Jordan statistical yearbook, 2(
[8] Department of Statistics, Jordan statistical Yearbook, 20
[9] Department of Statistics, Jordan statistical Yearbook, 201
[10] Department of Statistics, Jordan statistical Yearbook, 2(

Female	428	132425	309	8	2259	282
Total	3160	1,314,843		1971	428,475	

The Agricultural Engineers registered at the Agricultural Engineers Association according to specialization and sex is shown in the below table[11]:

Specialization	Male	Female	Total
Plants Protection	799	391	1190
Plants Production	2474	1640	4114
Agricultural Economics	750	612	1362
Animal Production	1500	290	1790
Soil & Irrigation	527	965	1792
Nutrition & Industry	947	2241	3188
Total	7297	6139	13,436

0.8 Skills Supply

0.8.1 Current situation of skills and qualifications

This sector is dominated by foreign workers, the majority of whom are Egyptians. The workers are mostly unskilled and mostly men. Women work mainly in harvesting and in grading carried out in packing houses.

The Agricultural Engineers registered at the Agricultural Engineers Association according to specialization and sex is shown in the table below[12]:

Specialization	Male	Female	Total
Plants Protection	799	391	1190
Plants Production	2474	1640	4114
Agricultural Economics	750	612	1362
Animal Production	1500	290	1790
Soil & Irrigation	527	965	1792
Nutrition & Industry	947	2241	3188
Total	7297	6139	13,436

Agricultural Engineers work in public and private sector enterprises and a number of them run their own business. Plant Production Engineers form the highest percentage of Engineers followed by Animal Production. Animal Production Specialization is the least preferred by females because of the working conditions in animal farms. The Nutrition Industry Specialization is dominated by females but the market cannot absorb the increasing number of female nutritionists. In general, Agricultural Engineering is a specialization that is preferred by females.

0.8.2 Education and training providers

No occupational standards have been developed for occupations in Agriculture. Agriculture is a specialization offered within the Ministry of Education (MoE) vocational education stream. 2 schools offer training in Agriculture, but Agriculture is the least popular option for vocational students. All vocational courses have a practical orientation and include production of goods for sale.

[11] Department of Statistics, Jordan statistical Yearbook, 201
[12] Department of Statistics, Jordan statistical Yearbook, 201

No training for agriculture occupations is offered by the VTC. A former programme for mechanics in the field of Agriculture was discontinued.

Al Balqa University supervises delivery of education and training in 12 public colleges, 26 priva colleges, 2 UNRWA colleges, 6 Military Colleges and 2 Ministry of Health Colleges.

Diploma in Agriculture with three specializations in Animal Production, Plant Production and Agriculture Technology are predominantly theoretical programmes available for delivery by the Community Colleges[13].

Information from 201 -2012 shows that the number of students enrolled in community colleges in agricultural programmes was 234 students, 56 of them were females[14].

Five Jordanian universities offer Agriculture programmes; they graduate around 1000 Agricultural Engineers annually, of which around 55 graduates obtain employment opportunities in the publi sector.

The Agricultural Engineering Association trains around 400 male and female Engineers every yea and helps them find employment opportunities; it also supports Engineers in establishing their own businesses.[15]

Below are some details about the services provided by the Agricultural Engineering Association to its members:

- Training programme for new graduates, which is a 6-months programme that starts with classroom training for the management and employability skills part, and specialized technical skills part. This preparatory training is followed by on-the-job training in private and public sector firms. The trainees receive a monthly stipend which is paid by both the firm and the Association. About 70% of the trainees in th programme are females.
- Employment services, which provides job matching opportunities for job seekers and firms. They have a data base and an automated system that filters applications against the requirements of the firms.
- Continuous Training Centre, which provides training to Agricultural Engineers at all stages in their professional careers. The courses are chosen based on the demand of companies and individuals and the new trends in the field.
- The START Programme, which is a funding programme that aims at supporting Agricultural Engineers to establish their own businesses. The loan size (which is a zero interest loan) is between JD 500 and JD 30,000 and is granted based on a competitive process according to set criteria. The Programme is still new and has granted 4 loans so far. Females are given priority in the loans.

0.8.3 How well do training providers match needed skills?

Training opportunities for agricultural workers are very limited and when exist, they are predominantly theoretical. Agricultural Engineers graduates also lack practical skills needed for

[13] Gopa, Final report on the analysis and selection of six sub-sectors for development of occupational education and training interventions
[14] Department of Statistics, Jordan statistical year book 20
[15] Agricultural Engineers Association President

smooth transition to work. NCARE has a training department that offer training to farmers. The training offered at the Agricultural Engineers Associations seems to be promising.

PART ONE: FRUIT AND VEGETABLE SECTOR

Chapter 1: Overview of Fruit and Vegetables Sector

1.1 Profile of the Sub-sector

1.1.1 Size and Shape of the Sub-sector

Fruits and vegetables sector plays an important role in the economic and social system in Jordan especially in the rural areas. Planting fruits and vegetables is strongly linked to the efforts exerted in Jordan to preserve the natural environment and ensure its sustainability.

The real GDP growth of the Kingdom was 2.7% in 2012. The agricultural sector witnessed a significant decline in 2012. The sector contracted by 9.4% compared with 3.9% growth in 2011. Consequently, the contribution of the agricultural sector in the GDP in 2012 decelerated to 3.9% down from 4.5% in 2011. The deceleration of agricultural sector, both plant and live stock, car under the influence of adverse weather condition and rising production cost owing to the spikes in the prices of fodder and energy in addition to political unrest in the region.

The contribution of the plant sector in the national agricultural product accounts for 4! and the animal production is 55%.

The relative success in the Jordanian exports from fruits and vegetables is due to the high demand on the horticulture products in the Jordan Valley which is characterized by its high quality and availability all over the year. The competitiveness of the sector has increased as a result of quality improvements on the products and the responsiveness of farmers and products suppliers to the international export requirements. The Jordan Valley is characterized by its fertile soil and unique climate as the average temperature in this area is few degrees higher than that of the surrounding areas all year round. The Jordan Valley is considered the food basket of Jordan; as the long day hours and high temperatures are utilized to produce high quality and high return products (vegetables, cut flowers, and herbs) outside the season. The agricultural highlands receive the highest amount of rain fall and form the majority of the vegetation in the country[16].

The agricultural products in Jordan consist of the following types[17]:

Field crops; wheat, barley, lentils, chick-peas, maize, clover trefoil, vetch-common vech, and others.

Total cultivated and harvested area (000 Dunum), and production (000 Tons) in 2012:

Cultivated Area	Harvested Area	Production
1155	604	243

[16] Ministry of Agriculture publication
[17] Department of Statistics, Annual Agriculture Surveys/ taken from the Jordan Statistical Yearbook 201

Vegetables; among which are tomatoes, squash, eggplants, cucumber, potatoes, cabbage, cauliflower, hot pepper, sweet pepper, broad beans, string beans, peas, Jews mallow, water melon, onion dry, and others.

Total area (000 Dunum) and production (000 Ton) of vegetables in Jordan in 2012 in summer and winter:

Total Area	Total Production
423	1569

Bearing trees; citrus fruits, olives, grapes, fig, almonds, peach, apple, date palm, bananas and others.

Total area, number of trees, and production in 2012 (000 Dunum for areas, 00 trees for numbers, 000 Ton for production

Total Area	Total # of bearing trees	Production
859	18439	455

The following table shows the areas of cultivated land in Jordan according to the type of crops from 2009 – 2012 (**in one thousand Dunum**s)[18]:

Area	2009	2010	2011	2012
Total cultivated land	2243.0	2593	2408	2437
Field crops cultivated land	1008.0	1286	1129	1155
Fruit trees cultivated land	823.0	827	850	859
Vegetables cultivated land	412.0	480	429	423
Irrigated land	948.2	1024.7	964.5	931
Non-irrigated land	1293.7	1568.8	1443.2	1506

1.1.2 Irrigation Types

The types of irrigation used for agriculture are:

- Surface irrigation
- Sprinklers
- Drip irrigation

The following tables show cultivated areas according to irrigation type in the different locations:

Cultivated area with field crops by type of irrigation in Jordan, 2011[19]:

Location	Total area Dunum	Non-irrigated area	Irrigated area		
			Surface	Sprinkles	Others
Uplands	1,107,723	1,040,458	23,801	29,613	13,852
Ghore	21,317	1,033	11,756	652	7,877
Total	1,129,040	1,041,491	35,557	30,265	21,729

The above table shows that most of the cultivated land with field crops is non-irrigated (rain-fed). It also shows that field crops are mostly cultivated in the up lands.

[18] Department of Statistics, Jordan Statistical Yearbook 201
[19] Department of Statistics, Agricultural Statistics Publicatio

Cultivated area with **winter vegetables** by type of plantation and irrigation in Jordan, 2011 (Area in Dunum)

Irrigated								Non-irrigated	Total Area
Location	Plastic houses		Plastic tunnels		Open field				
	Drip	Surface	Drip	Surface	Sprinkles	Drip	Surface		
Uplands	5,221	0	242	0	18,188	56,623	4,797	12,073	97,144
Ghore	30,805	2	3,433	10	0	108,420	1,433	42	144,144
Total	36,026	2	3,675	10	18,188	165,043	6,230	12,115	241,288

The above table shows that types of plantation for winter vegetables are plastic houses, plastic tunnels, and open field. It also shows that open field as a type of plantation is dominant in winter vegetables. Out of 241,288 Dunums which is the total cultivated area with winter vegetables, only 12,115 Dunums are non-irrigated.

ultivated area with **summer vegetables** by type of plantation and irrigation in Jordan, 2011 (Area ir Dunum)

Irrigated								Non-irrigated	Total Area
Location	Plastic houses		Plastic tunnels		Open field				
	Drip	Surface	Drip	Surface	Sprinkles	Drip	Surface		
Up lands	8,624	0	9,876	0	21,725	94,919	3,355	9,314	147,812
Ghore	1,282	53	6,451	17	0	30,373	1,354	3	39,529
Total	9,906	53	16,327	17	21,725	125,292	4,709	9,317	187,341

The above table shows that the types of plantation used with summer vegetables are plastic houses, plastic tunnels, and open field which dominates the types of plantation. Types of irrigation used in open field are sprinkles, drip, and surface. The non-irrigated area is very small compared to the irrigated area.

Cultivated area and production of vegetables (summer and winter) per location in 2011[20]:

Location	Total	
	Production (Ton)	Area (Dunum)
Up land	1,052,164	244,956
Ghore	876,139	183,672
Total	1,928,303	428,628

1.1.3 Distribution of Production

The table below shows the total cultivated area of vegetables (irrigated and non-irrigated) in 2011and the size of productior distributed geographically for the same year:

Geographic area	Total area (1000 Dunums)			Production (Ton)
	Irrigated	Non-irrigated	Total	
Jordan Valley	184	45	229	876,140
Up Lands	224	21	245	1,052,164
Total	407	21	429	1,928,304

The above table shows that the production of the up lands of vegetables is bigger than the Jordan Valley. It also shows that the cultivated area with vegetables in the up lands is larger than that in the Jordan Valley.

[20] Department of Statistics, Agricultural Statistics Publication 201

The table below shows the total cultivated area of **bearing trees** (irrigated and non-irrigated) and production size in 2011[21]:

Geographic area	Total area (1000 dunums)			Production (1000 Ton)
	Irrigated	Non-irrigated	Total	
Jordan Valley	108	1	109	172
Up Lands	362	379	741	255
Total	470	380	850	427

The above table shows that the production of the uplands is bigger than the production of the Jordan Valley. It also shows that the non-irrigated area is smaller than the irrigated area, but the difference is much smaller than that in vegetables.

Cultivated area, number of trees and production of **fruit trees** per location in 2011[22]

Location	Production (Ton)	Number of bearing trees	Area of total number of trees (Dunum)
Up lands	254,979	14,710,653	740,996
Ghore	171,544	4,195,779	109,050
Total	426,523	18,906,432	850,046

The above table shows that number of trees in the up lands far exceeds that in the Ghore. It also shows that the production of the up land from fruits is bigger than that in the Ghore.

1.1.4 Production & Exports Trends

Main crops production from field crops, vegetables and fruits trees (tons) in Jordan during 2007 – 2011

Crops	2007	2008	2009	2010	2011
Field crops	125,759	181,613	190,296	260,554	151,298
Vegetables	1,012,637	1,014,753	1,074,886	1,262,773	1,431,541
Fruit trees	309,479	289,240	354,413	393,604	365,744

Total number of exported fruit kinds amounted to 32 kinds. Total number of exported vegetables kinds amounted to46 kinds.

Number of countries importing Jordanian fruits is 42 countries, 12 of which are Arab countries, 2 European countries, in addition to other African and Central Asian countries, Turkey, India, and the United States.

Number of countries importing Jordanian vegetables is 40 countries, 10 of which are Arab countries, 24 European countries, in addition to some African and Ce tral Asian countries, Canada, Australia, Russia, and Turkey.

The average size of exports for the period 2005-2010 and its comparable distribution among th neighbouring countries (Arab countries) and remote countries is as follows, based on the higher weighted price for the year 2010):

Countries	Size (in tons)	Percentage	Value (in million JD)
Arab neighboring countries	650,811	93,5	260
Other countries	46,603	6.5	38
Total	697,414	100	298

[21] Ministry of Agriculture publication

[22] Department of Statistics, Agricultural Statistics Publication 2011

Development of the size and value of horticultural exports to Arab markets in the period 2005-2011, based on the higher weighted wholesale prices of 2010:

Year	2005	2006	2007	2008	2009	2010	2011	2012
Quantity (Tons)	543824	553511	700799	673944	751850	502427	781441	743,406
Value (Million JD)	217.0	221.4	280.3	269.6	300.7	210.0	312.6	427.2

Development of the size and value of horticultural exports to non-Arab countries' markets in the period 2005-2012, based on the higher weighted wholesale prices of 2010:

Year	2005	2006	2007	2008	2009	2010	2011	2012
Quantity (Tons)	19,643	16,516	30,612	42,790	49,280	120,774	60,359	58,011
Value (Million JD)	15.7	13.2	24.5	34.2	39.4	96.6	48.3	38.8

Development of the size and value of horticultural exports to all countries' markets in the period 2005-2012, based on the higher weighted wholesale prices of 2010:

Year	2005	2006	2007	2008	2009	2010	2011	2012
Quantity (Tons)	563,467	570,027	731,410	716,735	801,130	623,201	841,800	801,417
Value (Million JD)	233.2	234.6	304.8	303.8	340.1	307.5	360.9	466.0

1.1.5 Structure of the Sector and Stakeholders

The key organization for agriculture is the Ministry of Agriculture. There is no chamber of agriculture. The following organizations are considered sector stakeholders:

- Ministry of Agriculture.
- Agricultural Credit Organization.
- Jordan Cooperative Organization.
- National Centre for Agricultural Research and Extension (NCARE).
- Ministry of Labour.
- Ministry of Health.
- Jordan Food and Drug Organization.
- Jordan Standards and Metrology Organization.
- Ministry of Industry and Trade.
- Education and training providers (Al Balqa Applied University, Ministry of Education, Vocational Training Organization, universities offering agricultural programmes, NCARE, Agricultural Engineers Association).
- Jordan Farmers Union (19 branches in different governorates).
- Agricultural Engineers Association.
- Jordan Exporters and Producers Association for Fruits and Vegetables.
- Exporters and Producers of Vegetables and Fruits Union.
- Traders of agricultural materials Syndicate.
- Traders and Exporters of Fruits and Vegetables Syndicate/wholesale market.
- Greater Amman Municipality.
- Jordan Trade Chamber.
- Development and Employment Fund (there is a programme to support employment of Agricultural Engineers in cooperation with the Agricultural Engineers Association.
- Agricultural firms and farms.
- Agricultural marketing facilities, including packing houses.

1.1.6 Categories of Sector Enterprise

The vast majority of the fruits and vegetables farms are small and unregistered; they are owned and run by individuals. This category of farms forms around 99.5% of the total number of farms in the country. However, there is a small number of big units (firms and big farms) which add higher

economic value than small farms. These big units are located in different parts of the country, mainly in Mafraq, Shobak, and the Jordan Valley.

Big companies provide their employees with basic employment benefits such as social security and health insurance, while small farms do not provide such benefits.

The main types on enterprises available in the sector are:

- Producing firms (which own and run big farms)
- Producers and traders of agricultural materials.
- Firms which provide marketing services (packing and grading houses, cold storage, containers producers).
- Individual exporters from producing farms.
- Individual exporters and exporting companies (Arab countries, and European and high income countries).

1.1.7 Employment trends

Number of hired labour for crop activity by type of labour and nationality in Jordan during 2007 – 2012[23]

Type of labour	2007	2008	2009	2010	2011	2012
Permanent labour						
Jordanian	4,356	2,646	4,629	4,306	3,089	2,168
Non-Jordanian	11,555	17,274	23,783	17,338	15,511	11,248
Seasonal labour						
Jordanian	----------	471	1,268	1,285	675	185
Non-Jordanian	----------	4,114	1,846	854	864	846
Casual labour						
Jordanian	----------	14,831	17,142	19,090	18,244	14,461
Non-Jordanian	----------	28,367	28,265	18,484	25,395	15,866

The above table shows that foreign workers largely dominate the sector; number of permanent foreign workers increased during 2007 – 2009 then dropped in 2010 and decreased again in 2011 and 2012. The highest number of permanent Jordanians and non-Jordanians was registered in 2009. The casual labour constitutes the largest portion in both local and foreign workers among the other labour categories.

Experts in the sector indicated that the above numbers are not accurate and that the number is much higher.

1.2 Factors Impacting on Development of the Sector

1.2.1 National policies

The government supports farmers through the following:

- Most of the production and production inputs are waivered from tariff and sales tax.
- Income of farmers is waivered from income tax; however, the agriculture companies are waivered from income tax for the first JD 100,000.

[23] Department of Statistics, Agricultural Statistics Publication 20

As per WTO regulations and the "Agreement on Agriculture", and specifically policies of the "Green Box", subsidy for Agriculture is given in the following areas:

- Infrastructure projects.
- Research, extension and related projects.

Financial subsidy equals to 10% of the production value of each agricultural sector or the nationa agricultural product value, for areas such as Irrigation water and electricity for agricultural facilities.

1.2.2 International trade

National agricultural marketing policies in Jordan are linked with the general national economic policies, and trade and marketing policies, which comply with the WTO regulations. With regards to trading and marketing of all commodities, WTO regulations are mentioned in the general agreement for trade and tariffs GATT 1994. Agricultural commodities were specified in a special agreeme called "Agreement on Agriculture". Jordan has been fulfilling its requirements related to the general regulations of the GATT agreement and the Agreement on Agriculture with regards to the following:

Liberalization of markets and trade:

- The state does not practice production and marketing functions and does not put constraints on exports and imports.
- The state does not practice protection to producers other than custom protection.
- The state provides limited and allowed subsidy to producers.

The liberalization of markets and trade led to increased challenges related to competition in the local and international markets, as the tariff and sales tax waiver was not enough to overcome the challenges encountered by exporters as a result of liberating market and trade.

Moreover, the liberalization of export markets expanded the range of exporters from other countries which added to the Jordanian Exporters challenges in the international markets. As well, the liberalization of export markets affected not only Jordanian exports to international markets, but also affected domestic market which was also subject to higher competition forces.

Other agreements also affected the development of the sector such as the Great Free Trade Area (FTA) between Arab countries which removed all administrative and quantity constraints in addition to tariffs between the countries, in addition to Euro Mediterranean Agreement which aims at creating FTA between Jordan and EU countries. According to the Agreement, the EU markets are opened to almost all of Jordanian horticulture products, dates, olive oil and cut flower.

1.2.3 Climate change

Climate change scenarios indicate that Jordan and the Middle East could suffer from reduced agricultural productivity and water availability among other negative impacts. The Ministry of Environment in cooperation with the National Energy Research Centre and the UN Development Programme prepared the 2013-2020 Jordan Climate Change Policy which predicted that climate change will have serious implications on the country's efforts to eradicate poverty and realize sustainable development for current and future generations. The report indicated that climate change projections suggest a 1-4°C increase in temperatures and a 15-60% decrease in precipitation.

The report referred to studies conducted in Jordan which indicates that extreme weather events, such as flash floods, intense rain, snow storms and droughts, are predicted to be more frequent.

The climate change policy evaluated the current conditions of several sectors that will be affected by climate change and suggested practices and adaptation measures. The sectors included energy, transportation, solid waste and wastewater, land use and forestry, agriculture, water, biodiversity, health, coastal areas and tourism[24].

1.2.4 PESTEL Trends (political, economic, social, technological, environmental and legal)

Political Factors:

- Political relationship between Jordan and other countries may have negative impact on the export of the sector and transportation of goods
- Political unrest in the region
- Weak performance of government agencies which is attributed to weak institutionalization

Economic Factors

- Small sizes of most of the production units which increase the production cost and reduce competitiveness of the sector.
- Policies adopted by different government agencies are not harmonized, and in many cases lack stability.
- High labour cost.
- The increase in oil prices negatively which affect the competitiveness of the sector.

Social and Cultural

The Agricultural sector in general is not considered attractive to Jordanian workforce because of the perceived image of the sector occupations.

Working conditions offered in the farms are not preferable by Jordanians; farmers are reluctant to work in occupations that require high physical effort and in jobs that provide no stability and long term arrangements.

Social security and health insurance are two key factors that affect the Jordanians' decisions to take certain jobs; these factors are almost non-existent in horticulture farms.

Technological Factors

Big farms use high tech techniques in their operations, specifically fruits farms in the up land and vegetables and palm farms in the Jordan valley. Small farms, however, cannot afford to adopt such techniques, which in turn affect their productivity and quality of products.

Environmental Factors

- Climate change which affects the rainfall and temperature
- Climate change and misuse of land affects the quality of soil and its fertility
- Very low rainfall levels

[24] Ministry of Environment's secretary general, Ahmad Qatarneh, at a ceremony to launch the Climate Change Policy

- Decreased irrigation water quality caused by different pollution sources
- Other natural factors affecting the sector

Legal Factors

- Lack of a legislative framework that protects agricultural workers.
- Most of agricultural workers are not covered in the social security scheme.

1.2.5 Consumer trends

Main types of consumers:

- Restaurants
- Hotels
- Hospitals
- Household consumption through malls, supermarkets and other retailers

Trends:

- Due to decline in purchase power, consumers go for lower quality products and buy fewer quantities.
- The Syrian refugees in Jordan increased demand on products, specifically low quality products.

Chapter 2: Skills Demand in the Fruit and Vegetable sector

2.1 Skills Demand

2.1.1 Current Employment in the Sector

The following table shows the hired labour for crop activity by type of labour in 2012

Permanent Labour	
Jordanian	2,168
Non-Jordanian	11,248
Seasonal Labour	
Jordanian	185
Non-Jordanian	846
Casual Labour	
Jordanian	14,461
Non-Jordanian	15,866

2.1.2 Occupations in the sector

Agricultural Engineers; around 50% of them work in the public sector and the rest either work in the private sector or run their own businesses.

Agricultural extension Engineers provide extension services to farmers.

Agricultural Technicians.

Labourers working in the farms (Skilled and semi-skilled).

Labourers working in marketing facilities.

2.1.3 Skills demand

Skills required for the crop activity:

At the skilled and semi-skilled levels:

- Pre-harvesting skills
- Growing trees.
- Growing vegetables.
- Trimming trees (for fruits).
- Blossom thinning (for trees).
- Pest control.
- Pesticides spraying.
- Irrigation and fertilizing (mixing the material and determining the portions. of different medicines and training on using spraying pumps).
- Harvesting (mainly performed by female workers)
- Post-harvesting skills
- Sorting crops and putting them in field containers or final containers; field containers go to packing houses to prepare them for export, and final containers go to domestic market.
    - Grading and packing performed in packing houses (mostly done by female workers).

At Agricultural Engineers Level:

Graduates lack practical skills which affect their employability prospects. In addition, many of them lack the employability skills that make them appealing to business owners and enterprises. English language and computer skills are among the skills that business owners require and those that make obtaining employment opportunities easier for graduates.

Chapter 3: Supply and demand analysis

3.1 Supply and Demand

3.1.1 Skill Gaps

There is an oversupply in the number of Agricultural Engineers who enter the labour market annually, however, and as stated by specialists in the sector, graduates lack practical skills which affect their employment prospects. In addition, many of them lack employability skills that make them appealing to business owners and enterprises. English language and computer skills are among the skills that business owners require and those that make obtaining employment opportunities easier for graduates.

As for the skilled and semi-skilled level, Agriculture Sector Team indicated that there are skill gaps in the following areas listed according to importance:

- Technical skills in growing, grafting, and pruning fruit trees (grapes in particular), and modern techniques in growing and pruning trees that lead to early fruit ripening.
- Irrigation and fertilizing.
- Pest control.
- Technical skills in blossoms thinning.
- Grading and packing skills.
- Collecting fruits of certain kinds of trees.

- Identifying ripening signs.

In addition to the skills needed for fruits and vegetables sector, other promising sectors were identified by Agriculture Sector Team as sectors that need to build expertise for; these sectors are:

- Palm
- Mushrooms
- Cut flowers

The Agriculture Sector Team also identified transforming from classical to advanced farming as one of the areas that needs to be addressed.

According to the Sector Team, the above areas have to be accompanied by a campaign to raise awareness among Jordanians on the importance of working in agriculture, through extension services.

3.1.2 The Arab Standards Classification of Occupations (ASCO)

ASCO can provide guidance to Agriculture Sector Team on the types of occupations that need to be present at the sector and the skills that workers should have to perform well in these occupations. Including these occupations in this report does not indicate that these occupations exist or should exist in the sector; rather, they should be used as a reference to improve and organize occupational issues in the sector.

ASCO classified agricultural workers as follows:

- Market-Oriented Agricultural and Fishery Workers, Code 61
- Subsistence Agricultural Workers (small farms), Code 62

Relevant occupations under the market-oriented agricultural and fishery workers include:

6112013 Farmer , horticulture
Works independently, or under the supervision of a horticultural technician. Functions include: Cultivating lands to grow fruitful trees; Planting and serving seedlings, and picking and preparing fruits for marketing; Filling work forms, and providing work materials and equipment; Managing subordinates and developing their skills; and Following the procedures and regulations of occupational safety and Health.
6112024 Tree grafting and pruning worke
Works independently or under the supervision of an agricultural technician/ grafting and pruning. Functions include: Pruning trees, and grafting seedlings; Maintaining pruning and grafting tools and keeping them prepared; Filling work forms; and Following the procedures and regulations of occupational safety and Health.
6114013 Farmer , vegetable / general
Works independently, or under the supervision of an agricultural technician/ vegetable crops. Functions include: Providing work materials and equipment; Monitoring and preparing sheltered places devoted for vegetable growing and preparing lands; Planting , serving and harvesting crops; Operating agricultural machines; Filling up work records and patterns and managing subordinates and developing their skills; and Following the procedures and regulations of occupational safety and Health

6114024 Farmer , uncovered vegetables
Works independently, or under the supervision of a vegetables farmer/general. Functions include: Planting vegetable seeds, preparing open agricultural fields and planting (seedlings); Carrying out crops serving processes and picking and preparing products; Filling up work records and patterns; and Following the procedures and regulations of occupational safety and Health..
6115014 Farmer, Protected vegetables
Works independently or under the supervision of a vegetable farmer/general. Functions include: Preparing greenhouses to grow vegetable; Planting and serving different vegetable (seedlings); Growing and harvesting crops; Filling up work records and patterns; and following the procedures and regulations of occupational safety and Health.

Specialists' Occupations:

2132061 Specialist, horticulture
Works independently within the powers conferred upon him. Functions include: Studying environmental requirements for the cultivation of fruit trees orchards and cultivation feasibility; Developing production plans for orchards and following up their implementation and assessment, and studying and developing agricultural techniques in order to increase production efficiency. Preparing, studying and submitting tenders; Preparing technical reports, managing subordinates and developing their skills; and Developing procedures and providing requirements of occupational safety and health
2132021 Specialist, agriculture/ vegetables
Works independently within the powers conferred upon him. Functions include: Conducting feasibility studies for the cultivation of various types of vegetable crops, developing programmes for preparing the land for cultivation of uncovered and sheltered vegetable crops, and developing cultivation, harvesting and care programmes and following up their implementation and assessment; Preparing specifications and conditions of tenders for supply of vegetable production inputs; Preparing technical reports, managing subordinates and developing their skills; and Developing procedures and providing requirements of occupational safety and health.
2132031 Specialist , seeds
Works independently within the powers conferred upon him. Functions include: Studying species and varieties of seeds, developing programmes for selecting and preparing the land, and developing cultivation programmes and following up their implementation and assessment; Preparing programmes for production of seeds and seedlings and following up their implementation and assessment, and developing the production of seeds and seedlings of high productivity and excellent specifications. Preparing, studying and submitting tenders for supply of materials and equipment; Preparing technical reports, managing subordinates and developing their skills; and Developing procedures and providing requirements of occupational safety and health
2132041 Specialist , agricultural extension
Works independently within the powers conferred upon him. Functions include: Conducting agricultural field surveys and supervising their implementation and assessment, planning of agricultural extension programmes and supervising their implementation using agricultural extension; Assessing programmes, preparing tenders for supply of requirements of agricultural extension programmes; Preparing technical reports, managing subordinates and developing their skills; and Developing procedures and providing requirements of occupational safety and health

2132051 Specialist , plant protection
Works independently within the powers conferred upon him. Functions include: Studying various pests and their effects on agricultural production, studying effects of pesticides on pests, beneficial insects, different crops and the environment, and developing programmes for preventive and curative agricultural pest control and following up their implementation and assessment; Preparing tables of quantities, specification and conditions of tenders; Preparing technical reports, managing subordinates and developing their skills; and Developing procedures and providing requirements of occupational safety and health
2132151 Specialist, irrigation and fertilizing
Works independently within the powers conferred upon him. Functions include: Studying characteristics and components of agricultural lands and soils, developing appropriate fertilizing programmes, designs and schemes of irrigation and drainage and following up their installation and evaluation; Preparing irrigation schemes, and introducing modern technologies in using water and fertilizers. Preparing specifications and conditions of tenders for irrigation and fertilizing systems; Preparing technical reports, managing subordinates and developing their skills; and Developing procedures and providing requirements of occupational safety and health.

Relevant ASCO occupations under the Subsistence Agricultural Workers (small farms):

6210014 Farmer, irrigated farming
Works independently. Functions include: Preparing lands for irrigated farming; Planting vegetables, crops and fruitful trees, serving them and harvesting and marketing their products; and filling work forms; and Following the procedures and regulations of occupational safety and Health.
6210024 Farmer, rain-fed agriculture
Works independently. Functions include: Preparing lands for rain-fed agriculture; Planting vegetables, field crops and fruitful trees, serving them and harvesting and marketing their products; Filling work forms; and Following the procedures and regulations of occupational safety and Health.

3.1.3 Implications of Skill Gaps in the Sector

- Low productivity of workers
- High cost resulting from inefficient performance.

Chapter 4 Major challenges of the fruits and vegetables Sector

4.1 Major challenges of the fruits and vegetables Sector

4.1.1 Challenges related to workforce and skill development

The Agricultural sector is not a preferred sector for the Jordanian workforce due to long working hours and night shifts, instability, high physical effort, and lack of social security and health insurance.

Foreign labour with permits to work in the Agriculture sector leaves the sector to work in other sectors with better financial incentives, which lead to instability of labour and interruption of production.

Insufficient skills related to the areas identified under "Skill Gaps".

Ownership and management of farms in most cases are not separated which may lead to unqualified individuals assuming the responsibility of management.

4.1.2 Challenges related to policies and general environment affecting the sector

Challenges related to production:

- Small production units; vast majority of farms are small which affect their ability to compete in the local and international markets
- Weak productivity and weak utilization of technology in production
- High labour cost
- Instability and fluctuation of labour
- The use of organic fertilizers which incubate pests and insects generations that transmit diseases to crops
- High risk of plant diseases
- High ratio of lost and damaged

Challenges related to government policies:

- Weak partnership between public and private sectors.
- Instability of import and export policies.
- Policies adopted by different government agencies are not harmonized, and in many cases lack stability.

Challenges related to marketing and trade:

- Fluctuation of prices and inadequate conditions for price formation (Biased and not transparent).
- The dominance of oligopoly among the market middlemen which constraint the mechanism of supply and demand.
- Unstable export policy.
- Weak marketing information system.
- The inactivation of the national production protection law according to WTO regulations.
- Weak implementation of the technical specifications on imports.
- Insufficient control over quality and prices.
- Concentration of exports in the traditional markets.
- Contractual and export agriculture is still new and under developed.
- Fierce competition in the export markets resulting from increased market openness.
- Unstable road transportation and high road transportation cost.
- Air shipping of agricultural products is done on passenger airplanes.
- Logistical complications in airports and borders on exports.

PART TWO: LIVESTOCK SECTOR

Chapter 5: Overview of the Livestock Sector

5.1 Profile of the Sector

5.1.1 Introduction

Livestock is a very important sector within the Agricultural sector in terms of the size of investment, employment, and meeting consumers' demand of meat, milk, egg, and other products. The revenue generated from this sector is considered the main source of income for a considerable number of rural and nomad populations.

The contribution of the livestock sector in the national agriculture product is 55%. This se provides employment opportunities for 55,990; of whom 42,290 are Jordanians mostly from holders' family members.

The live stock sector consists of the following main components (sub-sectors)[25]:

- Poultry
- Sheep and goats
- Cattle

The livestock sector total production was JD 975.5 in 2011. The production value of the l tock sector increased by 3.1% in 2011 compared with 2010. The production of the poultry sect estimated at JD 517 million, which represents 53% of the total production of the livestock secto [26]. The poultry sector fulfils 83.7% of the local demand of chicken meat and 97.2% of table eggs in 2012.

The Cattle sector contribution in the national agricultural product was 14.3% in 2011. The (sector provides around 3000 employment opportunitie for Jordanians and non-Jordanians. The total number of cattle in 2012 reached 70,385 heads, and the number of licensed farms in 2012 was 402 licensed and 220 unlicensed farms. The cattle sector contributed to 72% of the total production of fresh milk, and 22% of the total production of red meat in 2012.

The sheep and goats sector contribution in the national agricultural product was 32.2% in 20: Number of sheep and goats in 1/11/2011 was 2,264.600 heads and 752.200 respective and contribute to 28% of the total local production of fresh milk and 77% of the local production of red meat in 2012.

The Feed Sector is another important sector as it accounts for 75% of the cost of raising animals, as the local production only covers 25% of the demand. Therefore, private and public sectors have tc import raw feed material and feed concentrates to cover the increasing demand of the livestock sector[27].

[25] The sub-sectors mentioned above will be referred to as sectors throughout this document
[26] Department of Statistics, Agricultural Statistics Publication 20:
[27] Ministry of Agriculture publications

Number of employed persons working in the livestock activity aged 16 and above per typ employment, sex and nationality in 2012.[28]

Activity and type of employment	Male			Female			Total		
	Jordanian	Non-Jordanian	Total	Jordanian	Non-Jordanian	Total	Jordanian	Non-Jordanian	Total
Permanent workers	1710	10,580	12,290	90	20	110	1800	10,600	12,400
Seasonal workers	120	500	620	0	30	30	120	530	650
Casual workers	550	1210	1760	610	810	1420	1160	2020	3180
From the family members	25,840	320	26,160	13,370	230	13,600	39,210	550	39,760
Gross Total	28,220	12,610	40,830	14,070	1090	15,160	42,290	13,700	55,990

The above table shows that employment opportunities of this sector concentrate in the family members' category. Apart from family members category, non-Jordanians dominate the employment in the livestock sector.

5.1.2 Size and shape of the Livestock Sector

Size and shape of the Poultry Sector

The poultry sector is one of the most important productive sectors within Agriculture. The investment value of this sector is estimated at JD 950 million distributed among the following:

- Broiler and layer Farms
- Parents and grandparents Farms
- Hatcheries
- Slaughter houses
- Feed factories and veterinary drugs factories.

The poultry sector assumes an important role in:

- Food and food security.
- Economic integration with supporting sectors.
- The added value achieved on the value chain in the various production and marketing stages starting with preparation of production input and ends with selling.
- Employment opportunities for Jordanians.

Size & Shape of the Sheep, Goats, and Cattle Sector

The sheep and goats sector contributes 32.2% of the national agricultural production in 2011.

Number of sheep and goats as in 1/11/2011 was 2,264.600 heads and 752.200 respectively. Sheep and goats contribution to the total production of fresh milk was 28% in 2012, in additic contribution of around 77% of the total local production of the red meat; in 2012, the sheep sect achieved self sufficiency of 35.3%, and the goat sector 99.1%.

The Cattle sector contribution in the national agricultural product 14.3% in 2011; it invests about JD 400 million covering cow farms and supporting sectors. The cattle sector provides around employment opportunities for Jordanians and non-Jordanians. The total number of cattle in 201 reached 70,385[29] heads, and the number of cattle farms in 2012 was 402 licensed and 220 unlicensed farms. Number of cows raised in licensed and unlicensed farms in 2012 was 53,417 heads and number of household cows was 16,968 heads. In 2012, the cattle sector contributed to 7: % of the

[28] http:/www.dos.gov.jo

[29] Ministry of Agriculture publications

total local production of fresh milk and 22% of the local production of red mea . In the same year, cow milk achieved self sufficiency of 100% and red meat produced from cows achieved self sufficiency of 29.2%.

5.1.3 Livestock sector production

Poultry Sector Production

The poultry sector is growing substantially in terms of production capacity and production. The following part illustrates the size of production, export, import, and consumption of the main components of the poultry sector.

The Broilers

The following table shows the development of production, import, and consumption of **broiler** in the period 2005 – 2012:

Year	Production (Thousand Ton)	Import (Thousand Ton)	Consumption (thousand Ton)	Individual consumption (kg meat/year)
2005	115	18	133	24.2
2006	119	4	122	22.8
2007	122	18	140	24.5
2008	135	26	153	26.8
2009	144	29	165	27.4
2010	179	2	201	29.5
2011	203	25	222	31.5
2012	190	56	NA	NA

The Layers

The following table shows the development of production, import, export, and consumption of table eggs (million eggs) during 2005 – 2011

Year	Production Million Egg	Export Million Egg	Import	Consumption Million Egg	Individual consumption egg /year
2005	**786**	**---**	**0**	**786**	**157**
2006	**863**	**21**	**0**	**842**	**160**
2007	**865**	**11**	**0**	**854**	**153**
2008	**975**	**30**	**0**	**945**	**165**
2009	**870**	**57**	**0**	**813**	**140**
2010	**935**	**103**	**0**	**832**	**145**
2011	**880**	**60**	**0**	**870**	**130**

Sheep, Goats, and Cattle Sector Production

This sector produces red meat and milk.

The quantity of red meat locally produced was around 24,000 Ton which is about 34% of the tot consumption of red meat. The individual's yearly average consumption is 9.9 kg.

The table below shows the quantities of red meat produced from the sheep, goats, cattle and camels in 2012[30]:

Live stock	Sheep	Goats	Cattle	Total
Quantity (Ton)	13,262	5124	5235	23,621
Percentage	56%	21%	22%	100%

[30] Department of Statistics, Agriculture Statistical Survey 201

Production and Imports of red meat:

The table below shows the quantities of imported red and white meet and meat locally produced during 2012 (Tons)[31]:

Meat Type	Imported (Ton)	Local production (Ton)
Cows	38,003	5235
Sheep	27,995	13,262
Goats	47	5124
Chicken	56,460	190,262

Local milk production (000 Ton) in 2011 according to source:[32]

Source	Cows	Sheep	Goats	Total
Milk production (Ton)	234.0	51.4	37.7	323.1
Percentage	72%	16%	12%	100%

As shown in the above table, cattle is the main source of local milk in the country.

Production and Imports of Fresh Milk:

The table below shows the quantities of locally produced and imported milk in 2012[33]:

Source of milk	Quantity (Ton)
Locally produced	365,400
Imported	233,250
Total	598,650

Average consumption of live stock products in 2010[34](Note small differences between different data sources)

Type of product	Average consumption per individual per year
Red meat	9.9 kg
Milk	92 kg
Chicken meat	29 kg
Table eggs	155 egg
Fish	4.6 kg
Honey	146 gm

Self sufficiency of livestock products in 2012[35]

Type of product	Self sufficiency
Cow meat	29.2%
Sheep meat	35.3%
Goat meat	99.1%
Chicken meat	83.7%
Table egg	97.2%
Fresh milk	100%

[31] Department of Statistics, Agriculture Statistical Survey 2
[32] Dr. Ayman Al Salti, Poultry Sector and food security, MoA, June 2(
[33] Ministry of Agriculture publications
[34] Dr. Ayman Al Salti, Poultry Sector and food security, MoA, June 2(
[35] Department of Statistics, Statistical agricultural survey 2(

Self sufficiency of milk (including powdered milk) was 52.2% of the total consumption in 2012.[36]

5.1.4 Structure and categories of Livestock Sector enterprises[37]

Sector Structure and Categories of Enterprises in the Poultry Sector

There are poultry farms in Jordan covering broiler, layer, parents and grandparents farms. Small farms are served by their owners and receive some guidance from supply companies which sell the chicks, drugs, and feed.

Big farms have their technical cadre consisting of a Resident Agricultural Engineer (Jordanian), technician (Jordanian), and foreign workers. Big farms have advanced technologies; some are fully automated and the others are semi-automated. Below are details on the type and numbers of companies and farms:

Broilers:

- 6 big companies (with their Slaughter Houses) which produce 45% of the total Broiler production.
- 4 medium and 6 small companies in addition to 1893 farms; all produce 55% of t total broiler production.
- 5 private sector Slaughters for the public.
- 1 Slaughter which is run by the Greater Amman Municipality.
- Slaughter is also done in butcheries.

Layers:

- 11 companies (small, medium and big) which contribute to 33% of the total production.
- 268 farms which produce 67% of the total production.

The table below summarizes the number and production capacity of poultry farms /year in 2011[38]

Type	Number	Production capacity/year (0(Ton)
Broiler farms	1866	27358
Layer farms	280	4900
Broiler parents farms	103	3899.3
Layer parents farms	4	9.65 million egg
Broiler grandparents farms	2	3.4 million chick
Hatcheries	43	288.4 million chick
Plucking units	Thousands	

[36] Ministry of Agriculture publications
[37] Dr. Ayman Al Salti, Poultry Sector and food security, MoA, June 2(
[38] Ministry of Agriculture publications

Sector Structure and Categories of Enterprises in the Sheep, Goats, and Cattle Sector:

- **Livestock Slaughter Houses**

Total number of 28 covering all governorates; 27 managed by municipalities and 1 owned by t private sector). Average number of workers in one slaughter house is 4 administrative and cleaning workers, 1 Vet, and 5 slaughters.

- **Milk cow farms**

90% of cow farms are small units owned and run by individuals or families. These small farms group together under cooperative associations. The biggest cooperative is the Cattle Breeders Association in Al Dolail; number of farms members in the association is 150 farms all operating in the area.

There are other associations in other areas such as the Association of Cow Breeders of Irbid Governorate which has member farms from different areas in the Governorate, in addition to associations in Madaba, Al Balqa', Al Mafraq, and another one in Al Dulail called Al Salam Association which has 40 small member farms.

The main service provided by associations to member farms is providing them with the concentrate feed. Usually, 2 foreign workers handle all the work in the small farm under the supervision of the farm owner. Small farms can seek Vet's expertise as needed.

On the other hand, there are 5 – 6 big farms, or companies that run big farms with cattle betwee 1000-3000 heads in the farm. These companies have administrative systems and hire administrative and technical cadre from the Jordanians in addition to low skill workers which are usually foreign workers.

- **Dairy factories**

There are 25 dairy factories in Jordan distributed in the different governorates in addition to 83 semi-automated workshops. Factories concentrate in the governorates with the highest concentration of farms. Workers in dairy factories are Jordanians.

- **Factories that import production input and medicines.**
- **Medicine factories.**

Livestock Sector Stakeholders

- Ministry of Agriculture
- Agricultural Credit Corporation
- The Co-operative Organization
- National Centre for Agricultural Research and Extension (NCARE)
- Ministry of Industry and Trade
- Ministry of Labour
- Ministry of Municipal Affairs and Greater Amman Municipality
- Ministry of Health
- Food and Drug Organization
- Jordan Standards & Metrology Organization

- Development and Employment Fund (a programme to support employment of Agricultural Engineers is available in cooperation with the Agricultural Engineers Association).
- Education and training providers
- Agricultural Engineers Association
- Veterinarians Syndicate
- Jordan Farmers Union
- Cattle Associations
- Jordan Poultry Production Association (JPPA)
- Poultry Farms and factories (Feed factories, Broiler and layer farms and factories, hatcheries, plucking units, drug factories, slaughter houses, sterilizer material factories, Producing and trading production input factories).
- Sheep, Goats, and Cattle Farms and Factories (Farms, milk factories, Feed factories, production inputs producing and importing factories, medicine factories)

5.2 Factors Impacting on Development of the Livestock Sector

5.2.1 National policies

The government supports farmers through the following:

- Most of the production and production inputs are waivered from tariff and sales tax.
- Income of farmers is waivered from income tax; however, the agriculture companies are waivered from income tax for the first JD 100,000.
- As per WTO regulations and the "Agreement on Agriculture", and specifically policies of the "Green Box", subsidy for Agriculture is given in the following areas:
- Infrastructure projects.
- Research, extension and related projects.
- Financial subsidy equals to 10% of the production value of each agricultural sector or the national agricultural product value, for areas such as Irrigation water and electricity for agricultural facilities.

5.2.2 International trade

National agricultural marketing policies are linked with the general national economic policies, and trade and marketing policies, which comply with the WTO regulations. With regards to trading and marketing of all commodities, WTO regulations are mentioned in the general agreement for trade and tariffs GATT 1994. Agricultural commodities were specified in a special agreement c "Agreement on Agriculture". Jordan has been fulfilling its requirements related to the general regulations of the GATT agreement and the Agreement on Agriculture with regards to the following:

Liberalization of markets and trade

- The state does not practice production and marketing functions and does not put constraints on exports and imports.
- The state does not practice protection to producers other than custom protection.
- The state provides limited and allowed subsidy to producers.

The liberalization of markets and trade led to increased challenges related to competition in the local and international markets, as the tariff and sales tax waiver was not enough to overcome the challenges encountered by exporters as a result of liberating market and trade.

Moreover, the liberalization of export markets expanded the range of exporters from other countries which added to the Jordanian Exporters challenges in the international markets. As well, the liberalization of export markets affected not only Jordanian exports to international markets, but also affected domestic market which was also subject to higher competition forces.

Other agreements also affected the development of the sector such as the Free Trade Agreement (FTA) between Arab countries which removed all administrative and quantity constraints in addition to tariffs between the countries, in addition to Euro Mediterranean Agreement which aims at creating FTA between Jordan and EU countries. According to the Agreement, the EU markets are completely opened to almost all Jordanian horticulture products, dates, olive oil and cut flower.

5.2.3 Climate change

Climate change scenarios indicate that Jordan and the Middle East could suffer from reduced agricultural productivity and water availability among other negative impacts. The Ministry of Environment in cooperation with the National Energy Research Centre and the UN Development Programme prepared the 2013-2020 Jordan Climate Change Policy which predicted that climate change will have serious implications on the country's efforts to eradicate poverty and realize sustainable development for current and future generations. The report indicated that climate change projections suggest -4°C increase in temperatures and a 15-60% decrease in precipitation. The report referred to studies conducted in Jordan which indicate that extreme weather events, such as flash floods, intense rain, snow storms and droughts, are predicted to be more frequent.

The climate change policy evaluated the current conditions of several sectors that will be affected by climate change and suggested practices and adaptation measures. The sectors included energy, transportation, solid waste and wastewater, land use and forestry, agriculture, water, biodiversity, health, coastal areas and tourism[39].

5.2.4 PESTEL Trends (political, economic, social, technological, environmental and legal)

Political Factors:

- Political relationship between Jordan and other countries may have negative impact on the export of the sector and transportation of goods.
- Weak performance of government agencies which is attributed to weak institutionalization.
- Political unrest in the region.

Economic Factors

- Small size of most of the production units which increase the production cost.
- Policies adopted by different government agencies are not harmonized, and in many cases lack stability.
- Weak protection of local production against injured imports according to WTO regulations.
- Price fluctuation of feed product in the international market.

[39] Ministry of Environment's secretary general, Ahmad Qatarneh, at a ceremony to launch the Climate Change Policy

Social and Cultural Factors

- The Livestock sector is not considered attractive to Jordanian workforce because of the perceived image of the sector occupations and the undesired working conditions.

Technological Factors

- Most farms do not apply modern Poultry and Livestock breeding approaches.
- Weak management of nutrition and animal health.
- Lack of traceability system.

Environmental Factors

- Problems faced by farms in disposing perished animals.
- Problems faced by farms in disposing animal waste.
- Climate change which affects the temperature and the rainfall.

Legal Factors

- Multiple agencies practicing control on the sector cause multiple regulations and practices (Ministry of Health, municipalities, Food and Drug Organization, Greater Amman Municipality, etc).

5.2.5 Consumers' Trends of the Livestock Sector

Consumer Trends of the Poultry Sector

The following table shows consumer segmentation and consumption trends:

Consumers	**Demand for weight**	**Source**	
		Local (%)	**Imported (%)**
Hospitals	1100-1200		100
Military	1100-1300	100	
Hotels	1100-1350		100
Restaurants	800-1200	50	50
Retailers (malls, supermarkets, Civil Consumption Organization and Military Consumption Organization)		30	70

Consumer Trends of the Sheep, Goats, and Cattle Sector

Consumers of red meat and fresh milk consist of the following categories listed according to importance:

- Household consumption through malls, supermarkets, Civil and Military Consumers Organizations.
- Restaurants
- Hotels
- Hospitals

Average consumption of meat and milk:

Average consumption of red meat per individual per year is 9.9 kg in 2010 Average consumption of milk per individual per year is 92 kg. Because of the growth in population and the high demand on dairy products, the locally produced milk and dairy products does not meet the growing local demand, therefore, milk and dairy products are imported from different countries. Most of the consumption is on yellow cheese, dry yogurt (jameed), powder milk, sterilized long term milk and others.[40]

Chapter 6: Skills Demand in the Livestock Sector

6.1 Skills Demand in the Poultry Sector

6.1.1 Current Employment in the Poultry Sector

The poultry sector provides work opportunities for Jordanians as shown in the table below. These opportunities are provided by poultry farms, poultry production companies and their slaughter houses, parents and hatcheries, marketing mediation utilities, feed factories, veterinary products firms, and nattafat.

The following table shows number of workers in the poultry sector aged 16 years and above by kind of labour, sex, and nationality in 2012[41]

Activity and kind of labour	Male			Female		
	Jordanian	Non-Jordanian	Total	Jordanian	Non-Jordanian	Total
Broiler farms						
Permanent employees	400	4,590	4,990	0	0	0
Seasonal Emp.	20	340	360	0	0	0
Casual emp.	80	730	810	20	0	20
Family member	6,120	20	6,140	40	0	40
Total	6,620	5,680	12,300	60	0	60
Layer farms						
Permanent employees	110	590	700	10	0	10
Seasonal Emp.	0	10	10	0	0	0
Casual emp.	0	20	20	0	0	0
Family member	290	0	290	0	0	0
Total	400	620	1,020	10	0	10
Parent stock farms						
Permanent employees	180	560	740	0	0	0
Seasonal Emp.	0	20	20	0	0	0
Casual emp.	0	20	20	0	0	0
Family member	70	0	70	0	0	0
Total	250	600	850	0	0	0
Hatcheries						
Permanent employees	120	120	240	30	0	30
Seasonal Emp.	10	30	40	0	0	0
Casual emp.	0	10	10	0	0	0
Family member	30	0	30	0	0	0
Total	160	160	320	30	0	30

[40] Ministry of Agriculture publications

[41] Department of Statistics, Agricultural Statistics Publication 201

The following table shows the total number of workers in the poultry sector by nationality in 2012[42]

Activity and kind of labour	Jordanian	Non-Jordanian	Total
Broiler farms			
Permanent employees	400	4,590	4,990
Seasonal Emp.	20	340	360
Casual emp.	100	730	830
Family member	6,160	20	6,180
Total	6,680	5,680	12,360
Layer farms			
Permanent employees	120	590	710
Seasonal Emp.	0	10	10
Casual emp.	0	20	20
Family member	290	0	290
Total	410	620	1,030
Parent stock farms			
Permanent employees	180	560	740
Seasonal Emp.	0	20	20
Casual emp.	0	20	20
Family member	70	0	70
Total	250	600	850
Hatcheries			
Permanent employees	150	120	270
Seasonal Emp.	10	30	40
Casual emp.	0	10	10
Family member	30	0	30
Total	190	160	350
Gross Total	**7,530**	**7060**	**14,590**

The above table shows that the broiler is the category that provides the biggest work opportunities in the poultry sector; number of Jordanians working in broilers exceeds number of non-Jordanians; most of the Jordanians are family members. Other than family members, broilers are dominated by non-Jordanians specially in the permanent employment category.

6.1.2 Workers' Compensation in the Poultry Sector

The following table shows the compensation of employees (Value in JD) in the poultry activity by kind of labour in 2012[43]

Activity and kind of labour	Wages & salaries	In kind payments	Holding contribution to the social security	Other benefits
Broiler farms				
Permanent employees	13,087,860	305,690	379,660	6,570
Seasonal Emp.	787,420	11,120	0	0
Casual emp.	284,270	4650	0	0
Total	14,159,550	321,460	379,660	6,570
Layer farms				
Permanent employees	1,935,710	33,380	59,130	7,600
Seasonal Emp.	17,070	320	530	0
Casual emp.	12,750	100	250	0
Total	1,965,530	33,800	59,910	7,600
Parents stock farms				
Permanent employees	2,518,390	30,530	180,590	29,470
Seasonal Emp.	23,860	0	680	0
Casual emp.	8,300	150	240	0
Total	2,550,550	30,680	181,510	29,470

[42] Department of Statistics, Agricultural Statistics Publication
[43] Department of Statistics, Agricultural Statistics Publication 20

Activity and kind of labour	Wages & salaries	In kind payments	Holding contribution to the social security	Other benefits
Hatcheries				
Permanent employees	957,400	1,760	82,210	31,390
Seasonal Emp.	60,470	0	0	0
Casual emp.	2,000	0	0	0
Total	1,019,870	1,760	84,600	31,390

6.1.3 Current Occupations in the Sector

Big farms have their technical cadre consisting of a Resident Agricultural Engineer (Jordanian), technician (Jordanian), and foreign workers. Big farms have advanced technologies; some are fully automated and the others are semi-automated. Workers in the farm only observe the animals as all important functions are run by sensors. The workers also assist the Engineer in the vaccines according to vaccines programmes. There is no full-time Vet and the service of a Vet is shared between farms. The Agricultural Engineer is responsible for the vaccine programme, giving drugs, anatomy (sometimes together with a Vet), estimation of feed requirements, and writing daily reports about the animals consisting of technical and financial parts.

There are also poultry companies which run more than one farm and have administrative cadre consisting of an Accountant and Warehouse clerk.

Small farms are run by owners who carry out all the functions in the farms.

6.2 Skills Demand in the Sheep, Goats, and Cattle Sector

6.2.1 Current Employment in the Sector

The following table shows number of workers in the sheep, goats, and cattle activity aged 16 years and above by kind of labour, sex, and nationality in 2012[44]

Activity and kind of labour	Male			Female		
	Jordanian	Non-Jordanian	Total	Jordanian	Non-Jordanian	Total
Sheep and Goats						
Permanent	670	3,550	4,220	50	20	70
Seasonal	80	90	170	0	30	30
Casual	460	400	860	590	810	1,400
Family	15,480	220	15,700	11,180	170	11,350
Total	16,690	4,260	20,950	11,820	1,030	12,850
Cattle (unorganized holdings)						
Permanent	0	50	50	0	0	0
Casual	0	40	40	0	0	0
Family	2,620	40	2,660	2,030	40	2,070
Total	2,620	130	2,750	2,030	40	2,070
Cattle (organized holdings)						
Permanent	230	1,130	1,360	0	0	0
Seasonal E.	10	10	20	0	0	0
Casual	0	0	0	0	0	0
Family	1,240	40	1,280	120	20	140
Total	1,480	1,180	2,660	120	20	140

[44] Department of Statistics, Agricultural Statistics Publication 2012

The following table shows the total number of workers in the sheep, goats, and cattle activities by nationality in 2012[45]

Activity and kind of labour	Jordanian	Non-Jordanian	Total
Sheep & Goats holdings			
Permanent employees	720	3,570	4,290
Seasonal Emp.	80	120	200
Casual emp.	1,050	1,210	2,260
Household member	26,660	390	27,050
Total	28,510	5,290	33,800
Cattle (unorganized holdings)			
Permanent employees	0	50	50
Casual emp.	0	40	40
Household member	4650	80	4730
Total	4,650	170	4,820
Cattle (organized holdings)			
Permanent employees	230	1,130	1,360
Seasonal Emp.	10	10	20
Casual emp.	0	0	0
Household member	1,360	60	1,420
Total	1,600	1,200	2,800
Gross Total	**34,760**	**6,660**	**41,420**

6.2.2 Compensation of the workers in the sheep, goats, and cattle activity

The following table shows the compensation of workers in the sheep, goats, and cattle activity by kind of labour 2012 (value in JD)

Activity and kind of labour	Wages & salaries	In kind payments	Holding contribution to the social security	Other benefits
Sheep & goats holdings				
Permanent employees	11,742,670	570,760	40	20,300
Seasonal emp.	213,220	13,210	0	0
Casual emp.	920,480	2,260	0	270
Total	12,876,370	586,230	40	20,570
Cattle (unorganized holdings)				
Permanent employees	121,270	830	0	1030
Casual emp.	4,100	0	0	0
Total	125,370	830	0	1,030
Cattle (organized holdings)				
Permanent employees	4,089,450	53,410	135,210	10
Seasonal Emp.	72,280	70	9,360	0
Casual emp.	-	-	-	-
Total	4,161,730	53,480	144,570	10

[45] Department of Statistics, Agricultural Statistics Publication 2012

6.2.3 Current Occupations in the Sheep, Goats, and Cattle Sector

The following main units exist in the big cattle farms:

- Feeding unit which is usually run by a technician (community college graduate) and labourers.
- Milking Bowler which is also run by a technician and labourers.
- Hooves unit which is concerned with cutting hooves. It is critical that the function of this unit is carried out by qualified technicians and workers because any mistake can badly affect the health condition of the cattle. This unit is run by a technician assisted by labourers.
- Insemination unit which is usually done through artificial insemination. It is essential that the technician in charge of this unit is highly qualified.
- Health unit which is run by a Vet, technicians and labourers.
- Calving unit which is concerned with the delivery of mothers. A Vet and a technician or an agricultural engineer runs this unit assisted by labourers. They are responsible for calving, taking care of the mother after the delivery, and sending it to Milking Bowls to be milked, taking care of the calves, sending female calves to the Breeding unit.
- Breeding unit
- Administrative unit consisting of farm administrator, an accountant, warehouse clerk, etc.

In a big farm, there are 2-3 Agricultural Engineers in addition to one Vet.

Chapter 7: Supply and Demand Analysis

7.1 Skill Gaps in the Poultry Sector

The Agriculture Sector Team identified skill gaps in the following areas listed according to importance:

- Managing Hatchery activities (Technician Level)
- Vaccination (Technician Level)
- Separating males and females (sexing), (Technician Level)
- Breeding layers in cages/Full Automatic (Agricultural Engineer Level and Technician Level)
- Cutting beaks (Technician Level)

7.2 Skill Gaps in the Cattle Sector

The Agriculture Sector Team indicated the following skill gaps to be addressed:

- It is highly recommended by the Agriculture Sector Team to develop an education and training programme to graduate Assistant/Technician Veterinarians in order to overcome the shortage of Veterinarians in the livestock sector and to assist Vets in carrying out veterinary work. It is also recommended to promote the Veterinary medicine specialization and encourage students to enrol in it to overcome the shortage in this specialization.
- Both Calving skills, and Artificial Insemination and checking pregnancy skills have the same importance according to Agriculture Team Sector (Technician Level).
- Feed mixing skills (Technicians Level)
- Hooves Cutting skills (Technician Level)
- Automatic milking skills (Technician Level)

7.3 Arab Standards classification of Occupations (ASCO)

The following part presents the ASCO relevant occupations in the livestock sector (Poultry, cattle, and sheep). These occupations should be used by the Agriculture sector Team as a reference.

Market-Oriented Occupations in Agriculture and Fishery:

6121024 Breeder, cattle
Works independently or under the supervision of a general livestock breeder. Functions include: Preparing and cleaning pens; Feeding and breeding cattle for the purpose of producing meat and yogurt; Checking cattle physical condition and following up births; Milking cattle and marketing products; Filling work forms; and Following the procedures and regulations of occupational safety and Health.
6121034 Breeder, sheep
works independently or under the supervision of a general livestock breeder. Functions include: Preparing pens and selecting healthy sheep; Serving and breeding sheep; Providing sheep with health care, and selling products; Filling work forms; and Following the procedures and regulations of occupational safety and Health.
6121095 Livestock Milking Worker
works independently or under the supervision of a livestock breeder/ cattle or sheep. Functions include: Preparing milking tools and milking machines; Milking female cattle and sheep and preserving milk; and following the procedures and regulations of occupational safety and Health..
6121105 Livestock Shearing Worker
works independently or under the supervision of a livestock breeder. . Functions include: shearing sheep wool, preparing and cleaning wool, maintaining shearing equipment and following the procedures and regulations of occupational safety and Health
6122013 Breeder, poultry / incubators
works independently or under the supervision of an agricultural technician/ poultry breeding. Functions include: Cleaning incubators and selecting and preparing incubation eggs; Locating eggs in incubators and controlling environmental conditions within them; Taking care of eggs and preparing chickens for marketing; Installing and operating equipment and devices, carrying out precautionary maintenance systems and providing work materials and necessities Filling work forms and managing subordinates and developing their skills; and Following the procedures and regulations of occupational safety and Health.
6122023 Breeder, poultry / general
works independently or under the supervision of an agricultural technician/ poultry breeding. Functions include: Preparing poultry raising pens; Receiving, sheltering, feeding and serving chickens and preparing chicken products for marketing; Filling work forms and managing subordinates and developing their skills; and Following the procedures and regulations of occupational safety and Health..
6122034 Breeder, chicken / egg
works independently or under the supervision of a poultry breeder/ general. Functions include: Preparing egg chicken raising pens; Receiving, feeding and serving chickens; Gathering and marketing eggs; Filling work forms; and Following the procedures and regulations of occupational safety and Health.
6122044 Breeder, chicken / meat
works independently or under the supervision of a poultry breeder/ general. Functions include: Preparing meat chicken raising pens; Receiving, feeding and serving chickens and preparing chickens for marketing; Filling work forms; and Following the procedures and regulations of occupational safety and Health.

Subsistence Agricultural Workers (small farms):

6210034 Farmer, livestock
works independently. Functions include: Preparing raising places and selecting animals; Feeding, serving and marketing animals; Filling work forms; and Following the procedures and regulations of occupational safety and Health.
6210044 Farmer, poultry
Works independently. Functions include: Preparing poultry raising hangars and receiving chickens; Feeding, serving and marketing poultry, and providing them with health care; Filling work forms; and Following the procedures and regulations of occupational safety and Health.

ASCO relevant Specialist Occupations:

2132081 Specialist , general/animal resources
Works independently within the powers conferred upon him. Functions include: Classifying livestock components, identifying their breeds that are appropriate to the local environment and studying their breeding feasibility, developing programmes for breeding and reproduction and following up the implementation and assessment of these programmes; Developing techniques of animal production, nutrition and health care, preparing schedules of operations for breeding devices and equipment and following up their implementation and assessment. Preparing tables of quantities, specifications and conditions of working procedures and providing requirements of occupational safety and health

7.4 Implications of Skill Gap on the Sector

- Low productivity of workers and farms.
- High cost due to inefficient performance.
- High risk of animal disease.

Chapter 8: Major challenges

8.1 Major challenges for the Poultry Sector

8.1.1 Challenges related to workforce and skill development

- The Poultry sector is not a preferred sector for the Jordanian workforce due to long working hours and night shifts, in addition to cultural reasons related to social perception of the sector occupations.
- Foreign labour with permits to work in the agricultural sector leaves the sector to work in other sectors with better financial incentives, which lead to fluctuation and instability of labour.
- Shortage of skills in the areas mentioned under skill gaps.
- Ownership and management of farms in most cases are not separated which may lead to unqualified individuals assuming the responsibility of management.

8.1.2 Challenges related to policies and general environment affecting the sector

Challenges related to production:

- Weak productivity and weak utilization of technology in production.
- High risk of animal diseases.
- Lack of channels to get read of perished chicken.
- Lack of sufficient and organized channels to get red chicken waste.
- High labour cost.
- Small production unit which increase production cost.
- Challenges related to government policies:
- Excluding the sector from the Barley subsidy.
- Constraints faced by the civil and military consumer organizations to receive local products.
- The 4% sales tax on table eggs.
- Weak activation of the technical standards that protect the consumer and the local products.
- Weak enforcement of local production law with regards to" injured imports" as per the WTO regulations.
- The checking fees obtained by Amman and other municipalities on the processed poultry without providing services in return.
- Weak stability of import and export policies.

8.2 Major challenges of the sheep and goats

8.2.1 Challenges related to human resources and skill development

Vast majority of workers in this sector are informal workers mostly from family members, therefore, it is hard to expose them to skill development programmes.

8.2.2 Challenges related to policies and general environment of the sector

Challenges related to sheep breeding

- Shortage in financial resources allocated to support and improve sheep breeding programmes.
- Insufficient support directed to sheep breeding stations of the Ministry of Agriculture to achieve the desired objectives.
- Drop and fluctuation in the average rain fall which led to sharp drop in the number of sheep in the kingdom during the last 10 years.
- Gradual and continuous decline in the grazing areas as a result of overgrazing.
- Lack of a clear programme to genetically improve sheep Breeds in Jordan which makes coping with the improvement of the sector difficult.

Challenges related to cost and productivity of the sector

- Small production units.
- Poor investment in the sheep sector.
- High prices of the feed which is mostly imported (75% is imported). The cost of feed forms 72% of the production cost.

- Low production of local sheep Breeds when compared with the genetically improved Breeds raised in the neighbouring countries.

Challenges related to marketing

- Most of the internal and external marketing is done individually by farm owners.
- Lack of traceability system which affects exports to developed countries
- Monopoly by sheep exporters
- Monopoly by livestock and refrigerated meat importers
- Light fluctuation of export policy
- Lack of organized livestock markets
- Primitive governmental quarantines for imports at the boarders

8.3 Major Challenges of the Cattle Sector

8.3.1 Challenges related to human resources and skills development

- Unavailability of qualified and trained individuals to use modern techniques in cattle farms and dairy factories
- The sector is not a preferred sector for the Jordanian workforce due to long working hours and night shifts, in addition to cultural reasons related to social perception of the sector occupations.
- Foreign labour with permits to work in the agricultural sector leaves the sector to work in other sectors with better financial incentives, which lead to fluctuation and instability of labour.
- Shortage of skills in the areas mentioned under skill gaps.

8.3.2 Challenges related to policies and general environment of the sector

Challenges related to production and marketing

- Small production and marketing units.
- Shortage of green fodder.
- High feed prices, which is mostly imported; the high feed price is one of the most important constraints affecting the sector.
- High fuel cost which adds to the cost of milk production.
- Problems and constraints related to animal health.
- Constraints on importing cows from certain countries prevents from obtaining good breeds.
- The high cost of modern techniques in cattle farms and dairy factories.
- The cattle cooperative associations do not include most or all producers.
- Insufficient refrigerated trucks for almost 50% of the production.
- The fluctuation of the price of the raw produced milk.
- Lack of cooperative relationship between the farm and the factory.
- The high prices of cows, especially in European countries.
- Lack of a marketing system that can inform the production to meet local and export markets demand.

Chapter 9: Agriculture Sector Plan

9.1 Major issues

The Agriculture Sector Team identified the following issues as priority issues that should be addressed in the sector plan:

Issues affecting the Agriculture Sector and their implications on the Sector

Issues	Impact on the sector
The Agricultural sector is not a preferred sector for the Jordanian workforce due to working conditions such as long working hours and night shifts, instability, high physical effort, in addition to cultural issues related to the negative perceived image of the sector's occupations by Jordanians.	High dependence on foreign workers which may affect labour stability The farmers have to go through the burden of getting government approvals to get foreign labour
Lack of legislative umbrella that protects workers in the Agriculture sector.	Jordanians remain reluctant to work in the agriculture sector
Due to the dominance of small scale production and informal work in both the plant and livestock units, most of Agricultural Workers are not provided with basic employment benefits such as social security and health insurance.	Jordanians remain reluctant to work in the agriculture sector
Foreign labour with permits to work in the Agriculture sector leaves the sector to work in other sectors with better financial incentives, which lead to instability of labour and interruption of production in the sector.	Distraction in agriculture production which affect farms' productivity
Identification and quantification of agricultural workers done by DoS may mislead the decision making process related to the sector. For the purpose of policy and decision making process, there is a need to expand the definition of "Agricultural Workers" to include workers in supporting and interrelated activities.	Decision making process at the national level is affected due to under estimation of the importance of agriculture in the employment of Jordanians.
Small farms lack the resources or technologies to process their products and benefit from the added value of processed food, especially dairy products.	Farmers do not benefit from the added value of processed food, specially dairy products.
A large number of Jordanian Agricultural workers are informal sector workers, especially farming family members, and there is a need to enhance the skills of this significant segment of the labour market.	Inability to enhance the skills of this large segment which affect productivity and competitiveness of the sector.
Agriculture is the least preferred option among students in vocational stream at the Ministry of Education.	Agricultural businesses cannot obtain semi-skilled and skilled Jordanians workers which force them to look for foreign labour.
Diploma in Agriculture offered by Al-Balqa Applied University through its community colleges is predominantly theoretical; it is also not a preferred option for students.	Graduates are not ready to assume jobs due to lack of practical skills therefore farmers found difficulty hire Jordanians or have to spend a long time in training them on site..
There are shortages in skills in different aspects of both plant and animal production (Refer to skill gaps in the report).	Shortage in skills affects productivity of the farms, increase the cost and therefore affect the overall competitiveness of the sector.

9.2 Implementation Plan

Goal # 1: The relevance of agricultural skills training to the current and future needs of the sector is enhanced					
Result (objective)	**Performance Indicator**	**Activity**	**Responsible person(s)**	**Timeframe**	**Resources required**
The agriculture vocational programme offered through the Ministry of Education is reviewed and recommendations are made for increasing the relevance to the labour market demand and increasing the attractiveness of the option for school student	1.The occup standards for demanded occupations which are at the skill levels offered by MoE are developed by end of Sep 2014. 2.One MoE agricultural vocational specialization curriculum is adapted and ready to be implemented by mid of 2015 as a pilot.	Identify occupations and skills needed by the sector that are at the skill level offered by MoE, taking into consideration small business management	-Ahmad Amro -Zuhair Jweihan -Abdul Shakour Jamjoum	April – May 2014	-Relevant references and resources -Specialized teams
		Coordinate with CAQA to develop occupational standards for the occupations in demand.	-Ahmad Amro -Zuhair Jweihan -Abdul Shakour Jamjoum	June – Sep /2014	-Trainers trained by GOPA
		Liaise with the representative of MoE to jointly review existing curricula and propose changes based on the occupational standards	-Marwan Molla (MoE Liaison) -Taleb Abu Zahrah -Samar Al-Ozaizi -Ahmad Amro -Mohammad Dalaeen -Mazen Hamarneh	Sep 2014-Jan 2015	-Developed occupational standards - ILO
		Identify with the MoE Liaison person requirements for the successful implementation of the proposed curricula in a pilot school, such as availability of qualified instructors, training of trainers programme, training tools and equipment, etc.	-Marwan Molla (MoE Liaison) -Taleb Abu Zahrah -Samar Al-Ozaizi -Ahmad Amro -Mohammad Dalaeen -Mazen Hamarneh	Sep 2014-Feb 2015	ILO
		Identify mechanisms for implementation making use of existing donors and other relevant parties' support.	-Abdul Rahman Ghaith -Mahmoud Al-Rabee' -Mohammd Dalaeen Ahmad Amro	Feb –June 2015	-ILO -ETVET Council -UNDP -FAO -UNISCO -ETVET Fund -ICARDA -CARDNI -IFAD
		Recommend a mechanism to ensure real partnership between the agricultural businesses and schools (on-the job training opportunities at agricultural businesses, industry-school exchange, orientation sessions by businesses to school students about careers in agriculture and their prospects, etc.) and advocate to implement the recommendations.	-Zuhair Jweihan -Abdul Shakour Jamjoum -Mazen Hamarneh -Mohammad Dalaeen -Mahmoud Al-Rabaya' -Ahmad Amro	Feb –April 2015	-IYF & Eco Consult in the area of career counseling -Agricultural Engineers Syndicate -Agricultural associations

Goal # 1: The relevance of agricultural skills training to the current and future needs of the sector is enhanced					
Result (objective)	**Performance Indicator**	**Activity**	**Responsible person(s)**	**Timeframe**	**Resources required**
Activate the role of VTC in agricultural vocational training in the occupations demanded by the sector	1. The occupa standards for demanded occupations which are at the skill levels offered by VTC are developed by end of Sep 2014. 2. One VTC agricultural vocational specialization curriculum is developed and ready to be implemented by mid of 2015 as a pilot.	Identify occupations and skills needed by the sector that are at the skill level offered by VTC, taking into consideration small business management.	Ahmad Amro Zuhair Ejweihan AfdulShakour Jamjoum Marwan Al Mawla	April-May 2014	-Relevant documents -Specialized teams
		Coordinate with CAQA to develop occupational standards for the occupations in demand.	Ahmad Amro Zuhair Ejweihan Abdulshakour Jamjoum	June-Sep 2014	Trainers trained by GOPA
		Liaise with the VTC to jointly review existing curricula and propose changes based on the occupational standards	Marwan Al Mawla Taleb Abu Zahra Samar Al Ozaizi Ahmad Amro Mazen Hamarneh Mohammad Al Dalaeen	Sep 2014 – Jan 2015	-Developed occupational standards -ILO
		Identify with the VTC requirements for the successful implementation of the proposed curricula in a pilot school, such as availability of qualified instructors, training of trainers programme, training tools and equipment, etc.	Marwan Al Mawla Taleb Abu Zahra Samar Al Ozaizi Ahmad Amro Mazen Hamarneh Mohammad Al Dalaeen	Sep 2014 – Feb 2015	ILO
		Identify mechanisms for implementation making use of existing donors and other relevant parties' support.	Abdul Rahman Ghaith Mahmoud Rabaya Mohammad Al Dalaeen Ahmad Amro	Feb – June 2015	-ILO -ETVET Council -UNDP -FAO -UNISCO -ETVET Fund -ICARDA -CARDNI -IFAD
		Recommend a mechanism to ensure real partnership between the agricultural businesses and VTC (on-the job training opportunities at agricultural businesses, industry-school exchange, orientation sessions by businesses to trainees about careers in agriculture and their prospects, etc.) and advocate to implement the recommendations.	Zuhair Ejweihan Abdul Shakour Jamjoum Mazen Hamarneh Mahmoud Al Rabaya Ahmad Amro	Feb-April 2015	-IYF and Eco Consult in career counseling -Agricultural Engineers Syndicate -Agricultural associations

Goal # 1: The relevance of agricultural skills training to the current and future needs of the sector is enhanced					
Result (objective)	**Performance Indicator**	**Activity**	**Responsible person(s)**	**Timeframe**	**Resources required**
Agricultural Diploma programme offered at community colleges is reviewed and recommendations made to increase the relevance to the labour market demand and increase the attractiveness of this option to community college students.	1. The occupa standards for demanded occupations which are at the skill levels offered by BAU are developed by end of Sep 2014. 2. One BAU agricultural diploma specialization curriculum is adapted and ready to be implemented by mid-2015.	Identify occupations and skills at the technician level that are needed by the sector, taking into considerations small business management	-Taleb Abu Zahra (BAU liaison) -Ahmad Amro -Tamam Al Halahlah -Mohammad Al-Dalaeen -Samar Al-Ozaizi	April – May 2014	-Relevant references and resources -Specialized teams
		Coordinate with CAQA to develop occupational standards for the proposed occupations.	-Taleb Abu Zahra (BAU liaison) -Ahmad Amro -Tamam Al Halahlah -Mohammad Al-Dalaeen -Samar Al-Ozaizi	June-Sep 2014	-Trainers trained by GOPA
		Liaise with the representative of Al-Balqa Applied University (BAU)to jointly review existing curricula and propose changes based on the occupational standards which reflect the sector needs.	-Taleb Abu Zahra (BAU liaison) -Ahmad Amro -Tamam Al Halahlah -Mohammad Al-Dalaeen -Samar Al-Ozaizi	Sep 2014 – Jan 2015	-Developed occupational standards
		Identify with the BAU Liaison person requirements for the successful implementation of the proposed curricula in a pilot community college, such as availability of qualified instructors, training of trainers, training tools and equipment, etc.	-Taleb Abu Zahra (BAU liaison) -Ahmad Amro -Tamam Al Halahlah -Mohammad Al-Dalaeen -Samar Al-Ozaizi	Sep 2014 – Feb 2015	Sector team ILO
		Identify mechanisms for implementation making use of existing donors and other relevant parties' support.	-Taleb Abu Zahra (BAU liaison) -Ahmad Amro -Tamam Al Halahlah -Mohammad Al-Dalaeen -Samar Al-Ozaizi	Feb – June/2015	-ETVET Council -UNDP -FAO -UNISCO -ETVET Fund -ICARDA -CARDNI -IFAD
		Recommend a mechanism to ensure real partnership between the agricultural businesses and the community college (on-the job training opportunities at agricultural businesses, industry-school exchange, orientation sessions by businesses to school students about careers in agriculture and their prospects, etc.) and advocate to implement the recommendations.	-Taleb Abu Zahra (BAU liaison) -Ahmad Amro -Tamam Al Halahlah -Mohammad Al-Dalaeen -Samar Al-Ozaizi	Feb – April/2015	-IYF & Eco Consult in the area of career counseling -Agricultural Engineers Syndicate -Agricultural associations

Goal # 1: The relevance of agricultural skills training to the current and future needs of the sector is enhanced					
Result (objective)	**Performance Indicator**	**Activity**	**Responsible person(s)**	**Timeframe**	**Resources required**
A campaign is conducted to raise the awareness of students and the public in general on careers in agriculture and their prospects.	One media campaign using three media channels to promote careers identified in results 1 & 2 above is designed, implemented and evaluated by the end of 2014.	Develop a media campaign plan to promote work in the sector	-Samar Ozaizi -Marwan Mawla -Zuhair Ejweihan -Tamer Rousan -Tamam Halahla	June – Oct 2014	-Local media channels -ETVET Council -Donor agencies
		Identify successful examples of people working in the sector and spot light them	As above	July 2014	
		Assess the media campaign	As above	Nov-Dec 2014	
A skills development initiative which focuses on enhancing the skills of informal workers, especially youth and women, is piloted, through extension services for selected segment/s.	The capacity of ( ) farm owners and ( ) farm workers focusing on youth and women is built as a result of the extension programme, by mid 2015. Number will be added upon identifying target group	Agree on a definition of "informal workers".	-Salah Al-Tarawnah -Tamer Al-Rousan -Ibrahim Al-Saoudi -Abdul Rahman Ghaith -Mohammad Dalaeen	March 2014	Field Farmers Schools (FAO)
		Identify target groups of this initiative.	Salah Al-Tarawnah -Ahmad Amro -Tamam Al-Halahlah -Mohammad Dalaeen -Samar Al-Ozaizi	April 2014	Sector team
		Refer to DoS, MOL, & MOA for the data base on the informal sector mentioned above.	As above	April – August, 2014	MOA
		Identify the requirements of the extension programme based on the training needs of the target groups.	As above	Aug – Oct 2014	NARE/DVV/ILO/IYF/ USAID
		Design an extension programme based on training needs	As above	Oct – Nov 2014	NARE/DVV/ILO/IYF/ USAID
		Train the trainers	As above	Nov – Dec 2014	NARE/DVV/ILO/IYF/ USAID
		Trainers train holders/owners (in workshops and the field in groups) who will train the workers	As above	Jan – March 2015	NARE/DVV/ILO/IYF/ USAID
		Evaluate the extension programme	As above	April – June, 2015	NARE/DVV/ILO/IYF/ USAID

Goal # 2: National initiatives to enhance the ability of Jordanian farms to contribute to national competitiveness and foc ecurity are developed and implemented					
Result (objective)	**Performance Indicators**	**Activity**	**Responsible person(s)**	**Timeframe**	**Resources required**
The current system for defining agricultural workers reviewed and expansion of its scope is proposed to ensure accurate data on formal and informal employment in the sector, leading to a better decision making process.	An agreement is secured with the "Permanent Expert Committee for Agricultural Statistics" to expand the definition of agricultural workers to include formal and informal workers in support sectors, by August 2014.	Identify supporting sectors for the agriculture sector in general and each of the plant production and animal production sector. This can include: transportation, cold storage, packing houses, selling and buying activities, exporting, importers and producers of agricultural materials, specific food processing activities, etc.	-Salah Al-Tarawnah -Mahmoud Rabaya' -Tamer Al-Rousan -Zuhair Jweihan	March – April, 2014	Using the document outlining the interrelations between agricultural sector and other sectors
		Secure an agreement with the Permanent Expert Committee which was established as an output of the national agriculture strategy 2002 – 2010, to include supporting sectors the statistical surveys conducted by DoS.	-Salah Al-Tarawnah -Mahmoud Rabaya' -Tamer Al-Rousan -Zuhair Jweihan	May –Aug 2014	Sector team
Cooperation mechanisms between small farms to share resources to increase economies of scale, and develop value adding processes for their products are developed.	A concept paper and implementation plan is presented to at least 2 potential donors to support cooperation mechanisms between small farms, by the end of 2014.	Consult with farmers on ways to increase economies of scale to enhance competitiveness, and develop value adding processes for their products and get a sense of the level of acceptance on the idea and identify areas of focus.	-Abdul Rahman Ghaith -Mahmoud Rabaya' -Zuhair Jweihan -Mazen Hamarneh -Mohammad Dalaeen	April – June, 2014	Sector team
		Based on the above step, develop a mechanism to increase economies of scale and value adding processes, identifying requirements and needed resources.	-Abdul Rahman Ghaith -Mahmoud Rabaya' -Zuhair Jweihan -Mazen Hamarneh -Mohammad Dalaeen	July – Sep 2014	-Sector team -MOA
		Work with relevant bodies to come up with recommendations on how to get support from donors and other organizations to implement the above.	-Abdul Rahman Ghaith -Mahmoud Rabaya' -Zuhair Jweihan -Mazen Hamarneh -Mohammad Dalaeen	Sep – Dec 2014	-E-TVET Council -Sector team -MOA
Overlap in registration and licensing of animal stock farms between Ministry of Environment, Ministry of Agriculture, and Ministry of Labour is identified.	A proposal to reduce overlap in registration and licensing is discussed (in minuted meetings) with three ministries by mid 2014.	Identify areas of overlap.	-Tamer Al-Rousan -Tamam Al-Halahlah -Abdul Rahman Ghaith	April – June 2014	Sector team
		Coordinate with relevant bodies to develop a strategy to streamline inspection requirements.	-Tamer Al-Rousan -Tamam Al-Halahlah -Abdul Rahman Ghaith -Mohammad Dalaeen	July – Sep 2014	Sector team
		Coordinate with relevant bodies to implement the strategy.	-Tamer Al-Rousan -Tamam Al-Halahlah -Abdul Rahman Ghaith	Oct – Dec 2014	Sector team

Goal # 2: National initiatives to enhance the ability of Jordanian farms to contribute to national competitiveness and f ecurity are developed and implemented					
Result (objective)	**Performance Indicators**	**Activity**	**Responsible person(s)**	**Timeframe**	**Resources required**
Legislative umbrella that protects workers in agriculture is in place including social security and health insurance.	A commitment from MOL to make necessary changes to labour legislations is secured by mid 2014.	Capture the gaps of legal issues affecting the agricultural workers.	-Ibrahim Saoudi -Tamam Al-Halahlah -Mazen Hamarneh -Mohammad Al-Dalaeen	March – May, 2014	Sector team
		Advocate for bridging the gap in legislations.	-Ibrahim Saoudi -Tamam Al-Halahlah -Mazen Hamarneh -Mohammad Al-Dalaeen	June – Aug 2014	
		Recommend initiatives that would increase the chances for agricultural workers to benefit from social security and health insurance.	-Ibrahim Saoudi -Tamam Al-Halahlah -Mazen Hamarneh -Mohammad Al-Dalaeen	Aug – Oct 2014	MOL ETVET Council
Review legislations affecting the sector and recommend changes	TBD later by the team				
Foreign workers with permits to work in agriculture sector are retained in the sector.	A proposal to retain foreign workers with permits to work in the agriculture sector is discussed (in a minuted meeting) with MoL and presented for implementation, by mid of 2014.	Liaise with the Ministry of Labour to take necessary measures to make sure that foreign workers with permits to work in agriculture are retained in the sector.	-Salah Al-Tarawnah -Ibrahim Al-Saoudi -Mazen Hamarneh -Zuhair Jweihan	March – June, 2014	