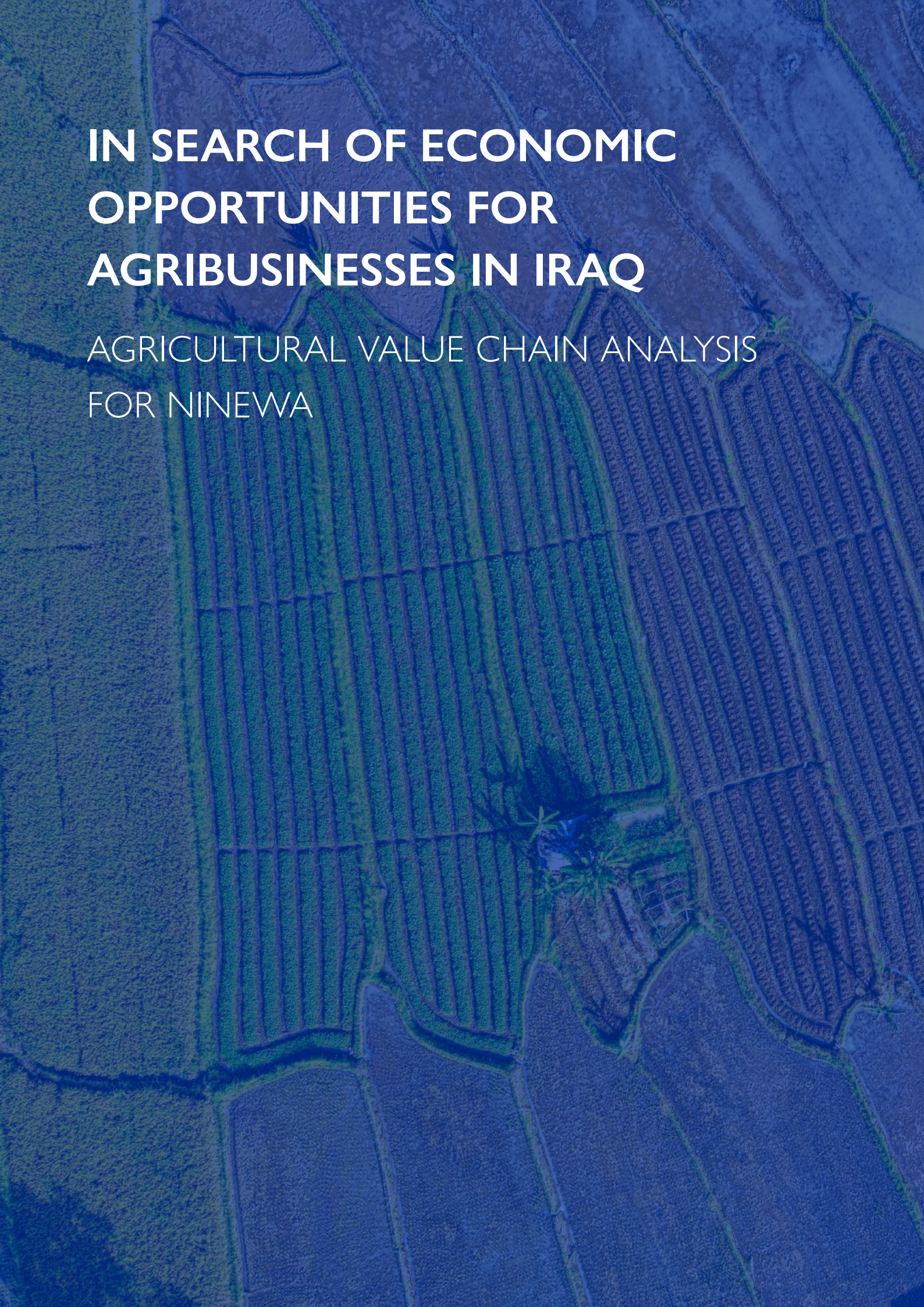

IN SEARCH OF ECONOMIC OPPORTUNITIES FOR AGRIBUSINESSES IN IRAQ

AGRICULTURAL VALUE CHAIN ANALYSIS FOR NINEWA

ABOUT IOM

The International Organization for Migration (IOM) is committed to the principle that humane and orderly migration benefits migrants and society. As an intergovernmental organization, IOM acts with its partners in the international community to: assist in meeting the operational challenges of migration; advance understanding of migration issues; encourage social and economic development through migration; and uphold the human dignity and well-being of migrants.

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SUMMARY

This report provides the main findings of a study entitled "Identification of Economic Opportunities for Agribusinesses based on Value Chain Analysis", focusing on Ninewa in northwest Iraq. It is part of a broader value chain analysis study carried out by IOM in seven governorates in Iraq.

This report provides an in-depth analysis of four agricultural value chains that were found to be among the most promising business opportunities in Ninewa. The aim of this study was to understand economic opportunities and gaps in the local economy through value chain analysis. The four value chains analysed are:

- Barley
- Sheep
- Figs
- Sesame

The field research focused on three districts: Mosul, Sinjar and Tel Afar. For the first three value chains (barley, sheep and figs), the focus of the research was on Sinjar and Tel Afar, while for the last value chain (sesame), the focus was on Mosul and Tel Afar.

THE CONTEXT: MAJOR CHARACTERISTICS OF THE ECONOMY

The economy of Ninewa is heavily dependent on agriculture and livestock. A variety of industries and trading companies are also found in the governorate, especially in Mosul.

Agriculture has historically been the main contributor to the economy of Mosul. Cultivation of wheat and barley, the two major crops grown in Ninewa, mostly depend on rainfall. Other important agricultural crops include vegetables and fruits, cotton, melons and watermelons, figs, pomegranates and olives. Ninewa has vast areas with orchards, although many of these were destroyed by the Islamic State of Iraq and the Levant (ISIL). Livestock also plays an important role in the economy of Ninewa. There are many sheep, goats and cattle, as well as buffalos and camels.

TRANSVERSAL MARKET ISSUES

During the research, the following major issues were found in relation to the functioning of the markets in Ninewa.

1. Competition from imported products, which are being offered at very low prices in the market, making it very hard to compete for local farmers.
2. Lack of government support to farmers, making it even more difficult for local farmers to compete with imported products.
3. Lack of access to finance for farmers because of bureaucratic impediments, as well as high loan interest rates and short repayment periods.
4. Lack of hygiene and sanitation in the marketplace – especially relevant for meat and fish products- and lack of street paving in the marketplaces.
5. Instability and lack of security as a result of ISIL's occupation, which has negatively affected the stability of markets, employment and productivity of farmers.
6. Logistical challenges as a result of the large number of religious events as well as curfews to curb the spread of the coronavirus disease 2019 (COVID-19), which has led to a restriction on the movement of products.

MARKET SUPPLY AND DEMAND OF AGRICULTURAL GOODS

As an input for the selection of the most promising value chains, a supply-demand analysis was carried out to find out which goods and services are most in demand, and which opportunities exist for new goods and services to enter the market. In Ninewa, tomatoes, potatoes, cucumbers, onions, pomegranates and rice appear to be among the most in demand and among the most popular items sold by vendors.

Among these, tomatoes, potatoes, rice and pomegranates appear to be among the most profitable. In addition, figs, pomegranates, fruits and vegetables and grain groats, which constitute important goods for consumers, could also be produced locally at a cheaper price, according to consumers. Based on these findings, the most promising agricultural items in Ninewa are vegetables (tomatoes, cucumbers, onions), potatoes, pomegranates, figs and rice.

MOST PROMISING VALUE CHAINS

The selection of the most promising value chains was based on the findings of the consumer and market vendor survey, as well as on the context analysis and general insights of thevalue chain experts and IOM staff in Ninewa. The flow chart below shows which phase in the process led to the selection of each value chain

CONCLUSIONS ON BARLEY VALUE CHAIN

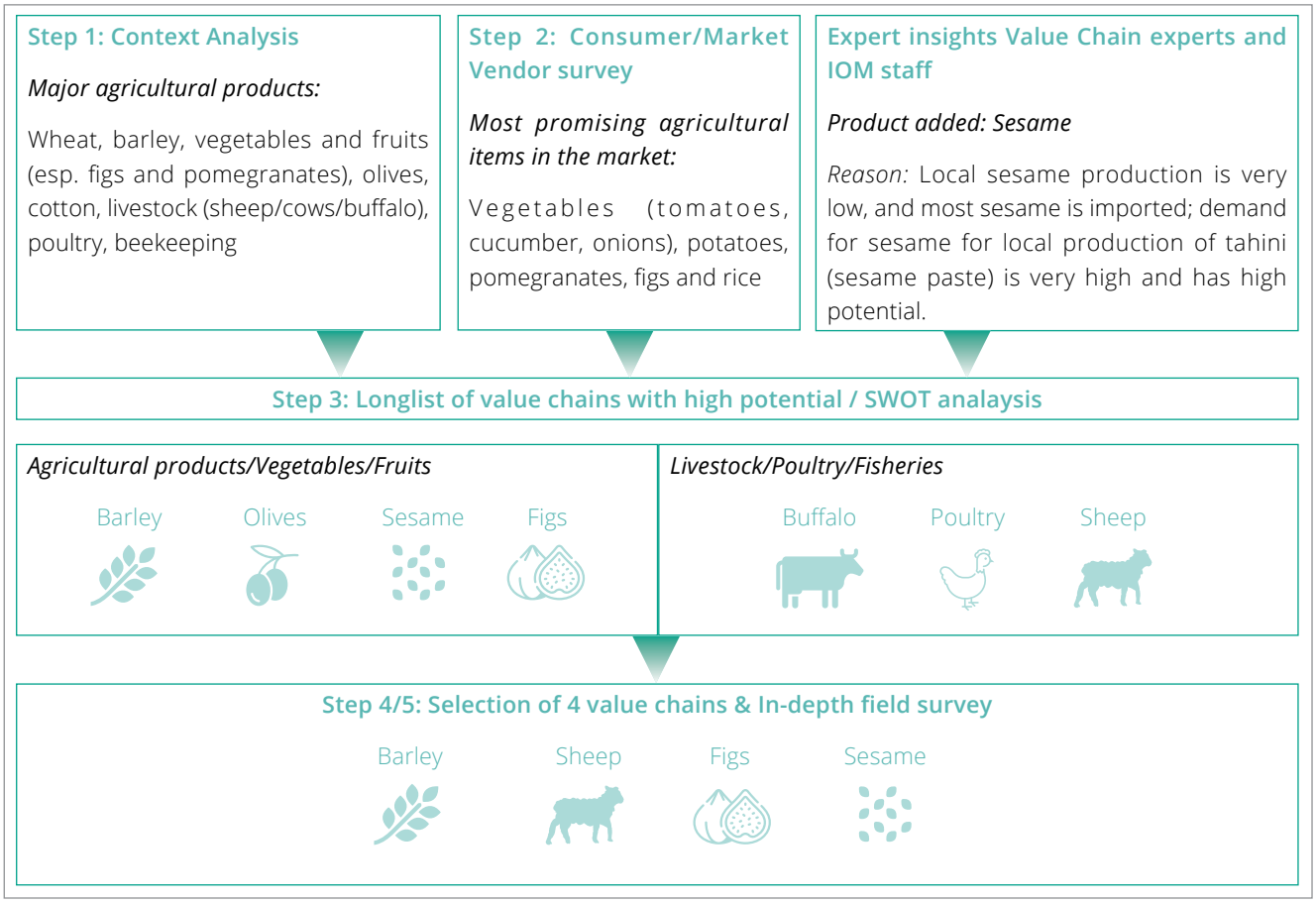
Farmers have different ways of buying barley seeds: they either procure seeds from the seed treatment plants, buy from traders in Tel Afar and Mosul, or they use seeds saved from previous year's harvests. The advantage of buying seeds from the treatment plants is that they are cleaned and ready to use, although the price is also higher.

Two types of barley are produced for different purposes: white barley is used for the production of flour and black barley for animal feed. Barley production is highly dependent on sufficient rainfall, which may vary per year and per subregion within Ninewa Governorate.

In terms of potential for job creation, the outlook is mixed, with some experts expecting that additional job opportunities can be created in barley production and marketing, as well as in livestock breeding (where barley is used as feed). Others doubt that the barley value chain could substantially improve the employment prospects in the area.

Most barley is sold by farmers to the government, who stores it in silos and then provides livestock breeders with barley (and wheat as well) as animal feed. Part of the barley is sold to local wholesalers/retailers, who then sell the seeds to livestock breeders, who need seeds to plant barley. The remaining barley is sold to different companies for different purposes: 1) flour production and 2) and beer production. The main final consumers are livestock breeders, as barley is mainly used as animal feed (around 45% of total barley production).

Farmers mostly have all the information they need and share a lot of information with traders and buyers. Areas where



farmers need support are access to finance and vocational training on agriculture. Financial support would help them to buy fertilizers, seeds and electricity and to expenses related to digging wells. A number of non-governmental organizations (NGOs) provide training to farmers on agricultural crops and livestock in Ninewa.

On the contrary, the government does not provide any information or support to barley farmers. While the government supports wheat cultivation, the same does not apply to barley, leading most farmers to replace barley cultivation with wheat. The growth potential for barley production depends on government policies and regulations and how many imports are allowed.

The following opportunities and challenges were found in the barley value chain:

OPPORTUNITIES	CHALLENGES
• Productivity of farmers could be increased by providing better technical equipment. • High demand for barley provides opportunities for increased production. • Potential to increase the income of women in the value chain (especially in livestock breeding or in cooking and cleaning of seeds). • Opportunity to build more silos for storing barley. • Opportunities for job creation in barley processing. • Potential to resume exports of barley if the government would prevent the import of barley from neighbouring countries. • Some support of barley producers from NGOs and the Food and Agriculture Organization (FAO) exists, but it is not sufficient.	• High dependency on rainfall, which is sometimes not sufficient for a good harvest. • Government support is limited and mostly focused on wheat and not barley. • Government support could include loans to farmers, compensation to war-affected farmers, and agricultural support (fertilizers, seeds and machinery). • Low quality of barley produced in Ninewa. • Need for an approval letter from the government to sell their products and the existence of checkpoints is posing major challenges to farmers. • Need for more vocational training for new farmers to enter into barley production. • Need for financial support for the development of fodder factories. • Eruption of fires in Ninewa in the past years, which damaged especially wheat and barley fields. • Loss of income by farmers due to the COVID-19 pandemic.

CONCLUSIONS ON SHEEP VALUE CHAIN

Traditionally, Ninewa Governorate has had the highest number of sheep of all governorates in Iraq. However, ISIL's occupation led to large losses in livestock, leading to a 20 per cent decrease in meat production. Due to COVID-19, several new challenges arose, including the inability to access urban markets to sell milk due to the closure of roads and restaurants, leading to an oversupply in local markets and a decrease in price.

In the sheep value chain, there are two main types of production: the fattening of lambs for meat and the breeding of sheep for reproduction, milk and its derivatives (cheese, yoghurt and ghee), and wool. Sheep milk is often preferred because of its high fat content and is used for cheese and yoghurt processing. One of the most valuable derivatives from milk, highly in demand especially in south Iraq, is ghee or locally referred to as 'free ghee', which is the fatty part of sheep milk. Finally, sheep is also used for making wool, which is also high in demand.

Clearly mapping the sheep trade appeared to be difficult due to its multi-directionality with traders buying from and selling sheep to breeders, but also selling sheep to butchers and consumers. In the report, all different types of trade are described.

Generally, information flows are satisfactory, except for information about sheep fertility and customer preferences. The relationships between breeders and buyers are very stable and sometimes date back to 20 years. In most cases, there is mutual trust, although it was also reported that there have been issues around the lack of trust. Both sheep breeders

and traders are willing to invest in the value chain, including in the expansion of stockyards to keep lambs and sheep. The growth in the sheep value chain will also generate other job opportunities, for instance for butchers.

In terms of government support, no specific projects to develop the sheep value chain exist. The government is encouraging NGOs to provide more support, but at present only a few work on this value chain.

The following opportunities and challenges were found in the sheep value chain:

OPPORTUNITIES	CHALLENGES
• Sheep breeding is a very stable and safe business to start, a certainty even captured by local proverbs ("Sheep, the fast wealth"). • High demand for lamb meat, especially in the winter season. • High demand for dairy products, providing an opportunity to build more processing capacity. This would enable the export of dairy products. • High demand for sheep wool and skins. • Sheep breeders are willing to invest in the value chain. • High potential for new job opportunities, for instance for butchers. Also, many opportunities exist for women. • Opportunity to provide training in better methods of production, diagnosis of diseases, as well as slaughtering, skinning, cutting and mincing meat.	• Lack of animal fodder and the high price of fodder. • Mines and remnants of war contamination. • Presence of animal diseases. • Lack of official markets for sheep. • Obstacles at checkpoints, which increase the cost of transportation. • Presence of illegal sheep smugglers selling them at very low prices (this seems to have decreased in the last 2 years) • During the lockdown, the inability to access urban markets to sell milk, due to the closure of roads and restaurants, led to an oversupply in local markets and a decrease in price; this problem might be solved by now. • Limited capacity to store dairy products.

CONCLUSIONS ON FIGS VALUE CHAIN

Ninewa is the second producer of figs in Iraq with an annual production of 1,167 tonnes. Before 2013, the fig production area was more than 560 donum in Ninewa, but nowadays it is only 20 per cent of the original size, due to the damage caused by ISIL. Many farms were burned down and abandoned after the attacks, so it is estimated that only a part of them are still operating.

Figs are planted by orchardmen, often combined with pomegranates, mulberries and apricots. Most figs are sold in local markets in Ninewa whereas a small amount is also sold in Tel Afar and Mosul City. On special request, figs are sometimes sold in Baghdad and Basra as well. Farmers sell either fresh figs, or they process them into dried figs or jam. A small part of figs is converted into figs sweets (Figs Kibbeh), which are very expensive.

Dried figs imported from Turkey, the United Arab Emirates, and Saudi Arabia are present in the market. It is estimated that if the Tel Afar orchards were totally restored, the products would meet the local needs and it would be possible to export dried figs to other governorates or to neighbouring countries.

In terms of information provision, farmers are generally very satisfied. Wholesalers would like to learn more about the preferences of consumers, including the desired types of figs in every season. Currently, little investment and cooperation between different actors in the value chain exists, but all actors are willing to improve this situation because of the good prospects of the fig value chain.

Government authorities offer limited support to the fig value chain, caused by a lack of staff and/or a lack of financial resources. In Sinjar, farmers are provided with limited support, such as fertilizers and sometimes petrol. If there was more government or NGO support to restart the halted businesses and support the ongoing ones, it would increase fig production in Sinjar. There are very good prospects in increasing dried fig and fig jam production as the orchards are increasingly restored.

The following opportunities and challenges were found in the cows (dairy) value chain:

OPPORTUNITIES	CHALLENGES
• The Sinjar mountains are very suitable for fig production because of the nature of the soil. • Huge opportunity to restore the destroyed fruit orchards both in Sinjar and Tel Afar because of the high demand for figs and other fruits. • Strong consumer preference for figs from Ninewa because of their good taste and quality. • Good prospects for increasing dried fig production. • There is potential for exports of dried figs or figs sweets. • If waste would be reduced, fig production would become more profitable. • Willingness by farmers to cooperate with other farmers, because it would help them revive the sector in terms of planting fig trees.	• Many orchards were burned down and abandoned after the arrival of ISIL. • Farmers only have access to a limited number of suppliers. • Farmers sometimes cannot obtain the required type of tree plants on time or the appropriate tools needed for fig production. • Entry barriers for farmers include lack of experience and knowledge in demanded fig types, knowledge about irrigation and fertilizers, and lack of transportation. • Producers need financial support and training in agricultural engineering, as well as in fig jam production. • Need to clean irrigation channels in Tel Afar from reeds. • Lack of irrigation channels in Sinjar; at present, farmers depend on rainfall only. • Lack of transportation to transfer farmer's products to local markets. • Lack of specialized grocery shops selling only figs.

CONCLUSIONS ON SESAME VALUE CHAIN

Sesame is one of the main crops for producing cooking oil in Iraq along sunflowers. One of the most popular derivates from sesame seeds is tahini, a paste of crushed sesame seeds, which is widely used in middle eastern cuisine.

The production of sesame seed fluctuated substantially in recent years, with a downward trend, both in areas planted and production volumes since 2005. Most of the production is processed and consumed locally. Iraq is a net importer of sesame seed due to its low domestic production. Sesame seeds are sometimes also produced by the farmers themselves. The competition with imported sesame, which is cheaper than the Iraqi one, impacts local production. The imported sesame is usually cleaner than the local one, because better technology and tools are used in harvesting and processing. However, locally produced sesame is generally considered to be of higher quality.

Two factors determine sesame productivity: the quality of the soil and the right amount of water. Iraqi sesame is in high demand. Sometimes the demand exceeds supply, especially during winter (outside the harvest season). Wholesalers are looking for high quality, large-sized, clean and reasonably priced sesame seeds. There are three main types of sesame processing: 1) Tahini manufacturing; 2) Use of sesame in pastries by bakeries and 3) Oil extraction.

A large tahini industry was located in Mosul, in Bashiqa and the surrounding areas. After ISIL's occupation of Ninewa , all the factories were destroyed, and the equipment stolen. Recently, a process of renovation has begun in these factories, but on a smaller scale. The tahini produced in Mosul is considered the best in all of Iraq. It is sold to other governorates and to a small extent is also exported to different countries.

Farmers expressed the need for better information about new technologies and new generations of seeds, and for training. They are willing to strengthen the cooperation with other actors, such as buyers from factories, as long as this benefits the agriculture sector in Ninewa. At the moment, no organization is providing any vocational training or skills development in sesame production or processing. Before 2014, the Tahini producers were supported by the government through subsidized petrol. However, after 2014 support stopped, and currently no support is provided. With regards to access to finance, the Industrial Bank offers loans to businesses in general, and also to Tahini factories, as they represent one of the main industries in Ninewa.

The following opportunities and challenges were found in the sesame value chain:

OPPORTUNITIES	CHALLENGES
• Only low amounts of fertilizer are needed for sesame production. • Sesame farmers who abandoned Ninewa after 2014 because of ISIL, are increasingly returning to cultivate sesame. • Presence of many tahini factories that require sesame seeds. • High demand for tahini, especially in winter, not only in Ninewa and other governorates but also for exports. • Potential for new uses of sesame, e.g. in cosmetic product.	• Quality of Iraqi sesame is lower compared to imported sesame seeds. • Traditional methods of irrigation and fertilization lead to dry seeds. • Farms have faced fires during the sesame harvesting seasons. • Planting is simple, but the harvest is more difficult. There is a lack of technology to harvest high-quality sesame, and it is difficult to clean the sesame. • Harvesting requires a high number of workers.

POTENTIAL FOR INVESTMENT AND JOB CREATION

As an overall conclusion, it was found that three value chains are promising sectors for local economic development and decent job creation in Ninewa: sheep, figs and sesame. To stimulate local businesses, the sheep value chain looks the most promising in terms of job creation. With relatively small investments, this value chain offers opportunities to generate many jobs. For the figs and sesame value chains, there are also good opportunities, although the initial investments needed are significantly higher. The table below shows the opportunities for cash investment and job creation of these three value chains.

Estimated investment and job creation per value chain in Ninewa

VALUE CHAIN/BUSINESS OPPORTUNITY	ESTIMATED INVESTMENT COST FOR THE FIRST YEAR PER BUSINESS	ESTIMATED JOB CREATION PER BUSINESS	ESTIMATED TOTAL JOB CREATION
Sheep - Raising sheep for meat	USD 10,900	2 jobs	100 new businesses x 2 = 200 jobs
Sheep - Raising sheep for dairy production	USD 29,700	3 jobs	100 new businesses x 3 = 300 jobs
Sheep - Raising sheep for wool and sheepskin production	No initial investment needed	No extra jobs created, but it can provide sheep breeders with additional income	No extra jobs created
Figs - Production of dried figs	No initial investment needed	No extra jobs created, but it can provide fig farmers with additional income	No extra jobs created
Figs - Production of fig jam	USD 46,750	5 jobs	25 new businesses x 5 = 125 jobs
Sesame - Establishment of farm for sesame cultivation	USD 51,000	3 jobs	100 farms x 3 = 300 jobs
Sesame - Establishment of Tahini factory	USD 74,000	8 jobs	20 factories x 8 = 160 jobs

It was also concluded that there is very little potential for investment and job creation in the barley value chain in Ninewa, because the sector is highly controlled by the government, who buys and distributes barley, and because

limited business opportunities for other uses of the crop exist. Therefore, it is not recommended to invest in the barley value chain.

From these data, it is possible to calculate the estimated social return on investment in terms of the investment in dollars per job created for each value chain (see table below). The investment needed per job created ranges between 5,000 United States dollars (USD) and USD 10,000. It appears that raising sheep for meat offers the best social return on investment, while raising sheep for dairy production has a relatively high cost per job created. Investments in the processing of dried figs and sesame/tahini are also relatively capital intensive, but at the same time, these investments create significant numbers of jobs.

Estimated social return on investment in terms of the investment in dollars per job created for each value chain in Ninewa

VALUE CHAIN/BUSINESS OPPORTUNITY	ESTIMATED INVESTMENT IN DOLLARS PER JOB CREATED
Sheep - Raising sheep for meat	USD 5,450
Sheep - Raising sheep for dairy production	USD 9,900
Sheep - Raising sheep for wool and sheepskin production	n/a
Figs - Production of dried figs	n/a
Figs - Production of fig jam	USD 9,350
Sesame - Establishment of farm for sesame cultivation	USD 17,000
Sesame - Establishment of Tahini factory	USD 9,250

1. INTRODUCTION

1.1 BACKGROUND AND OBJECTIVES

IOM is a major actor in post-conflict recovery and reconstruction, and as such is heavily involved in livelihood development and job creation programmes. In Iraq, IOM's strengths lie in its field presence around the country and operational capacity to rebuild community infrastructure, conduct vocational and other training, provide grant funding at local levels to support business development, and a variety of other areas key to recovery. Lack of economic opportunity, even more than ideology, is cited as a major push factor leading to recruitment of youth by violent extremist groups. In 2020, IOM has adapted its existing private sector development programming to support small and medium enterprises (SMEs) at various stages along different agricultural value chains.

This report provides the main findings of a study entitled "Identification of Economic Opportunities for Agribusinesses based on Value Chain Analysis", focusing on Ninewa in northwest Iraq. It is part of a broader value chain analysis study carried out by IOM in seven governorates in Iraq.[1]

The aim of the study was to understand economic opportunities and gaps in the local economy through value chain analysis. More specifically, the purpose was to:

- Identify key promising sectors for the local economic development and decent job creation;
- Identify existing gaps to jump start the revitalization of the sector development;
- Provide recommendations for an IOM intervention to promote local economic development and job creation for people who are in socioeconomically vulnerable situations.

At the end of the project, three final reports (one for each region) were produced, each analysing four different value chains.

The expected outcomes of the value chain assessment are:

1. Defining which areas of the value chains lack private/public investment, do not exist at all, or most urgently need cash injections to complete the chain and/or become competitive;
2. Defining which areas of the value chains have the best social return on investment in terms of the number of jobs created per dollar invested.

1.2 METHODOLOGY

The methodology adopted builds on the general concepts of value chain analysis. This means that the value chain is considered as a system, because its performance is a function of the interactions among its parts and needs to consider all activities along the chain of production. This involves collective decisions among chain members to work together to grow, process and deliver products that meet the expectations of specific consumers. In this way, the best outcome for all participants can be reached. Particular attention is therefore paid to the effective flow and use of information along the chain, which usually depends on the extent of trust and commitment between trading partners.

A systematic data collection process has been followed, consisting of the following steps:

1. Context analysis

In this step, a brief context analysis was produced for each governorate, based on a combination of literature review and in-depth knowledge of the local IOM teams. The analysis includes basic information about the governorate's geography, climatic conditions, population, poverty, employment/unemployment, displacement and return trends, and major economic sectors. An important goal of this context analysis is to obtain a first glimpse of the most important agricultural subsectors and products produced in each governorate.

2. Consumer/market survey

As an input for the selection of the most promising value chains, a selected number of interviews has been carried out with consumers and market vendors, to find out which goods and services are most in demand, and which opportunities exist for new goods and services to enter the market.

1 This includes the following regions/governorates:
- Northeast/centre of Iraq with a focus on Diyala and Salah al-Din;
- South of Iraq with a focus on Basra, Missan, Thi-qar and Muthanna;
- Northwest of Iraq with a focus on Ninewa.

Two semi-structured questionnaires were used, one for consumers (Tool 1) and one for market vendors (Tool 2).[2] The sample size was as follows:

- Consumer survey: 25 interviews per governorate
- Market vendor survey: 15 interviews per governorate

In the case of Ninewa Governorate, more interviews were carried out because three districts were included in the survey. The sample size per district was as follows:

- Sinjar: 25 consumer interviews and 20 market vendor interviews
- Tel Afar: 25 consumer interviews and 15 market vendor interviews
- Mosul: 26 consumer interviews and 16 market vendor interviews

Meaning the total sample size was of 76 consumer interviews and 51 market vendor interviews.

The tools have been adapted from a value chain analysis study carried out by IOM in 2020 in three governorates in the centre-south of Iraq, including Karbala, Najaf and Al Qadissiya.[3] These tools have been inspired by the manual developed by Transition International on socio-economic profiling and opportunity mapping.[4]

3. SWOT Analysis/Value chain selection

The value chain selection was based on the previous steps in the research process, the context analysis and the consumer/market survey. First, several potential value chains that seem to have good potential were preselected, with a maximum of 10 value chains. Next, a SWOT analysis was carried out for each of these value chains. Based on a comparison of the SWOT analyses for each potential value chain, a final selection has been made of four value chains per region.

4. In-depth value chain data collection

As the next step in the research, more in-depth data collection was done through semi-structured interviews and Key Informant Interviews with four distinct groups of actors along the value chain: farmers (Tool 3), wholesalers and retailers (Tool 4), industry experts (Tool 5) and local authorities (Tool 6). For the farmers and wholesalers/retailers, semi-structured interviews were used, while for industry experts and local authorities, Key Informant Interviews were used.[5]

Respondents were selected using the purposive sampling technique (i.e. selecting those known to have the information needed). The interviews focused on the efficiency and effectiveness of product flows, communication and information flows, chain relationships and governance. The goal of this step in the data collection process was to investigate the efficiency and effectiveness of product flows, communication and information flows, and relationships (governance) through which value is created and diminished in the value-chain production and marketing processes. In this way, it was possible to examine the importance of the factors that lead to a chain's success.

By combining the data collected in all four steps (context analysis, consumer/market survey, SWOT analysis and in-depth value chain data collection), a value chain map was drawn to show the multiple ways a particular product gets to the consumer, from raw materials inputs (such as seed, fertilizer, chemicals) to the point of consumption. .

5. Data analysis

As a next step, data analysis was carried out to draw meaning from the data. In a general sense this was done by asking the question, 'What enables and constrains the chain's efficiency and effectiveness?' During the analysis, the answers to the questions in the questionnaires and key informant interviews formed the building blocks for improving the chain's performance. As part of this process, for each region, a data analysis workshop was held to analyze the data collected and to draw a preliminary value chain map. Next, the data analysis involved a deeper analysis of the following topics:

- the role of the different value chain actors,
- cost structure and prices
- communication and information flows
- relationships (governance) in the value chain
- government support to development of the value chain

Based on this analysis, the opportunities and challenges for value chain development were formulated, followed by a description of the potential for investment and job creation in the value chain.

2 See, Annex B for the questionnaires

3 Dorp M. van and A. Abass (2020), Economic Opportunities for Youth Based on Value Chain Analysis in Centre-South Iraq. IOM Iraq.

4 Transition International, 2008, Socio-economic profiling and opportunity mapping manual. Available from: www.transitioninternational.com/ti/wp-content/uploads/2018/12/SOCIO-ECONOMIC-PROFILING-AND-OPPORTUNITY-MAPPING-MANUAL-2.pdf

5 The tools used during this phase can be found in Annex B. The tools have been inspired by the very useful "Guide to value-chain analysis and development for Overseas Development Assistance projects" (Collins R.C., Dent B. and Bonney L.B., 2015).

6. Reporting

As a final step, a final synthesis report for each region has been produced by the two lead researchers. The results will be presented during a workshop for each region.

1.3 CHALLENGES TO THE RESEARCH AND RESPONSES PROVIDED

The main challenge during the research was related to the COVID-19 pandemic, which affected data collection, in particular:

- Due to the international travel restrictions, it was not possible for the two value-chain researchers to provide the training for IOM staff in person. Nor was it possible to provide on-the-job guidance during the data collection phase. Instead, a three-day training was provided online for all IOM staff involved in the data collection. This worked out well and was almost as effective, although it was challenging to get the same level of commitment of staff compared to a live training.
- For the same reason, it was impossible to carry out any pilot interviews under the guidance of the two value chain researchers. This led to some misunderstandings and errors in the first round of interviews, which required additional data collection leading to some delays in the process.
- Throughout the process, several other meetings with the IOM teams were done through online video calls, which went relatively smoothly, although some staff had connection problems.

Finally, it is important to note that the study has been conducted in due consideration of the socioeconomic and political sensitivities in the target areas as determined in the IOM risk analysis/conflict analysis. Fortunately, throughout data collection, no major incidents or violent conflict took place, so the IOM data collectors were able to carry out their work without major disruptions (apart from the general restrictions related to COVID-19, such as lockdowns and curfews).

2. CONTEXT ANALYSIS AND MAJOR ECONOMIC SECTORS

In this section, a context analysis is provided of the two governorates included in this report. This part consists of four sub-sections, including basic information about 1) geography and climatic conditions, 2) population, poverty and employment, 3) displacement and return trends, and 4) major economic sectors.

2.1 NINEWA[6]

2.1.1 Geography and climatic conditions

Ninewa Governorate is in northwestern Iraq. It shares borders with Syria and several Iraqi governorates. Ninewa is the third largest governorate in size. Its total land area is estimated at 37,323 km2 (8.6% the total size of Iraq). Districts include Ba'aj, Hatra, Sinjar, Tel Afar, Tel Kaif, Shekhan, Hamdaniya, Aqra, and Mosul. Mosul City, the provincial capital, is located in the northeast. Tel Afar is another major city in Ninewa, located approximately 30 miles northwest of Mosul city. Sinjar district, also called Shingal, is in the north-west of Ninewa, around 5 to 10 km from the Syrian border, 380 km from Erbil, and 126 km from Mosul City. The Tigris and Greater Zab rivers irrigate much of Mosul. The Tigris River extends from the governorate's northwest to the south . There are arid, semi-desert plains south of Mosul City.

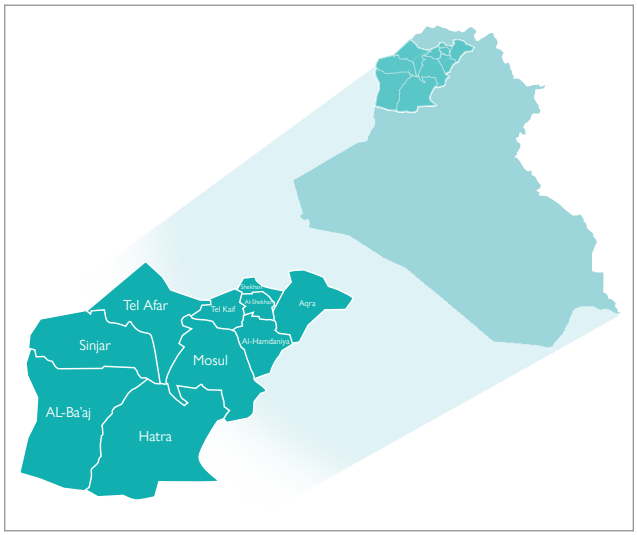


Figure 1: Map of Ninewa Governorate[7]

The climate in Ninewa is cold in winter, hot in summers, (Figure 2) reaching above 40°C with rainfall mostly absent in

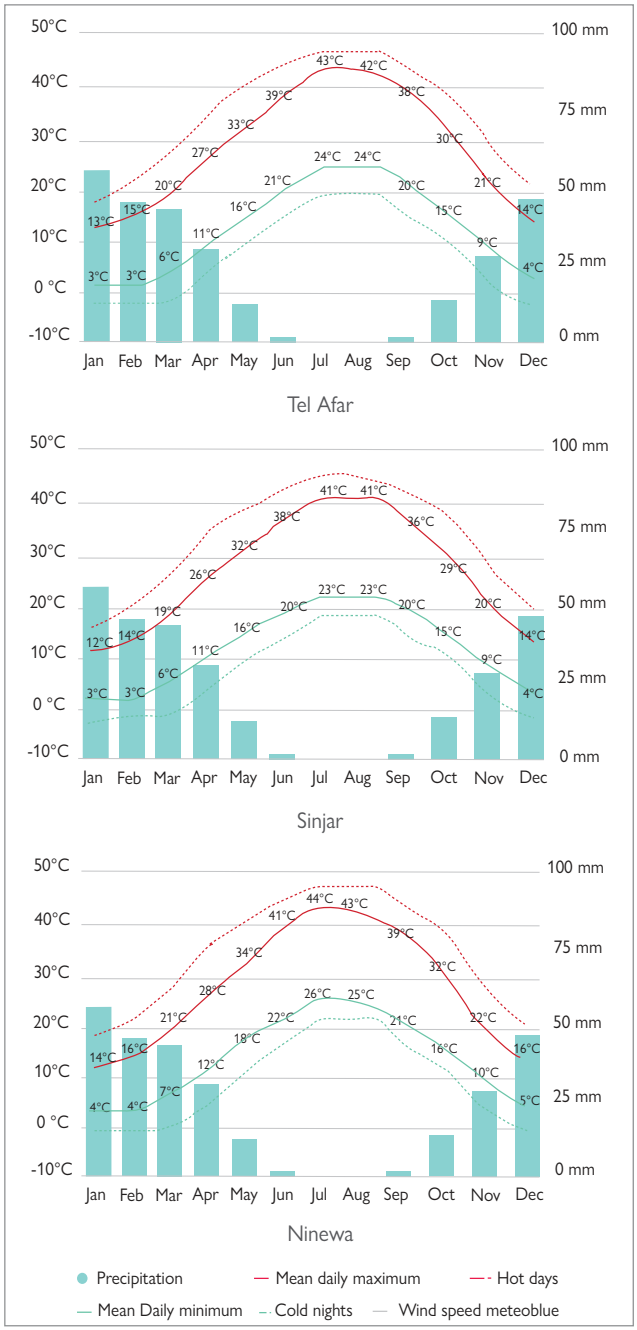


Figure 2: Temperatures and rainfall in Ninewa[8]

6 Ninewa is also known as Ninawa or Nineveh. For consistency purposes, Ninewa is used throughout this report.

7 Wikipedia; https://en.wikipedia.org/wiki/Tel_Afar_District#/media/File:Ninevehdistricts.jpg

8 Meteoblue. Available from: www.meteoblue.com/en/

the summer months. Most of Ninewa falls into the Mediterranean climatic zone with some parts extending to the semi-arid zone.

2.1.2 Population, poverty and employment data

Throughout history, a diverse mix of ethnicities and religions have lived in Ninewa. In addition to the sizable Arab Sunni population, Arab Shias, Kurds, Assyrians, Chaldeans, Turkmen, Yezidis, Shabak and other minorities live in the governorate. Over the past decades, policies of Arabization, Kurdicization, as well as the targeting of certain minorities, have aggravated tensions regionally.[9] In August 2014, ISIL conquered large areas of Ninewa.

Mosul, one of the major urban centres of Iraq, has almost 1.6 million inhabitants.[10]Tel Afar District has a total population of around 511,004 inhabitants according to an estimate from 2018, of which around 43 per cent live in urban areas and the remaining in rural areas. Sinjar's population was estimated at 450,000 before the conflict with ISIL. Around 95,000 were living in Sinjar town and the remaining in Sinjar sub-districts including in the surrounding villages.[11]Despite ISIL's attacks and massive displacement, it was recently estimated that the population of Sinjar has grown, with current population estimates at 500,000.[12]

Ninewa is also one of the poorest governates of Iraq. In 2014, the poverty rates averaged 34 per cent and showed great variety among different sub-districts, between 15 per cent to 50 per cent, with the highest share of poor people residing in Mosul City.[13] According to local media outlets, poverty rates have dramatically increased in Ninewa since 2020.[14]

Unemployment in Ninewa was recorded at 7 per cent in 2011, 16 per cent among men and 6 per cent among women.[15] However, these figures are likely much higher nowadays. According to a study conducted in Mosul in 2018, 62 per cent of the adults who were of working age and not retired were employed outside the home in income-producing activities.[16] Outside Mosul, unemployment is higher. For example, based on findings from an assessment conducted in Tel Afar Centre in 2018, only one third of adult household members were reportedly earning an income from employment in the 30 days preceding the assessment, and on average, they had worked 17 out of the last 30 days.[17] Employment among women was particularly low, with only 8 per cent of women compared to 57 per cent of men reportedly earning an income.[18] It is estimated that as much as 45 per cent of people in Sinjar are unemployed, with female unemployment recorded at 30 per cent.[19]

2.1.3 Displacement and return trends

According to the latest data from IOM, displacement remains high in Ninewa, with over 52,000 displaced households recorded (or almost 300,000 individuals). In addition, there are over 309,059 households (or 1,857,222 individuals) of returnees. More than 5,500 individuals were secondarily displaced in Ninewa as of the second half of 2020.[20] In Ninewa, the highest number of internally displaced persons (IDPs) are located in Mosul, Al-Shikhan and Sinjar (Table 1). The highest number of returnee individuals are located in Mosul, Tel Afar, and Hamdaniya.

Of the people in acute need, 50 per cent were concentrated in only two governorates including Ninewa, especially in

9 NCCI, Ninewa Profile, 2010. Available from: www.ncciraq.org/images/infobygov/NCCI_Ninewa_Governorate_Profile.pdf

10 Mosul metro area population 2020. Available from: www.macrotrends.net/cities/21536/mosul/population#:~:text=The%20current%20metro%20area%20population,a%203.34%25%20increase%20from%202018

11 Data obtained from the Sinjar Sub-District Government Offices, 2020.

12 Ibid.

13 Tara Vishwanath, Dhiraj Sharma, Nandini Krishnan, and Brian Blankespoor, Where are Iraq's Poor: Mapping Poverty in Iraq, 2014. Available from: https://openknowledge.worldbank.org/bitstream/handle/10986/22351/Where0are0Iraq0ping0poverty0in0Iraq.pdf?sequence=1

14 Kirkuk Now, Poverty rate in Nineveh province nearly doubled, 2 February 2020. Available from: https://kirkuknow.com/en/news/61545

15 UNDP, Human Development Report, 2014.

16 Latfa et al., Household recovery in Mosul one year after the defeat of ISIS, December 2020, Conflict and Health, 14(1).

17 REACH, Tel Afar: Area Based Assessment, September 2018. Available from: https://reliefweb.int/sites/reliefweb.int/files/resources/reach_irq_report_aba_telafar_september_2018.pdf

18 Ibid.

19 Data obtained from the Sinjar Sub-District Government Offices, 2020.

20 IOM, DTM Report, 2020.

Mosul and Tel Afar.[21] Almost 7,000 IDPs reside in critical shelters in Mosul.[22] The highest number of returnee individuals living in shelters in critical conditions in Iraq are in Ninewa Governorate (53,136), especially in Mosul (31,590), Sinjar (8,094) and Tel Afar (7,428).[23]

Table 1: Displaced people and returnees in Ninewa, IOM, Round 118, October 2020

DISTRICTS	NUMBER OF IDP HOUSEHOLDS	NUMBER OF INDIVIDUALS	NUMBER OF RETURNEE HOUSEHOLDS	NUMBER OF RETURNEE INDIVIDUALS
Akre	4.970	29.650		
Al-Ba'aj	1.070	6.420	7.735	46.410
Al-Hamdaniya	5.676	28.411	27.945	167.670
Al-Shikhan	8.424	45.576	357	2.142
Hatra	459	2.754	7.908	47.448
Mosul	23.372	133.300	173.819	1.042.914
Sinjar	5.598	33.588	16.239	97.434
Tel Afar	1.538	9.228	58.667	352.002

2.1.4 Major economic sectors

The economy of Ninewa is heavily dependent on agriculture and livestock. A variety of industries and trading companies are also found in the governorate, especially in Mosul.

AGRICULTURE

According to the Ministry of Agriculture, there are more than 5 million dunams of arable land in Ninewa, which yielded 40-45 per cent of Iraq's annual wheat and barley production.[24] Agriculture has historically been the main contributor to the economy of Mosul. There are several grain silos in Mosul district along with a number of flour factories (private and government owned), located within the city's industrial areas but catering to the needs of the governorate.[25] Cultivation of wheat and barley, the two major crops grown in Ninewa, mostly depend on rainfall. According to the Tel Afar Department of Agriculture, barley and wheat cultivated areas, in Tel Afar and the 30 surrounding villages alone, are estimated at 338,000 dunams (or 84,500 hectares) with a yield intensity slightly higher in water semi-secure areas. Sixty-five per cent of Sinjar's land is cultivable and is mostly reserved for wheat and barley cultivation, on both sides of the Sinjar Mountain, with different levels of quality, including very good, good and medium.[26] Wheat and barley are usually sold to government-owned silos. As of the second quarter of 2019, only 61 per cent of locations of return in rural Ninewa reported that most or all of agriculture or livestock activities that took place before the conflict with ISIL's have recommenced, while 37 per cent of locations reported some activities have restarted.[27]

Vegetables and fruits are also cultivated in Mosul District for local and national consumption. Tel Afar's farmers cultivate cotton, melon and watermelon in the western parts; but the area is also famous for figs, pomegranates and olives as vast areas have orchards stretching over the southern part of the district. The orchards were ruined or burnt by ISIL. Nonetheless, most were recently restored or re-planted by their owners. The orchard area in Tel Afar centre is estimated at about 500-600 dunams (or 125-150 hectares),[28] with a harvest estimated at 18 to 20 tonnes of figs and pomegranates per season. These amounts, nonetheless, do not meet the local needs as these orchards were only recently rehabilitated, some farmers stated in an interview conducted by

21 UN OCHA, Humanitarian Needs Overview 2020, 2019. Available from: https://reliefweb.int/sites/reliefweb.int/files/resources/iraq_hno_2020.pdf

22 Ibid.

23 Ibid.

24 RNVDO, Agriculture. Available from: www.rnvdo.org/agriculture/#:~:text=Agriculture%20is%20one%20of%20the,dunam%20for%20arable%20land%20area

25 UN Habitat, Mosul City Profile, 2016.

26 Data obtained from the Sinjar Sub-District Government Offices, 2020.

27 IOM, Rural Areas in Ninewa, 2019. Available from: https://iraq.iom.int/files/publications/iom_iraq_csu_ruralareasinninewa_singlepages_digital.pdf

28 Tel Afar, Irrigation Office.

IOM staff.[29] There are also 107 functioning greenhouses in Tel Afar, out of which 53 are functioning as they have been rehabilitated - with some of recent set up – located in the suburbs of Tel Afar center.[30]

Sinjar has many orchards as well, and grows tomatoes, cucumbers, watermelons, figs, grapes and eggplants. A transition from wheat and barley cultivation to these vegetables and fruits in orchards was reported as people started to requalify some of their cultivable land in Sinjar.[31] Farmers in Sinjar were able to adapt to market demand in Sinjar District market for tomatoes, watermelons, eggplants, cucumbers, grapes and figs. Farmers are struggling to export their products due to a lack of support from the central government. Farmers only sell their products to the local market in Sinjar, its districts, and the neighbouring markets of Mosul City, Tel Afar, and sometimes Duhok.[32]

Agriculture was one of the main sources of employment in the city of Mosul and in Ninewa in general. According to an NGO, before 2014 each farm employed around 14 workers on average, which is also corroborated by a recent study conducted by IOM in Sinjar, with estimates 10 to 15 people employed per farm, or about three families.[33] However, farmers' income has now been reduced by almost 50 per cent, with a lack of assistance from the government cited as one of the most important factors in this downturn.[34] In Sinjar, nearly 80 per cent of the working population was involved in agriculture before 2014. Nowadays people still tend to work in agriculture but with a reduced capacity, especially due to machinery loss, including harvesters and tractors. Out of the 80 per cent originally working in agriculture, it is estimated that only 10 per cent would be able to resume their original agricultural activities in Sinjar.[35]

The agricultural sector of Ninewa experiences a variety of challenges, including lack of government support in the form of loans, compensation for war-affected farmers, and agricultural support (fertilizers, seeds, machinery); limited greenhouse cultivation, limited use of modern agricultural techniques, and an overall dependency on rainfall (estimated at 90 per cent). Sale and transportation are hindered by travel restrictions, which are particularly acute in Ninewa, and difficulties encountered at checkpoints. In addition, fires have erupted in Ninewa in the past years, damaging especially wheat and barley fields, and decimating trees. While ISIL is mostly blamed for the fires, some alternative explanations point to climatic conditions and other actors, including the Iraqi Security Forces.

The latest challenges are caused by COVID-19. Based on a study conducted in April 2020 in Hamdaniya and Mosul, loss of income was the highest reported impact of the lockdown on farmers.[36] Most wheat and barley farmers as well as vegetable farmers reported having no income at all during the first lockdown.[37] Similarly, of the farmers who usually employ labour, more than half of vegetable farmers and wheat and barley farmers said they were either unable to employ people because of lockdown , or were paying their employees reduced salaries because there was not enough work for them.[38] It should be noted that the situation is very dynamic and that it is expected that the economy will recover in the coming years.

It is clear that opportunities also exist in Ninewa, including the availability of cultivable land, water sources in some areas, the presence of labour and the presence of know-how among farmers.

LIVESTOCK

According to the latest available official statistics, in 2011, the total number of food-producing animals in Ninewa was 1,466,078, including 1,247,225 sheep, 114,000 goats,

29 Interview with orchard owners by IOM.

30 Tel Afar, Irrigation Office.

31 Ibid.

32 Ibid.

33 IOM, Destroyed Businesses in Sinjar, report in preparation.

34 Data obtained from the Sinjar Sub-District Government Offices, 2020.

Tel Afar, Irrigation Office.

35 Data obtained from the Sinjar Sub-District Government Offices, 2020.

36 Mercy Corps et al., The Economic Impact of Covid-19 on Agriculture and financial Services in Ninewa, April 2020. Available from: www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/assessments/perma-the_economic_impact_of_covid-19_on_agriculture_in_ninewa_-_rapid_market_analysis.pdf

37 Ibid.

38 Ibid.

78,668 cattle, 13,961 buffalos and 12,224 camels.[39] Due to livestock losses because of the conflict with ISIL, as of 2016, the production of meat dropped by 20 per cent, of eggs by 30 per cent, and of milk and honey by 50 per cent.[40] In 2017, the Food Security Cluster estimated that 60 per cent of sheep and goats were lost in the month prior to the assessment along with a 45 per cent reduction of cattle. The major problems included lack of animal fodder and the high price of fodder, mines and remnants of war contamination, and the presence of diseases.[41]

The latest COVID-19 related challenges include the inability to access urban markets to sell milk, leading to an oversupply in local markets and a decrease in price. With limited capacity to store their production, dairy farmers have experienced major losses in income.[42] For poultry and cattle farmers, the loss of income across households is expected to lead to a decrease in demand and consumption of meat and poultry products. Furthermore, the closure of roads and restaurants made it difficult to find markets to sell their products. Seventy-five per cent of breeders interviewed in the second quarter of 2020 reported that they had no income under the current circumstances.[43] Of the remaining 25 per cent of breeders who were still receiving an income, up to 74 per cent said they had experienced a significant or moderate drop in their salaries.[44]

Looking at the major districts, there are very few large livestock producers in Tel Afar and these mainly breed cows and sheep. Despite the damage suffered during ISIL's occupation, owners have revived and revitalized the sector in Tel Afar. Livestock and beekeeping are also on the rise in Sinjar, especially after the war ended, according to local sources.[45] Sinjar farmers also raise sheep to produce milk, wool and meat.

TRADE

Because of its strategic location, Mosul became a prominent commercial centre and a trading hub throughout history. In the past, livestock trading was one of the main sectors in the city of Mosul. However, the trade sector was severely impacted by the conflict with ISIL. Al-Sarachkhana Market, Bab Al-Saray, Al-Shareen Market, and the Gold Market have been almost entirely destroyed. During the last three years, owners have been rebuilding their locales and trade is gradually getting back on its feet. Nowadays, trading has expanded, with several markets reopening, including Souq Al-Nabee specialized in cosmetics and apparel retail, Al-Nabee Sheet specialized in electronics, Al-Darkyzlyaa for electrical supplies, and the renovated Gold Market.

In Tel Afar, after the main market was abandoned due to insecurity, even before the arrival of ISIL, other markets were established in different areas, including in Hasan Koi, Al-Saray, Al-Etfaa' Street, Ras Al-Jadda, Al-Qala' Street, hospital street, and in the neighbourhood of Al-Wahda, as well as smaller markets located in the smaller neighbourhoods of Tel Afar. These shops and stores sell different goods, especially food. It is estimated that there are about 6,000 shops in Tel Afar, mostly in the city centre, in addition to some smaller malls, which have opened only recently.

INDUSTRIES

In Mosul, there are two main industrial zones where most of the manufacturing companies are located, one on the east and one on the west side. There are several large government-owned factories in Mosul District. Inside the city, there are a pharmaceutical company, a pharmaceutical/medical equipment company, a sugar company, a dairy factory, clothes and cotton textiles factories, a pre-cast concrete elements company, and a wood and furniture company. Outside of the city, there are Al-Mishraq Sulphur State Company, and several cement producers including the Sinjar Cement Plant, owned by the Northern Cement Company with headquarters in Mosul City.

In addition, according to the latest statistics available, in 2013, Mosul also had a large number of privately owned factories, including 349 food factories, 33 furniture factories, 19 leather products factories, two drinks and juices factories, and 20 metal furniture and aluminum products factories.[46] However, ISIL dismantled the equipment of approximately 70 to 80 per cent of the city's factories and transported and

39 Agricultural statistical atlas: roadmap for agricultural development (green economy). Central Statistical Organization, Ministry of Planning, Republic of Iraq. 2011, Part 1 (In Arabic Language). Available from: https://mop.gov.iq/page/view/details?id=8

40 https://reliefweb.int/sites/reliefweb.int/files/resources/FAO_Assessment1.pdf

41 Iraq Food Security Cluster, 2017. Available from: https://reliefweb.int/sites/reliefweb.int/files/resources/fsc_irq_livelihoods_infographic_ninewa_20170517.pdf

42 Mercy Corps et al., 2020.

43 Ibid.

44 Ibid.

45 Interview Agriculture Department

46 Ministry of Planning, 2014.

sold it to neighbouring countries, leading to the collapse of the industry sector in Mosul.[47] Since then, marketplaces are flooded with cheap imports, primarily from Turkey and Iran, including many items that were previously produced in Mosul, such as processed foods and textiles. As a result, businesses now face the dual challenge of trying to restore their businesses after ISIL in a markedly altered market place, and having to contend with new players with severe competition due to low prices.[48]

CEMENT

Cement represented one of the main economic sectors in Mosul. Until 1990, the cement produced used to be exported abroad as well.[49] According to the Ministry of Industry, the sector produced more than 1 million tonnes of high-quality cement per year at a lower cost than the rest of Iraq.

As of 2018, the sector was still struggling to restart. Major challenges reported by the constructions sector enterprises surveyed by IOM included delays in document issuance, checkpoints, corruption and extortion, and lack of cement government subsidies.[50]

In Tel Afar, there are three concrete bricks, four gypsum factories and an asphalt factory, as well as the Sinjar Cement Plant. Considering that in 2018, 45 per cent of enterprises registered in Ninewa operated in construction, the Sinjar Cement Plant is a major driver of the economy. Concrete block factories in Tel Afar were reportedly employing around 100 residents per factory from the city in the past, but currently operate at a reduced level, employing only around five residents as of mid-2018.[51]

47 UN Habitat.

48 IOM, Mosul Enterprise Challenges and Opportunities, 2018.

49 In the 1980s, Iraq exported from Mosul more than 300,000 tonnes of cement per year. The peak was the period between 1987 and 1990 when it exported more than 1,100,000 tonnes to Turkey, the Gulf Countries, Yemen and Singapore. Elaph, Two years after the jihadists were defeated the industrial sector in Mosul is struggling to regain its role, October 2019. Available from: https://elaph.com/Web/Economics/2019/10/1269037.html

50 IOM, Mosul Enterprise Challenges and Opportunities, 2018.

51 Ibid.

3. CRITICAL MARKET SYSTEMS AND SUPPLY-DEMAND ANALYSIS

3.1 TRANSVERSAL MARKET ISSUES

During the research, the following major issues were found in relation to the functioning of the markets and value chains in Ninewa, including:

1. **Competition from imported products:** The biggest problem facing the local markets in Ninewa is the competition with imported goods. The process of opening up the borders with neighbouring countries, not accounting for goods entering Iraq and forcing importers to pay import duties, has led to a situation in which imported goods are very cheap compared to locally produced goods, leading to unfair competition. This is the case for both agricultural and industrial goods.
2. **Market prices fluctuation:** Another problem is the fluctuation of prices, which leads to instability of the local market, leaving traders and farmers in a state of permanent economic insecurity. This situation is aggravated by the imported goods at a cheap price, which has negatively affected local production and local markets proliferation.
3. **Lack of access to finance for farmers:** Farmers face great difficulties in obtaining loans from banks due to the high interest rates. This has prompted farmers to borrow from big traders present in the market who grant loans in exchange of a guaranteed delivery of the crop at a low price. This reduces farmers' profit margins. In the past, the state supported farmers with subsidized seeds and fertilizers, while giving the certainty to buy the crop at the prevailing market price.
4. **Lack of proper market facilities:** According to the market vendor survey, one of the major constraints is the lack of hygiene and sanitation in the marketplace, as authorities do not maintain and clean the markets well. There is also a lack of paved streets in marketplaces, which makes the movement of goods very difficult, especially in the winter season (due to the heavy rainfall).
5. **Instability and lack of security:** The situation in Ninewa remains unstable. During ISIL's occupation, which lasted for more than two years, all infrastructure was destroyed while it also led to a deterioration of the social fabric and an increased mistrust between citizens. This has led to a continued situation of insecurity in the governorate, which greatly affects the stability of markets, employment and production.
6. **Logistical challenges due to COVID-19:** The effect of the pandemic and the imposition of curfews had serious negative effects on the movement of goods and agricultural crops between districts and sub-districts, and also to and from Ninewa Governorate, which led to price inflation and disruptions in trade, negatively affecting farmers' incomes.

3.2 SUPPLY-DEMAND ANALYSIS OF MAJOR AGRICULTURAL GOODS AND SERVICES

As an input for the selection of the most promising value chains, a supply-demand analysis was carried out to find out which goods and services are most in demand, and which opportunities exist for new goods and services to enter the market. In three districts of Ninewa (Mosul, Sinjar and Tel Afar), 76 interviews were held with consumers and 51 interviews with market vendors.

Consumers reported regularly obtaining tomatoes, which was by far the most mentioned agricultural item followed by cucumbers, potatoes, onions, yoghurt and eggplants (Table 2). Goods obtained once in a while include cooking oil, rice, tomato paste, meat and grains (barley/wheat). The vast majority always find the agricultural items they are looking for (93 per cent) with a small number of consumers reporting not finding all the desired items.

About one third (31 per cent) are dissatisfied with one agricultural item, including grain groats (mentioned by 4 consumers), imported tomatoes (4), milk cream (4), meat (3), animal fat (2), beans (2), figs (2), and honey (2). The reasons for dissatisfaction mainly lie in the poor quality of the items (7), distrust in the vendor (3), high prices (2), or a mismatch between the product and the actual needs of the consumer (2).

Some agricultural items, which are imported and could be produced locally at a cheaper price, include figs, pomegranates, fruits in general, vegetables, grain groats, grapes and tomatoes.

Table 2: Findings on demand and supply of most important agricultural goods, Ninewa

CONSUMERS				VENDORS	
Goods obtained regularly (n=75)	Goods obtained sometimes (n=75)	Imported goods but cheaper if produced locally (n=75)	Available but not affordable products (n=75)	Most popular goods sold (n=51)	Most profitable goods sold (n=51)
Tomatoes (74)	Cooking oil (39)	Figs (18)	Meat (12)	Tomatoes (20)	Tomatoes (11)
Cucumbers (53)	Rice (37)	Pomegranates (14)	Figs (8)	Potatoes (19)	Potatoes (4)
Potatoes (49)	Tomato paste (31)	Fruits (13)	Honey (7)	Cucumbers (18)	Rice (4)
Onions (48)	Meat (30)	Vegetables (12)	Pistachio (4)	Pomegranates (12)	Pomegranates (3)
Yoghurt (47)	Grains (barley/ wheat) (21)	Grain groats (11)	Beef (3)	Rice (12)	Beans (2)
Eggplants (38)	Sugar (19)	Grapes (11)	Canned meat (3)	Onions (11)	Celery (2)
Eggs (36)	Chicken (16)	Tomatoes (10)	Dates (3)	Eggplants (8)	Chicken (2)
Oranges (29)	Grain groats (16)	Dates (6)	Oranges (3)	Bananas (7)	Olives (2)
Apples (27)	Grapes (16)	Dairy (6)	Eggs (3)	Olive oil (7)	
Bananas (27)	Pomegranates (13)	Apples (5)	Fish (2)	Chicken (6)	

Vendors reported that the most popular items sold include tomatoes, potatoes, cucumbers, pomegranates, rice and onions. The most profitable items include tomatoes, potatoes, rice, and pomegranates (Table 2).

Consumers also reported some agricultural products, which are available but not affordable to them, including meat, figs and honey as the most mentioned goods (Table 2). A few consumers also mentioned sesame paste. One consumer commented that "there is sesame paste in the market which is locally produced, but is of poor quality, has a relatively bad taste and a light consistency." Another consumer stated that grain groats (from barley or wheat) are currently imported from Turkey. They are relatively expensive and of low quality. Instead, grain groats could be produced locally and sold at a lower price instead of the imported Turkish groats.

Consumers also made recommendations on how to improve the functioning of the market. The most mentioned recommendation was that of banning the import of products that could be produced locally followed by a similar suggestion of promoting the increase of local products in the market. Supporting farmers in general and improving food safety are also important consumers believe, as well as some other less mentioned fixes for improving the current market (Table 3).

Table 3: Suggestions for improving the functioning of the market as reported by consumers

MARKET FUNCTIONALITY IMPROVEMENT	PERCENTAGE
Avoiding importing products, which could be produced locally	28%
Increasing the number of local products in the market	26%
Supporting farmers	23%
Improved hygiene control in the market and general food safety	10%
Increased competition to drive market prices down	8%
Improvement of the sheep market	5%

The majority of vendors (88%) felt they are able to satisfy customers' demand. Twelve per cent do not think so, because of the limited availability of the item in stock due to financial issues, followed by purchase costs as being too high, and limited availability of goods.

Vendors reported as major marketing constraints price fluctuation and control (43%) followed by poor market facilities (27%), delayed supplies (19%) and commodity procurement challenges (11%). Vendors also advanced some ideas on promising business opportunities in agriculture in Ninewa. The most mentioned include livestock breeding and the establishment of greenhouses. These are followed by the establishment of warehouses, growing of tomatoes, barley and wheat, establishing orchards and tomato paste processing factories (Table 4).

Table 4: Most promising business opportunities in Ninewa as reported by Vendors

PROMISING BUSINESS OPPORTUNITIES	NUMBER OF MENTIONS BY VENDORS
Livestock breeding	8
Greenhouse establishment	6
Warehouse establishment	4
Tomatoes cultivation	4
Barley and wheat cultivation	4
Orchards establishment	4
Tomato paste processing factories	4
Pomegranates cultivation	3
Fruit cultivation – apples, oranges, etc.	3
Potatoes cultivation	3
Onions cultivation	3
Mills – flour, grain grouts production	3
Packaging	2
Dairy	2
Cucumbers cultivation	2
Olives cultivation	2
Vineyards	2
Legume cultivation	2

In conclusion, tomatoes, potatoes, cucumbers, onions, pomegranates and rice appear to be among the most in demand and among the most popular items sold by vendors. Among these, tomatoes, potatoes, rice and pomegranates appear to be among the most profitable. In addition, figs, pomegranates, fruits and vegetables and grain groats, which constitute important goods for consumers, could also be produced locally at a cheaper price, according to consumers. Based on these findings, the most promising agricultural items in Ninewa are vegetables (tomatoes, cucumbers, onions), potatoes, pomegranates, figs and rice.

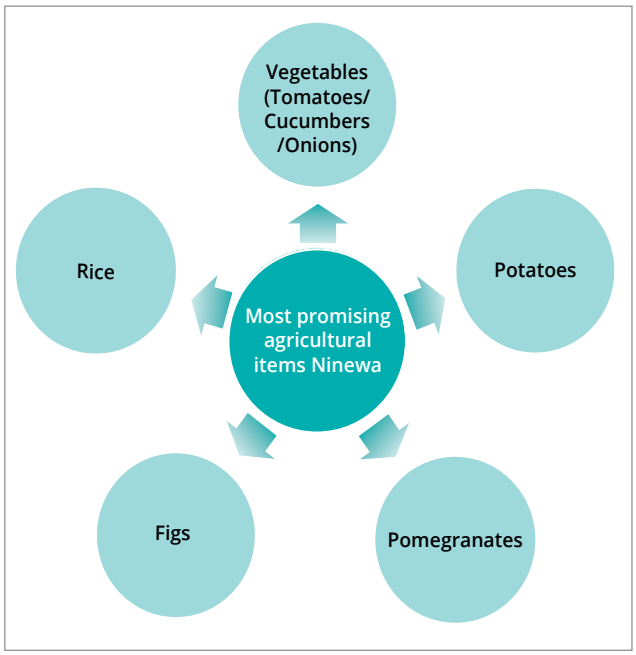


Figure 3: Most promising agricultural items in Ninewa

4. AGRICULTURAL VALUE CHAIN ANALYSIS

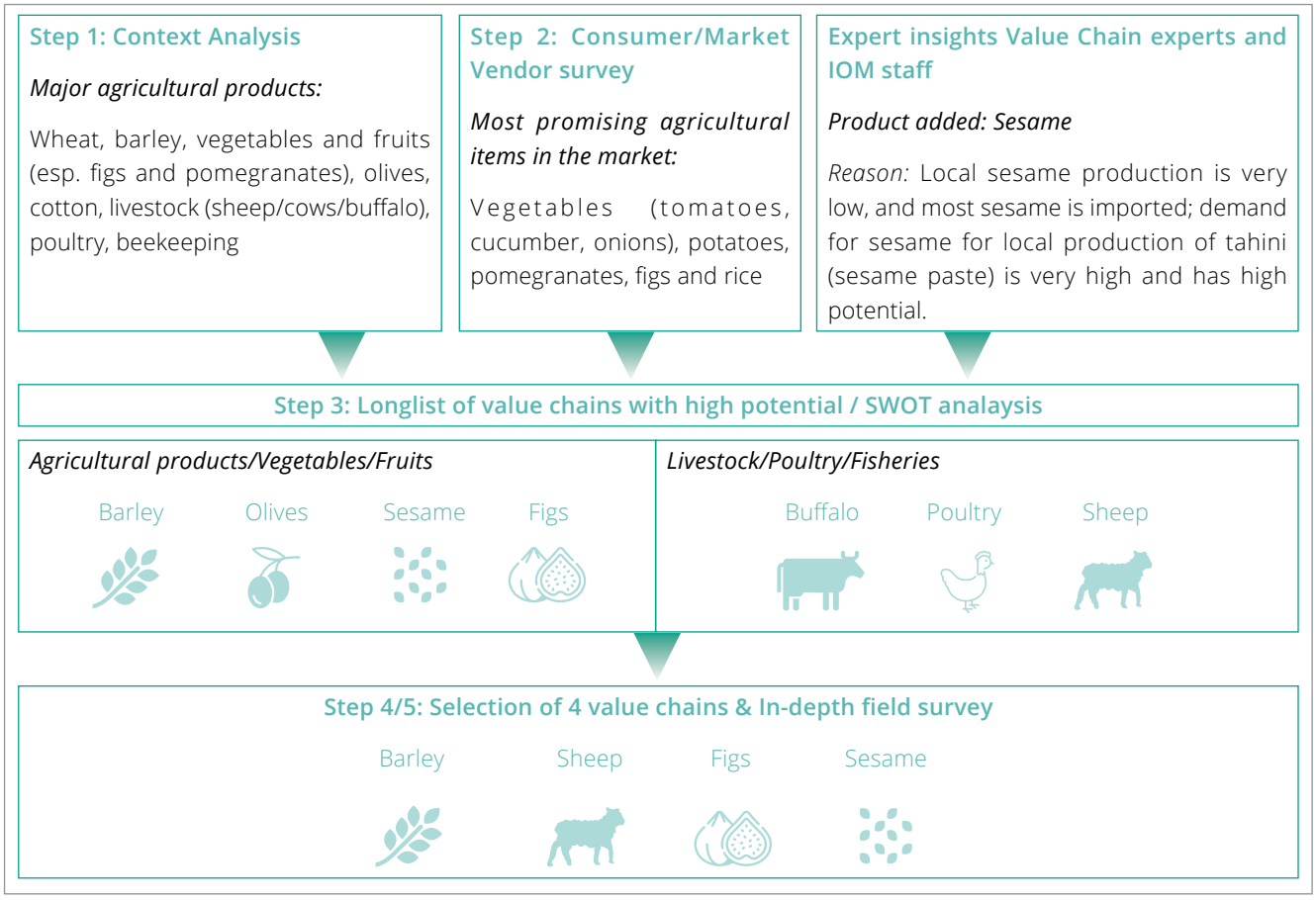
4.1 SWOT ANALYSIS AND SELECTION OF PROMISING VALUE CHAINS

Following the context analysis and the consumer and market vendor surveys, the next step in the process was to identify and select the value chains for this study. Selecting an appropriate value chain requires a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats). The following key elements have been used in the process of evaluating each value chain with high potential:

1. **Availability of local capacities and skills** for value chain development of the specific product.
2. **Market demand** for the specific products in the chain by local, regional and international customers and consumers.
3. **Potential market size**, depending on the size of the geographic area, population size and population density.
4. **Market trends** that will affect the consumers' buying habits.
5. **Presence of industry forces** that may affect the value chain positively or negatively, including international as well as internal issues such as government policy, and structural or technological changes.
6. **Competitor analysis** of direct competition (i.e. between producers/vendors of the same products) and indirect competition (i.e. between producers/vendors of similar or substitutable products or those competing for the same market). Special attention will be given to the competitiveness of local producers with imported products.
7. **Profitability** of the value chain.

During a workshop with the IOM teams in the southern region, a total of eight value chains with high potential for Basra, Missan, Thi-Qar and Muthanna were identified. For each of these chains, a SWOT analysis was carried out, which can be found in Annex A.

The selection of the most promising value chains was based on the findings of the consumer and market vendor survey,



as well as on the context analysis and general insights of the value chain experts and IOM staff in Ninewa. The flowchart shows which phase in the process led to the selection of each value chain.

It can be seen in the figure, sesame did not show up in the consumer/market vendor survey, because sesame is not sold in the local market. In fact, local sesame production has decreased significantly over the last decades, while imports of sesame have increased. The sesame is used by local factories as a main ingredient for producing tahini (sesame paste). This locally produced tahini – most often based on imported sesame – is sold in small shops and supermarkets. There is a very limited production of tahini made of locally produced sesame, even though the potential is high given the history of sesame production in Ninewa, which could represent a major opportunity for increased local sesame production.

The same applies to barley, which is not sold in the local market to consumers either. Farmers sell to the government or to large traders, who then sell to livestock breeders for use as animal feed, or to factories for production of flour or beer.

The value chains with high potential are the following:

VALUE CHAINS WITH HIGH POTENTIAL	DISTRICT WHERE THIS VALUE CHAIN IS MOST PROMINENT
Agricultural products/Vegetables/Fruits	
Barley	Sinjar/Tel Afar
Figs	Sinjar/Tel Afar
Olives	Mosul
Sesame	Mosul/Tel Afar
Livestock/Poultry/Fisheries	
Sheep	Sinjar/Tel Afar
Poultry	Tel Afar/Mosul
Buffalos	Mosul

Next, based on a comparison of the SWOT analyses for each potential value chain, a final selection of the four most promising value chains was made for Ninewa. The main arguments for selection of the four value chains are listed in the table below. During the workshop, a score was assigned to each potential value chain on a scale of 1-10, to be able to compare and rank them (see Annex A for the full ranking of value chains).

POTENTIAL VALUE CHAIN	MAIN ARGUMENTS FOR SELECTION	SCORE BETWEEN 1 AND 10
Barley	• High job creation potential • Opportunity for exporting barley • High competition from imported barley so there is a need to reduce local production cost	9
Sheep	• High demand for both meat and dairy products • High prices • Lack of processing capacity, but could be developed	8.5

Figs	• High demand • Special fig varieties only produced in the region • Destruction of orchards is common as a destabilization technique, but situation is improving	7.5
Sesame	• High demand for sesame • Many tahini factories need sesame • Production could be improved through better protection against fires • The tahini produced in Mosul is considered the best in all of Iraq.	7

4.2 VALUE CHAIN ANALYSIS PER SUBSECTOR

For each of the four selected value chains, a detailed value chain analysis, including a value chain map in Ninewa has been carried out. This analysis was informed by interviews with a selected number of key informants:

1. Agricultural producers (this category includes farmers, livestock or fish producers, depending on the value chain);
2. Wholesalers and retailers (middlemen, large traders, shop owners, restaurant owners);
3. Industry experts (equipment suppliers , chemicals, feed, seeds and other inputs, processors such as graders and packers, slaughterhouses, food production factories);
4. Local authorities (Chamber of Industry or Commerce, Provincial Council / Committee on Industry, Trade and Agriculture, agricultural advisors/extension officers).

The goal of these interviews was to obtain deep insights into the functioning and the shortcomings of the value chain, as well as to create a value chain map of the multiple ways products reach consumers - from raw materials inputs to the point of consumption - in the four selected subsectors. The maps are based on a combination of qualitative and quantitative data and information. During a workshop with IOM staff and the value chain consultants, a first draft version of the value chain map was developed, becoming the basis for the maps included in this report.

For each value chain, the focus of the data collection was on one district within Ninewa Governorate, depending on where this sub sector has the highest potential or is already best developed with room for further expansion:

- Barley: Sinjar and Tel Afar
- Sheep: Sinjar and Tel Afar
- Figs: Sinjar and Tel Afar
- Sesame: Mosul and Tel Afar

In the next sections, for each value chain, the following themes will be explored:

- Context
- Value chain map
- Value chain actors
- Cost structure and prices
- Communication and information flows
- Relationships (governance) in the value chain
- Government support to development of the value chain
- Opportunities and challenges for value chain development
- Potential for investment and job creation in the value chain

The last part of each section provides an idea about the potential for investment and job creation in the value chain, to understand in which areas of the value chain cash grants are most needed.

4.2.1 BARLEY

Focus area: Sinjar and Tel Afar

Context

On a national level, the two major agricultural crops are barley and wheat (Figure 4). Barley is the number one agricultural crop in Iraq. Over the years, barley production has fluctuated considerably, with sharp drops in 2012 and 2018. At present, national barley production is around 1,550 tonnes.[52]

52 Source: CSO.

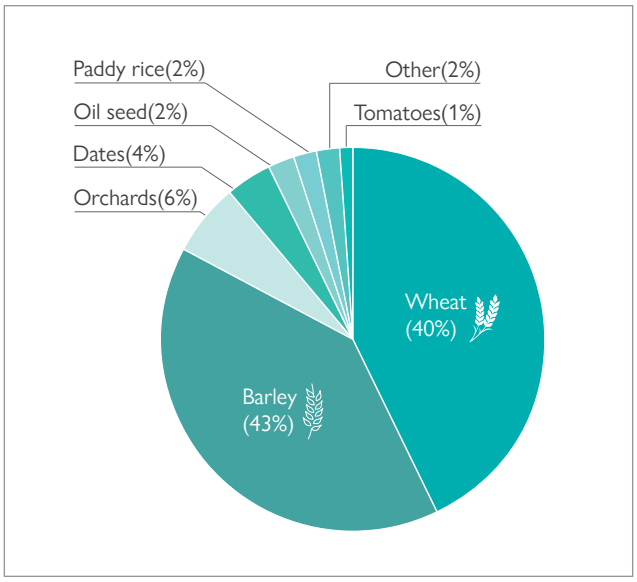


Figure 4: Distribution of cultivated areas in Iraq; Source: UNESCO[53]

In Ninewa, agriculture has historically been the main contributor to the economy of the governorate. According to the Ministry of Agriculture, there are more than 5 million dunams of arable land area in Ninewa.[54] Grains, primarily wheat and barley, are Iraq's main crops in the north and central rainfed areas, produced in mixed wheat–barley–forage legumes cropping systems.[55] In 2020, Ninewa was the major producer of barley in Iraq, producing 700,000 tonnes, accounting for more than half of total production in Iraq.[56] Barley is one of the two major crops grown in Ninewa, together with wheat. Both crops mostly depend on rainfall, although barley requires less water than wheat and it is more tolerant to soil salinity. Barley is mainly produced for animal fodder.

Barley is mostly grown in Tel Afar and Sinjar. In Tel Afar district, barley and wheat cultivated areas is estimated at 338,000 dunams (or 84,500 hectares). In Sinjar district, 65 percent of all land is cultivable and is mostly reserved for wheat and barley cultivation, on both sides of the Sinjar Mountain, with different levels of quality, mentioned earlier.[57]

Before the crisis in 2014, agriculture was one of the main sources of employment in Ninewa, but since then the number of people employed in agriculture has decreased dramatically due to ISIL's occupation. Since the start of COVID-19, loss of income was the highest reported impact of the lockdown on farmers, with a majority of wheat and barley farmers reported having lost their income as a result of the first lockdown.[58]

Value chain map

The value chain map for barley in Ninewa is presented on the following page.

Value chain actors

Input suppliers

Two male farmers of barley were interviewed, one in Sinjar and one in Tel Afar. The following inputs are needed for barley production:

- Seeds
- Fertilizer
- Fuel for tractors/machinery/transport

According to the Agriculture Directorate, Iraq used to have its own centres to develop seed banks, but after the war in 2003, those seed banks were destroyed. At present, the government depends on farmers to store seeds in government silos, which are then distributed to farmers again. The state-owned Mesopotamia Seed Company also buys seeds from farmers.

Farmers indicated that they use different ways to procure their barley seeds:

1. Farmers buy seeds from the seed treatment plants in Mosul and Samarra. These plants are specialized in cleaning wheat and barley seeds from grass and stones to ensure that they are clean, purified, treated with anti-charing medicine, pouched and overall ready for being planted. Their seed price is higher than non-cleaned seeds (about USD 50/tonne higher). On top of this, there are additional costs due to checkpoints where a fee is charged to transporters.
2. Farmers buy from traders in Tel Afar and Mosul.

53 UNESCO, 2019b, Assessment of the Labour Market & Skills Analysis, Iraq and Kurdistan Region-Iraq, Agriculture.

54 RNVDO, Agriculture. Available from: www.rnvdo.org/agriculture/

55 FAO, 2012, Iraq Agricultural sector note.

56 Available from: www.knoema.com

57 Data obtained from the Sinjar Sub-District Government Offices, 2020.

58 Mercy Corps et al., The Economic Impact of Covid-19 on Agriculture and financial Services in Ninewa, 2020. Available from: www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/assessments/perma-the_economic_impact_of_covid-19_on_agriculture_in_ninewa_-_rapid_market_analysis.pdf

Value Chain map for Barley - Ninewa

Inputs:

- Seeds
- Fertilizer
- Fuel for tractors/ machinery/ transport

Production:

- Both small and large producers
- Black barley (used as animal feed) is more widely produced than white barley

Distribution:

- Most barley is sold by farmers to the government (80-90%)
- Part of the barley is sold to wholesale or retail traders
- Part of the barley is sold to flour factories and to factories producing beer

Government silos

Small shopkeepers and grocery stores

Wholesale traders

Consumers:

Livestock breeders using barley as feed for livestock

Factories:

Barley is used to produce flour and beer

Export:

Export of barley to neighbouring countries (only if production is high)

3. Farmers use seeds saved from previous year's harvests. One farmer interviewed stated that he usually keeps around 100 tonnes of both barley and wheat for the next planting season. Sometimes he markets his whole harvest and makes an agreement with the seed treatment plants to buy seeds.

Not all farmers are eligible for receiving seeds from the government silos, as this depends on the location of the farm. One of the farmers interviewed indicated that he is not allowed to buy seeds from the government silo as his lands lie in southern Tel Afar, which is an agriculturally insecure area due to lack of rainfall.

The government sometimes provides petrol to farmers through the Agriculture Directorate. Farmers tend to buy fertilizers in the local market. Sometimes they also receive fertilizers (for instance urea) from the Ministry of Agriculture. The amount of fertilizers received depends on the farm size, planted area and the kind of crop cultivated.

Production

There are different production zones for barley, including areas with abundant rainfall and areas of low rainfall, with some areas falling in between. Two types of barley are produced for different purposes: white barley is used for the production of flour and black barley for animal feed.

Annual cropping decisions are made in July or August by each farmer, in consultation with other farmers in the region. Barley grows between September and October, when farmers start ploughing, loosening the soil, airing it and weeding. In October or November, farmers start planting the seeds. Barley is usually planted together with wheat.

In addition to cultivating his own lands, one farmer mentioned that in the past few years he rented land from other farmers and landowners. The revenues are shared as follows: one third goes to the seed suppliers, one third to the landowner and one third to the farmer.

Assuming there is sufficient rain, one tonne of seeds can yield 30 tonnes of barley. The major determining factor for a good harvest is the amount of rainfall, especially the early rainfall starting in the beginning of October. The harvesting of barley and wheat takes place in May and June respectively. One farmer indicated that in the last season, he sold 24 tonnes of barley and 60 tonnes of wheat to government silos.

Waste mostly occurs during storage. If the storage hall is not well protected, some crops might get moist and have to be discarded. When there are delays in marketing the barley, some of the harvest may be wasted before entering the silo and unloading the crop. During the cleaning of seeds for planting, 15 per cent is usually wasted too. When harvesting, waste is typically very low. Sometimes waste results from the malfunctions of planting and harvesting machinery.

Storage practices differ. One of the farmers interviewed stated that he does not store in the farm because seeds are not secured. The other farmer stated that after harvesting, he sometimes stores around 100 tonnes of seeds for the next year. This year, he has not stored any since he used them all for planting. He explained that the amount of seeds stored mainly depends on the availability of seeds in the market or in the seed treatment plants.

Farmers rated – from irrelevant to highly significant – factors influencing their decision to do business with major buyer(s), including:

The volume buyers will buy from farmers	Relevant/Significant
Lack of alternatives	Irrelevant/Significant
Practical help/advice offered	Irrelevant/Average
Finance offered	Relevant/Irrelevant
Long-term prospects of continued sales	Relevant
The strength of the personal relationship with buyers	Irrelevant/Significant
The price buyers offer	Irrelevant
The security of ongoing business with buyers	Irrelevant

The barriers to market entry for poor producers include a lack of access to capital, lack of transportation services, lack of business relationships, lack of communication with other experienced farmers and lack of government support.

In terms of potential for job creation, opinions differ. One industry expert expects that the growth in the value chain would generate additional job opportunities in growing, harvesting and transporting barley. As well, it would create jobs in livestock breeding so barley production can be profitable for different parties present in the value chain. Another expert was more skeptical and questioned whether the barley value chain could substantially improve the employment prospects in the area.

Not many women work in barley production, as it is currently dominated by men, who are therefore more specialized in this field. However, the value chain offers some potential to increase the income of women as well. For instance, women sometimes work in livestock breeding or grain cooking and cleaning used in grain groats processing.

Distribution

There are three distribution channels for barley:

- Most barley is sold by farmers to the government, who stores it in silos. There are five main grain silos in Ninewa (one in each district). In each sub-district, there is a mini-silo, which is just an open area covered by a shield. The government provides livestock breeders with barley (and wheat as well) as animal feed, representing around 45 per cent of the total barley production.
- Part of the barley is sold to local wholesalers/retailers, who then sell the seeds to livestock breeders, who need seeds to plant barley. Wholesalers store the barley in mini silos. They usually store barley for 6 months, leading to wasting some of it. Building better warehouses would represent a solution in this case.
- The remaining barley is sold to different companies for different purposes: 1) those producing flour (around 40%) and 2) and those producing beer (around 15%).

The wholesalers interviewed indicated that they support local farmers with seeds so that they can plant and sell to these farmers after production. The traders benefit because farmers ensure a consistent and high-quality supply of barley. The main factor is the cleanliness of the product. The traders decide on the price and are responsible for transporting the seeds, and after the harvest they also collect from farmers. They have a special truck used for measuring weight. Traders interviewed indicated that they are buying and selling between 200 to 300 tonnes of barley per day.

A number of flour factories (private and government-owned) are located within the cities' industrial areas. In Sinjar, the government silo is located in Sinuni. A small part of barley is sold to beer factories (Bashiqa, Bar Tela, Bathra).

Basically, the choice of who to sell to depends on the government's ability to pay farmers, which is not always a given. One farmer stated that "when the government is the buyer, it is a problem because we don't get paid immediately after selling". The farmer interviewed indicated that if the government delays the payment, he prefers to sell to local traders. When selling to local traders, the advantage is that they pay cash, but the sales price, and thus the profit margin, is lower.

Traders closely consider barley cleanliness. When barley is not clean, the trader can refuse to buy it, or buys it at a reduced price. One trader stated that "sometimes we go to the field to check the barley and if we find that it is not clean, we don't buy it, and we only pay for the transportation expenses." One trader stated that based on the contract with the companies and the government, they receive specific equipment and machinery for testing the quality of seeds.

The trader interviewed in Sinjar stated that he has more than 70 per cent of the market share, and that there is only one competitor. For the trader in Mosul, competition is higher, with around 100 merchants. The trader estimated his market share at 10 percent.

Due to the heavy rainfall in the past years, which led to a high production of barley, it was possible to export it to neighbouring countries. However, in 2020 lack of rain made exports more difficult.

Processing

Barley is processed into animal feed, used for flour or used as input in beer production. According to an industry expert, there are not enough factories in Ninewa to process raw barley (and wheat).

Consumption

The main final consumers are livestock breeders, as barley is mainly used as animal feed (around 45%). The Ministry of Agriculture supplies the livestock breeders with barley, providing each farmer with 90 kg per lamb or sheep. Other consumers include farmers, who need seeds to plant barley. Part of the barley is also sold to produce barley flour (around 40%) and beer (around 15%).

According to industry experts, demand for black barley is high as it is used for animal feed. With the increase in livestock production, the demand for barley will continue to increase. Demand for white barley, which is used for flour, is high too.

Consumers buy barley based on quality, hygiene and price. According to one trader, "the final consumer wants a fat and clean seed. I engage with farmers and final consumers on a monthly basis to know if they are satisfied with our products"

Cost structure and prices

The main cost drivers for farmers are seeds, fertilizers and fuel for tractors/ machinery/transportation. The main cost drivers for wholesalers in the value chain are the operating cost for the machines, oil, electricity, data management specialists, labour cost, rent of warehouses, transportation and payments at check points. A small amount is added as a profit.

One of the traders interviewed indicated that the price is set in a contract with the government. The price in the contract depends on the season and the rainfall, and also on the demand levels. Over the last years, farmers' selling price has varied significantly and ranged between IQD 213,000-420,000 per tonne.

In the current harvesting season (2021), the purchasing price of barley is IQD 220,000-240,000 per tonne, and after grinding it is delivered to the customer for IQD 250,000-270,000 per tonne. The price of white barley, which is used for the production of flour, is usually higher than black barley, which is used for animal feed.

One trader indicated that the profit margin is fixed in the governmental contracts. The margin for the trader is 7 USD/tonne. Another trader indicated that the profit margin is 3 per cent.

The average prices of barley along the value chain, produced in Ninewa, are as follows:

ACTOR IN THE CHAIN	SELLING PRICE
Farmer	220,000-240,000 IQD per tonne
Wholesaler	230,000-250,000 IQD per tonne
Retailer	250,000-270,000 IQD per tonne

Communication and information flows

Farmers indicated the need to have more knowledge on the use of a fertilizer pump, which is attached to the tractor, and on how to use it to better strengthen the crops. Farmers would also require more information on the consumers' preferences to understand the desired type and its demand in the market. Nonetheless, farmers mostly have all the information they need. Farmers share a lot of information with traders and buyers.

Farmers need support in terms of finance and vocational training on agriculture. Financial support would help them in buying fertilizers, seeds and electricity as well as cover expenses related to digging wells.

Traders' information needs tend to differ. One of them stressed the importance of understanding customer preferences and needs. Sometimes, his customers do not have enough knowledge on how to expand their businesses. Another trader mentioned not requiring any information from his customers as they already share information.

According to industry experts, barley producers do not require any training, as they usually learn directly from relatives or friends. While training in barley processing industries might still be needed, most of the processing mills are currently out of service and would need to be rehabilitated first.

A number of NGOs provide training to farmers on agricultural crops and livestock in Ninewa, including Welthungerhilfe, Action Against Hunger, World Vision, Mission East, Yazda and Samaritan's Purse (SP). FAO is also supporting farmers in Ninewa through the provision of seeds, fertilizers and other types of support. One government expert interviewed stressed the importance of increasing these support programmes to further develop the agricultural sector. He stated that "there is good coordination with the international NGOs but we still suffer from programme duplication. When an NGO implements a project they don't give us the GPS coordinates and beneficiaries information. So far, only one NGO shared such information." The government also needs local contractors instead of outsiders because these outsiders do not possess the right skills and lack the proper equipment to provide support to barley farmers

Relationships (governance) in the value chain

The farmers interviewed indicated that they are satisfied with their input suppliers. One of them stated that he has been dealing with the same supplier for more than 10 years. The relationships with wholesale and retail traders are also good and based on mutual trust. However, relations with the government appear problematic, especially with the employees at silos. One farmer explained that: "silo staff mistreats us and there are delays in the payments to farmers. I feel discouraged and annoyed in dealing with the governmental offices due to their behaviour". For that reason, he is also not willing to invest in the value chain, even though he had plans to increase his collaboration with other farmers.

Both farmers interviewed are open to the idea of working with other farmers, as it would help them improve their knowledge by exchanging information, assets and inputs. There are no formal contracts between farmers and traders. As one trader explained, "it is a social relationship thing. We don't have contracts for that."

Both traders interviewed are open to the idea of working with other upstream or downstream chain members. In order to support farmers and traders, a trader mentioned the need to establish warehouses in strategic locations.

Government support to development of the value chain

According to both farmers interviewed, the government does not provide any information or support to barley farmers. They are not satisfied with the performance of the Agriculture Directorate, the silo or the petrol station. The Directorate delays the share of gasoline allotted to farmers. When one of the farmers asked the Agriculture Directorate for support on how to use a fertilizer pump, support was denied.

While the government supports wheat cultivation, the same does not apply to barley. This has led most farmers

to replace barley cultivation with wheat. One trader stated that there could have been more governmental support to further develop their business, as well as more support for farmers. The same trader also mentioned that the only support he received was from an international NGO on storing the crops.

According to an industry expert, the growth potential for barley production depends on government policies and regulations and how much the government allows for imports outside of Iraq. Barley will always have potential for further development, the same expert elucidated, as demand for barley as animal feed will continue to rise.

According to an expert from the Agriculture Directorate, Iraq used to have its own centres for developing seed banks. However, these were destroyed during the war in 2003 and since then the government depends on farmers and private companies for seed production. The Agriculture Directorate has competent human resources, which could participate in the development of the barley value chain. However, financial resources remain limited.

The type of support received from the government remains unclear. Every year, the government develops an agricultural plan for barley production, and farmers subsequently submit their documents outlining their respective plans before planting. Based on their plans, farmers are provided with gasoline, seeds and fertilizers. Reportedly, there is a new government programme that provides loans to farmers and entrepreneurs who work in agriculture. However, due to the high interest rates, many farmers are not interested in this programme. However, another government expert stated that government support for barley production does not exist.

At present, there is no cooperation with other governmental institutions, although the Agriculture Directorate expressed the desire to cooperate with educational institutions such as the University of Mosul.

While some projects implemented by national and international NGOs currently exist, none support the barley value chain. Welthungerhilfe has provided support to the Agriculture Directorate with training to staff in agriculture and development.

Opportunities and challenges for value chain development

Opportunities:

- By providing better technical equipment, productivity could be increased among farmers.
- Given the high demand for barley, the number of farmers cultivating barley could be further increased. Barley is not only sold to livestock breeders as animal feed, but also to other companies producing barley flour and beer.
- There is potential to increase the income of women in the value chain, because many women work in livestock breeding or in cooking and cleaning of seeds.
- There is an opportunity to build more silos for storing barley.
- Barley processing also provides opportunities for job creation.
- In the past, barley was exported outside of Iraq (e.g. Lebanon); exports could resume if the government prevented the import of barley from neighbouring countries.
- Some support of barley producers from NGOs and FAO exists, but it is not sufficient.

Challenges:

- Dependency on rainfall, which is sometimes not sufficient for a good harvest.
- Government support is mostly focused on wheat and not barley. This means that most farmers have switched to wheat instead of barley cultivation. There are no future plans for support by the government.
- Fuel and fertilizer support are limited. Sometimes these inputs are provided after the harvest season, so the farmers are forced to buy fuel and fertilizer from the black market.
- Government support could include loans to farmers, compensation to war-affected farmers, and agricultural support in terms of fertilizers, seeds and machinery.
- In general, the quality of the barley produced is very low.
- Farmers need an approval letter from the government to sell their products, and at every checkpoint their produce is checked, which poses major challenges to farmers.
- More vocational training for new farmers to enter into barley production is needed.
- Financial support for the development of fodder factories is needed.
- Sale and transportation are hindered by traveling restrictions, which are particularly acute in Ninewa, and the difficulties encountered at checkpoints.
- Several fires broke out in Ninewa in the past years damaging especially wheat and barley fields.

- Since the start of the COVID-19 pandemic, farmers lost a lot of income.

Potential for investment and job creation in the value chain

In conclusion, the barley value chain holds low potential for job creation in Ninewa. By buying and distributing barley, the government closely controls the sector and the business opportunities for other uses of barley remain limited. Therefore, investing in businesses in the barley value chain is not recommended.

4.2.2 SHEEP

Focus area: Sinjar and Tel Afar

Context

Livestock (including sheep and goats, cattle, camels and buffalos) represents one of the major sources of protein and income for the rural populations of Iraq. Before the crisis in 2014, large state-owned industrial enterprises for dairy and poultry production were present around the main cities. Livestock represented 30 to 40 per cent of the total value of agricultural production. The performance of the small ruminant sector (sheep and goats) was severely reduced during the last decades, because animals were sold to neighbouring countries and due to loss of genetic potential and reduction in herd size. The small ruminant sector in Iraq also suffers from the lack of organization among producers.[59]

"Traditional" grazing of animals is still prevalent in Iraq. Flocks of sheep and goats, sometimes even cows, are grazed extensively on natural vegetation. The grazing animals sometimes consume crop residues available in nearby cropping areas. Some households also keep a few goats, sheep or even cows for milk - mostly for subsistence farming. Amongst farmed ruminants, the most important are sheep, cows and goats. In Iraq, over 80 per cent of milk comes from cows, while most of the remainder comes from sheep and buffalos.[60]

The livestock sector experiences several challenges in Iraq, including:

- Harsh climatic conditions, with very high temperatures in the summer and low temperatures in winter, as well as scarcity of water sources, especially in the western (desert) plateau and areas far away from rivers.
- Lack of veterinarians and factories producing vaccines leads to the spread of diseases along with a decrease in vaccination campaigns.
- Feeding: animals are often left to graze randomly, leading to some animals getting insufficient food, while it sometimes also leads to overgrazing.
- Breeding: there is a lack of sufficient experimental fields, which does not help in improving the natural selection of animals.
- The focus on goats instead of sheep has a negative impact on the environment, as goats are a threat to pastures since they tend to cause soil erosion, especially in mountainous areas.
- The lack of modern farms for raising animals that protect them from heat in summer and cold in winter negatively affects production.
- Slaughtering takes place outside the slaughterhouses, which has dangerous health effects on livestock and on human health - also due to the general poor hygienic conditions.
- Smuggling of sheep and goats outside the country to obtain high prices reduces the number of animals present in the country and consequently a rise in prices.

In the past, Iraq used to export hides and skins of bovines, sheep and lambs, but this practice has decreased significantly since 2014.[61]

In 2011, the total number of sheep in Ninewa was around 1.5 million, representing 85 per cent of the total number of animals.[62] More recent statistics on the number of sheep in Ninewa are not available. For the whole of Iraq, in 2017, the number of sheep exceeded 9 million. Traditionally, Ninewa Governorate has the highest number of sheep, followed by Anbar and Nasiriyah Governorate.[63] However, in Ninewa, the ISIL occupation led to large losses in terms of livestock, leading to a 20 per cent decrease in meat production.[64]

Due to COVID-19, a number of new challenges arose, as was shown in the context analysis. This includes the inability to

59 FAO, 2012, Iraq Agricultural sector note.

60 UNESCO, 2019b, Assessment of the Labour Market & Skills Analysis, Iraq and Kurdistan Region-Iraq, Agriculture.

61 Ibid.

62 Agricultural statistical atlas: roadmap for agricultural development (green economy). Central Statistical Organization, Ministry of Planning, Republic of Iraq. 2011, Part 1 (In Arabic Language). Available from: https://mop.gov.iq/page/view/details?id=8

63 CSO, 2017.

64 https://reliefweb.int/sites/reliefweb.int/files/resources/FAO_Assessment1.pdf

access urban markets to sell milk due to the closure of roads and restaurants, leading to an oversupply in local markets and a decrease in price.[65]

Value chain map

The value chain map for sheep in Ninewa is presented below.

Value chain actors

Input suppliers

The inputs needed for sheep breeding include the following:

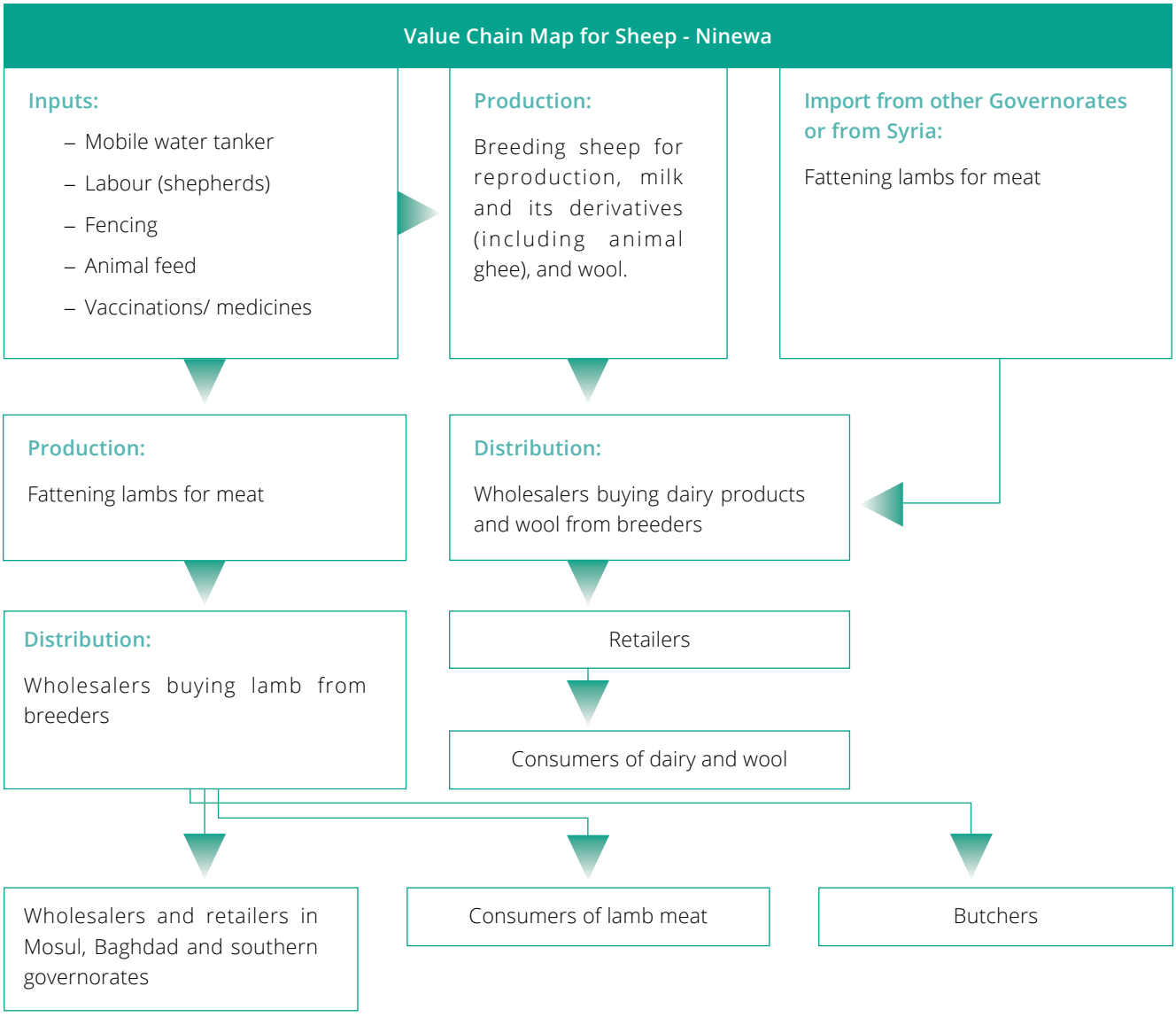
- mobile water tanker
- labour (shepherds)
- fencing
- animal feed
- vaccinations/medicines

During the first two weeks, special fodder needs to be given to lambs, consisting of bran, barley, grain and flour. Vaccination and anti-louse treatments are also required.

Production

In the sheep value chain, there are two main types of production:

- Fattening of lambs for meat;
- Breeding sheep for reproduction, milk and its derivatives (cheese, yoghurt, ghee), and wool.



65 Mercy Corps et al., 2020.

Two cattle breeders raising sheep were interviewed, one in Sinjar and one in Tel Afar. One of them has more than 250 sheep that move around depending on rainfall. The other farmer interviewed raises both lambs for meat and sheep for reproduction, milk and wool. At present, he has 200 sheep and 302 lambs for fattening. Lamb fattening and sheep breeding is conducted on a continuous basis.

The fattening of lambs for meat production takes about 3 to 5 months. Lambs are raised on the farm or bought from outside. They are fattened for a few months and are sold when they reach a slaughter weight of about 35-55 kg.

There are three courses for lamb fattening::

- Mid-May – mid-August
- Mid-August – mid-November
- Mid-November – mid-February

Breeders look for sheep sold at good prices and of good quality, that is, sheep that highly fertile and can produce a lot of milk.

In lamb fattening, waste is mostly caused by sheep morbidity. The most frequent cause is nervous disease, which is a form of listeriosis, most commonly but not exclusively, associated with silage feeding.[66]

In the dairy sector, the main products include milk, cheese and yoghurt. Sheep milk is often preferred because of its high fat content and is often used for cheese and yoghurt processing. On average, a sheep in Iraq can produce around 0.5-1 kg of milk per day over a period of 90 days per year (from April to July).

Waste mostly occurs during storage because of the lack of good storage facilities. Most dairy products are produced in spring and sold during summer and winter. Dairy products that cannot be stored have to be sold immediately. If they had improved storage, breeders would be able to store their products more properly and consequently sell more milk. Ghee can be stored for longer periods and tends to be sold in winter.

Hygiene is problematic during the processing stage, especially in dairy production. Also, animal fodder needs to be cleaned so that sheep do not catch diseases.

Farmers rated – from irrelevant to highly significant – factors influencing their decision to do business with major buyer(s), including:

The price buyers offer	Significant
The security of ongoing business with buyers	Significant/ Highly Significant
The volume buyers will buy from farmers	Significant
Lack of alternatives	Relevant
Practical help/advice offered	Irrelevant/Significant
Finance offered	Irrelevant/Significant
Long-term prospects of continued sales	Significant/ Highly Significant
The strength of the personal relationship with buyers	Average/ Highly Significant

Distribution

It should be noted that clearly mapping the sheep trade is difficult due to its multi-directionality, with traders buying from and selling sheep to breeders, but also selling sheep to butchers and consumers.

Breeders usually sell to traders on the local market continuously. There are no official markets for sheep. The wholesalers usually go to the breeder's location to buy the lambs. One breeder explained that he sells to 10 large wholesalers, and to 25 minor wholesalers who usually purchase 30-50 lambs each. Sheep are transported in trucks.

Wholesalers and traders who buy sheep and lambs in Sinjar and Tel Afar come from Ninewa and other governorates too, including Baghdad, Erbil, Najaf, and Karbala. The wholesalers sell the sheep to:

- Other wholesalers and retailers in Mosul, Baghdad and southern governorates
- Butchers
- Consumers

Butchers sell meat to consumers. In the case of dairy products, the products are sold through small vendors in the market.

One of the wholesalers interviewed, based in Sinjar, indicated that he buys sheep from traders from Sinjar, Ramadi, Mosul and even outside of Iraq, mainly Syria. As he explained, "I buy from them for two critical reasons, one, they meet my demand, second, the prices are reasonable." The other wholesaler interviewed, based in Tel Afar, buys from livestock

66 Silage is a type of fodder made from green foliage crops which have been preserved by acidification, achieved through fermentation.

breeders in Tel Afar, Sinjar, Ba'aj, Mosul, Sinuni, and Rabeeah. He also buys from livestock brokers in the sheep market. In total, he trades with almost 100 livestock fattening and breeding farmers. For this wholesaler, knowing the source of sheep is important because the quality and types differ for each region.

One wholesaler interviewed indicated that he sells approximately 150 sheep per month worth more than USD 20,000. For the other wholesalers, sales are highest during summertime. In summer he sells 500 lambs, 200 sheep and 100 goats per week, while in winter he sells about half of these numbers.

The two wholesalers responded differently to the question on certificates or quality standards. One of them explained that there is no need for certificates. The other wholesaler has a professional business license, endorsement from a veterinarian and another from the Ministry of Agriculture. The difference likely lies in the fact that the latter is one of the biggest traders in Ninewa.

Formal contracts are not stipulated between breeders and traders; only informal ones exist, based on trust and credibility. Nonetheless, delays in payment are still common.

The main challenge in the distribution is represented by checkpoints, which increases the costs of transportation threefold. Authorities do not allow trucks to transport more than ten lambs or sheep per time, which results in additional trips required and therefore, costs. This is a local regulation aimed at preventing the smuggling of sheep, which only applies to urban areas. In rural areas, moving the flock of sheep in search of green pastures is not limited by any regulation.

The presence of smugglers in the market is also problematic. They bring sheep illegally through the border with Syria and then sell them at very low prices. In 2018, the price of lamb meat had decreased as a result of the smuggling, which increased the supply of sheep in the market. After the smuggling stopped, the price increased again.

In terms of competition, one large wholesaler interviewed estimates that in Ninewa, there are around 15-20 wholesale traders, whereas there are around 50-60 breeders, traders, and butchers.

In terms of waste, some sheep die during transportation. These losses range between 4 and 10 per cent of the total volume of sheep.

Processing

The processing of lamb meat includes: transporting the lambs to the slaughterhouse, slaughtering, skinning, cutting in kilograms according to demand, and selling to retailers. The remaining parts of the meat are processed into minced meat.

Sheep milk is mostly sold raw, as consumers prefer to pasteurize and process the milk at home. One of the most valuable derivatives from milk, highly in demand especially in the south of Iraq, is ghee or locally referred to as 'free ghee', which is the fat part of sheep milk. Finally, sheep is also used for making wool, which is also high in demand.

Consumption

The final consumers of dairy products demand high quality and clean dairy products. In regards to meat, consumers and butchers look for fattened lambs because their meat is desired in the market. They prefer male fattened lambs because they tend to be fatter.

According to the industry experts interviewed, demand exceeds supply for sheep dairy products and lamb meat. Demand for lamb meat is continuous, especially in winter when demand exceeds supply. For dairy products, supply is not sufficient because factories that would buy all the sheep milk, process it and store it currently do not exist. This means that there is an opportunity to build more processing capacity. Doing so would also enable exporting dairy products. Demand for sheep wool and skins is high too.

Cost structure and prices

The main cost drivers for farmers include a mobile water tanker, labour (shepherds), fencing, animal feed and vaccinations/medicines. The main cost drivers for wholesalers in the value chain include transportation and animal feed during the storing period.

The selling price of the wholesaler is determined among livestock breeders, lamb fattening owners and traders. It depends on sheep availability, season, quantity of rainfall and transportation costs. Transportation represents a major expense because of the restrictions on the number of lambs allowed in a truck per ride (maximum 10 lambs), which means that the wholesaler has to make several trips.

The buying price is IQD 175,000 per sheep, with a weight of 32-35 kg. The selling price of a sheep by breeders is IQD 225,000-235,000 per sheep (USD 100 to 150) with a weight of 35-55 kg, depending on the age and whether the sheep is pregnant or not.

The profit margin of the wholesaler is between 5 and 12 per cent for each sheep sold to buyers. As one wholesaler explained, "the profit is relatively small because of the huge cost of transportation due to check points. But when the volume of purchased cattle is high, it can still generate a fair profit."

The average prices of sheep along the value chain, produced in Ninewa, are as follows:

ACTOR IN THE CHAIN	SELLING PRICE
Farmer	225,000-235,000 IQD per sheep
Wholesaler	250,000-275,000 IQD per sheep
Retailer	300,000-350,000 IQD per sheep

The average prices of sheep milk along the value chain, produced in Ninewa, are as follows:

ACTOR IN THE CHAIN	SELLING PRICE
Farmer	1,250 IQD / liter
Wholesaler	1,500 IQD / liter
Retailer	1,750-2,000 IQD/ liter

Communication and information flows

Breeders receive medical information from their input suppliers about vaccines and disease control and on how to use the vaccines. One breeder interviewed indicated that he also receives useful information from traders and wholesalers on the spread of diseases, such as smallpox, plague, foot-and-mouth disease, which affect livestock in neighbouring countries before reaching Iraq, so he can take precautionary measures and suitable vaccines.

On the market side, breeders receive information about the market price and its fluctuations, and the type and sex of lambs in demand. They also receive information about the type and colour of sheep that produce higher amounts of milk, so that breeders can increase milk production.

There is a lack of information about sheep fertility; if breeders were better informed, they could increase the reproduction of sheep. One wholesaler indicated that he would like to know more about customer's preferences so that he could supply the right type of products.

Relationships (governance) in the value chain

The breeders interviewed have dealt with their major input suppliers for many years. One of them is satisfied with these relations as they are trustful. The other breeder is not completely satisfied due to lack of trust. He gave the following example: "the suppliers would tell me that the sheep sold produces 6 liters of milk per day but it turns out that in reality it is much less. This occurs frequently. Therefore, I typically don't buy from random people." Establishing a formal sheep market, which does not exist now, would help in solving these issues.

As for the relationships between breeders and buyers, these are very stable and sometimes date back to 20 years. There is mutual trust and friendship because buyers know that the products are clean and of high quality. There are usually no contracts in this business.

One of the wholesalers interviewed has been supplying local farmers for the last two years. He indicated that "they buy from us because they trust the quality of our products and safety of doing business with us. I also give them products on credit for more than 6 months."

One of the breeders stated that he has never made investments to meet the requirements of a buyer or another downstream chain member, because he has a guaranteed demand for his products. Both sheep breeders are willing to invest in the value chain. One of them stated that "in the future, I am considering an investment with other actors in the chain to increase the number of lambs and sheep, but at present my stockyard is not big enough to have thousands of lambs and sheep. I intend to build a new, larger stockyard if I get the capital to do so." They are also open to the idea of working with other breeders in partnership in different stockyards as there is strong demand for their products from Ninewa and other governorates, including Baghdad.

They both indicate that they feel incentivized and encouraged by their buyers. One of them indicated that "I often get baksheesh (bonus money) from the wholesalers for prior informing them about my sales as I am trustful, and my goods are excellent and highly rated."

One of the breeders emphasized the profitability of sheep: "Livestock is like recycling in Sinjar, there are always opportunities for doing continuous business. A lot of people find it a very secure and safe business to start. There is a common proverb in Sinjar which says "Sheep, the fast wealth".

The wholesalers and industry experts are also optimistic about the prospects of a sheep value chain. One wholesaler stated that "live sheep are the most important factor in this value chain, and they produce the dairy products and help families and individuals to find sources for living." The wholesalers interviewed are both open to the idea of working with other upstream or downstream chain members, as it would help to expand their business, build partnerships across the value chain and create better engagement with the community.

According to an industry expert interviewed, public markets are needed in higher numbers to encourage more people to start a livestock business. As well, if transportation between

governorates was eased, it would enable marketing sheep products within the country. The main barriers to entry for producers include lack of capital, lack of investments and lack of official markets. Also, they need sufficient experience and knowledge of the market and consumer demands.

The growth in the value chain would generate new job opportunities, for instance for butchers. By increasing the number of livestock produced, the price would decrease and butchers would be able to increase their turnover and consequently employ a worker. The value chain also provides opportunities for women because many women (including from female-headed households) work in livestock breeding and fattening lambs. They are also involved in cleaning the stockyards, foddering, and watering.

Government support to development of the value chain

According to FAO, there used to be programmes for livestock aimed at developing local production of sheep and goats, cattle, camels and poultry, by upgrading the genetic potential of the local breeds, improving pastures, increasing the technical coefficients, intensifying vaccination campaigns and modernizing equipment and facilities including slaughterhouses and refrigeration plants.[67]

Based on interviews with several actors in the sheep value chain, the current situation has changed significantly. According to a government official, before 2014, loans were granted for building stockyards and fencing, but after ISIL's occupation only subsidized animal feed is available. Financial resources are lacking, but, nonetheless, sufficient agricultural engineers and technicians for establishing training programmes are available in Ninewa.

The Agriculture Department is working in close coordination with farmers, and supports them with fertilizers, medical treatment and vaccines.

The Agriculture Department prepares an annual plan for the region of Ninewa. This year, the agriculture office has supported the livestock breeders with subsidized barley, 90 kg per sheep or lamb, at a price of 220,000 IQD/tonne (compared to the market price of 240,000 IQD/tonne). There are also information sessions for livestock breeders on the methods for fattening, producing, and diagnosing animal diseases in the region.

According to the same government official, there are no specific projects on developing the sheep value chain. There are no factories to support the farmers. The government is encouraging NGOs to provide more support. He stated that "we are in need of durable projects and factories to improve the value chain for livestock".

The wholesalers interviewed also indicated that they have never received any government or other support, except for selling animal feed at a subsidized price. According to the industry experts interviewed, more support is required for local farmers through animal feed, fencing and mobile water tanks.

Training is required, including better methods of production, diagnosis of diseases, as well as training on slaughtering, skinning, cutting and mincing the meat.

Only a few NGOs work in the sheep value chain. Reportedly, this includes WHH, Samaritan's Purse (SP), ACF and some other NGOs but the respondent did not have specific information about their activities. One NGO reportedly provided pools to wash sheep in several villages, supported farmers with poultry installations projects and supported the Agriculture Department in Tel Afar with laboratory machines and furniture.

Opportunities and challenges for value chain development

Opportunities:

- Sheep breeding is a very stable and safe business to start, a certainty even captured by local proverbs ("Sheep, the fast wealth").
- There is high demand for lamb meat, especially in the winter season when demand exceeds supply.
- The demand for dairy products is high, and the supply is low because there are no factories that can buy all the sheep milk, process it and store it. This means that there is an opportunity to build more processing capacity. This would also enable the export of dairy products.
- The high demand for sheep wool and skins.
- Sheep breeders are willing to invest in the value chain, including in the expansion of stockyards to keep lambs and sheep.
- The sheep value chain offers many opportunities to generate new job opportunities, for instance for butchers. Also, many opportunities exist for women to work in livestock breeding and fattening of lambs. Women are also involved in cleaning the stockyards, foddering and watering.

67 FAO, 2012, Iraq Agricultural sector note

- The government has sufficient agricultural engineers and technicians for establishing training programmes but they have a lack of financial resources.
- There is an opportunity to provide training in better methods of production, diagnosis of diseases, as well as slaughtering, skinning, cutting and mincing meat.

Challenges:

- Lack of animal fodder and the high price of fodder.
- Mines and remnants of war contamination.
- The presence of animal diseases.
- Lack of official markets for sheep.
- Obstacles at checkpoints, which increase the cost of transportation threefold.
- Presence of smugglers that bring sheep illegally through the Syrian border and then sell them at very low prices (this seems to have decreased in the last 2 years).
- During the lockdown, accessing urban markets to sell milk was impossible due to the closure of roads and restaurants, leading to an oversupply in local markets and a decrease in price; this problem might be solved by now.
- Limited capacity to store dairy products.

Potential for investment and job creation in the value chain

After analysing all data and given that the products most in demand are meat, milk and wool, the assessment concluded that the highest potential for investment and job creation in the sheep value chain in Ninewa is in the following three options:

1. Raising sheep for meat: this is the best opportunity because of the high demand for Iraqi sheep meat, which is appreciated by consumers. Iraqis are used to consuming it frequently for lunch or dinner and sometimes even for breakfast.
2. Raising sheep for dairy production: Many products can be derived from sheep milk, such as cheese, butter, fat and milk. This process is usually carried out by women. Ninewa is well known for the production of famous and high-quality types of cheese in Iraq. The business case could be further developed for other types of dairy products too.
3. Raising sheep for wool and sheepskin production: Sheep are also raised for their wool to be used in the garment industry. Iraq used to have a large number of tanneries in most of the provinces of Iraq and in Ninewa in particular, where the skins were exported officially or unofficially to neighbouring countries. At present, the number of tanneries has decreased significantly due to the large number of leather imports, especially tanned and ready-to-manufacture leather products from neighbouring countries, which are sold at a very low price.

Raising sheep for meat – estimated investment cost and job creation

Sheep are raised to produce meat and the minimum size to make a profitable business case is up to 50 heads of sheep. Two persons are responsible for sheep breeding and taking care of food, water and the barn where sheep sleep. Since the average price of one sheep (aged less than 6 months/ weight 6-8 kg) is IQD 120,000, the price of the herd would amount to IQD 6,000,000 (for 50 sheep in total). The sheep breeder pays a lower price if the sheep is newborn and the lactation stage has ended (IQD 80,000-100,000). The sheep is raised until it is one year old, after which it is sold for slaughter and used for meat.

Initial investment cost:

- 50 Sheep x 120,000 = IQD 6,000,000 = USD 4000
- Barn cost = USD 500

Initial investment needed: USD 4500

Operating cost:

- Feed for 4 months = USD 500x 4 months = USD 2000
- Medicines and vaccines = USD 100 x 4 months = USD 400
- Salaries of workers:

  USD 500 x 2 workers x 4 months = USD 4000 per month

Operating cost for 4 months USD 6400

Total investment cost for four months: (Initial investment + operating cost) = USD 4500+ USD 6400 = USD 10,900

Employment creation:

It is estimated that two people can be employed in each project. In Ninewa, it is estimated that a minimum of 100 projects could be established. This means that at least 200 people could be employed.

Total potential job creation: 200 jobs

Raising sheep for dairy production – estimated investment cost and job creation

Sheep give between 260-370 kg of milk annually. Sheep can be milked either manually or using a mechanical milking machine. The price of a sheep ranges between USD 200-700. The period of milk production for ewes lasts between 4 and 8 months, during which they are milked twice a day.

The time needed by the novice to milk all his ewes ranges between 10 and 15 minutes, and with practice, it can be reduced to 5 minutes; therefore, to collect milk from 50 ewes, three workers are needed daily, to milk the ewes twice (in the morning and in the evening) . The ewes continue to give milk after each birth and ewes are born every 6-8 months, meaning that the milk will not be discontinued throughout the year, but when ewes are three years old, the amount of milk produced decreases and they are then sold for their meat.

Initial investment cost:

- 50 Sheep x USD 80 per sheep = USD 4,000
- Barn cost = USD 500

Initial investment needed: USD 4,500

Operating cost:

- Feed per month = USD 500 US
- Medicines and vaccines per month = USD 100
- Salaries of workers

  USD 500 x 3 workers per month = USD 1,500

Operating cost for 12 months: USD 2,100 x 12 = USD 25,200

Total investment cost for 12 months: (Initial investment + operating cost) = USD 4,500+ USD 25,200 = USD 29,700

The business case could be further developed for cheese production and other dairy products too. Some initial estimates of the potential revenues to be made from cheese production have been made (without taking into account the additional costs). The daily production of milk for 50 ewes reaches 50 liters per day, which means 1500 liters per ewe per month. When converting this milk into cheese, the amount of cheese produced per month is 300 kg because 5 liters of milk yields 1 kg of cheese. The price of 1 kg of cheese is about IQD 8,000, so the total monthly revenues are IQD 2,400,000 or 1,600.

Employment creation:

It is estimated that three people could be employed in each project. In Ninewa, it is estimated that a minimum of 100 projects could be established. This means that at least 300 people could be employed.

Total potential job creation: 300 jobs.

Raising sheep for wool and sheepskin production

No full investment projection is made for this opportunity, but some initial data are provided to give an idea about the potential additional benefits to sheep breeders. The season for shearing wool in Iraq is in the month of April, when temperatures start to rise, and each sheep can give 3-9 kg of wool annually. The average sales price is about IQD 750/kg of raw, unrefined wool, which means that each sheep can give USD 2.5 of wool per year.

As for the production of leather, after slaughtering the sheep and making use of their meat, the leather is sold to the tanneries; the average price of a whole sheep skin is about IQD 1500-2000 Iraqi dinars, equivalent to USD 1-1.5.

All sheep breeders carry out this process alongside the meat or dairy production. This means that there are no additional job opportunities created, but sheep breeders can earn an additional income through this opportunity.

4.2.3 FIGS

Focus area: Sinjar and Tel Afar

Context

The Middle East is the origin of Ficus Carica or the common fig, one of the oldest fruit trees in the region. Hundreds of varieties are present in the region, even though the local agricultural departments have paid little attention to evaluate the different types of figs. Relics and traces of fig cultivation were found, among other areas, in Palmyra in Syria and Babylon in Iraq.[68]

Together with date palm, citrus, grapes, pomegranates, stone fruits (apricots, plums, peaches, almonds), pears, olives and apples, figs are one of the main fruit crops grown in Iraq. The quality of fruits produced in Iraq is generally low. Improper harvesting techniques and post-harvest handling are the most important reasons for their low quality.

68 Trees of Joy website, undated, Fig Varieties of the Middle East. Available from: https://treesofjoy.com/fig-varieties-of-the-middle-east/

Significant amounts of grape, fig and apricot fruits are dried and consumed in different ways in Iraq.[69]

The total yield in Iraq in 2019 was 76,570 hg/ha, which signifies a steady growth in production from 65,000 hg/ha in 2008. Exports were very small, with a total of 31 tonnes in 2017.[70] Compared to other countries, Iraq is a relatively small producer – the top five are Turkey, Egypt, Morocco, Iran and Algeria.[71] In 2019, the total cultivated area of figs in Iraq was 1,210 hectares, with a production of 9,265 tonnes. Ninewa is the second producer of figs with an annual production of 1,167 tonnes, after Salah al Din, which represents more than half of total production (Figure 5).

Value chain map

The value chain map for figs in Ninewa is presented on the following page.

Value chain actors

Input suppliers

Farmers buy the fig seeds locally or they produce their own seeds from the previous harvest. Only small quantities of fertilizer are needed. Pesticides need to be applied twice a year, before the first leaves sprout and once the fruit starts to ripen.

One of the problems that farmers are facing is that they have access to a limited number of suppliers. It would be good if there were more suppliers so they would have more choice. Farmers sometimes cannot obtain the required types of tree plants in time, or the right tools needed (e.g. a special type of saw)

Production

Two male fig farmers (or orchardmen) were interviewed, one in Sinjar and one in Tel Afar. Farmers plant figs during fall and spring. One farmer stated that the planting of a specific type of fig, called Yele Injer, takes place during June, whereas the harvesting starts by mid-August until the end of October. To be able to plant figs, the soil has to be suitable. Some soil needs to be burned before planting figs to make it more fertile. The cropping decisions are made by the farmer, depending on the rainfall. The yield depends on the amount of rainfall.

One of the farmers indicated that he grows first-class trees of figs and pomegranates and second-class mulberries and apricots. He also plants some vegetables like eggplants, tomatoes and onions to meet their income needs. He has 120 fig trees of different types like Agh Aghaj, Ahmed Qara, Islam Aghaje, Deri, Qezlar Aghaje, Shor Qara, Qaseb Qara and Uzun Uzun, among others. He also has 100 pomegranates trees, 30 mulberry treses and 20 apricot trees.

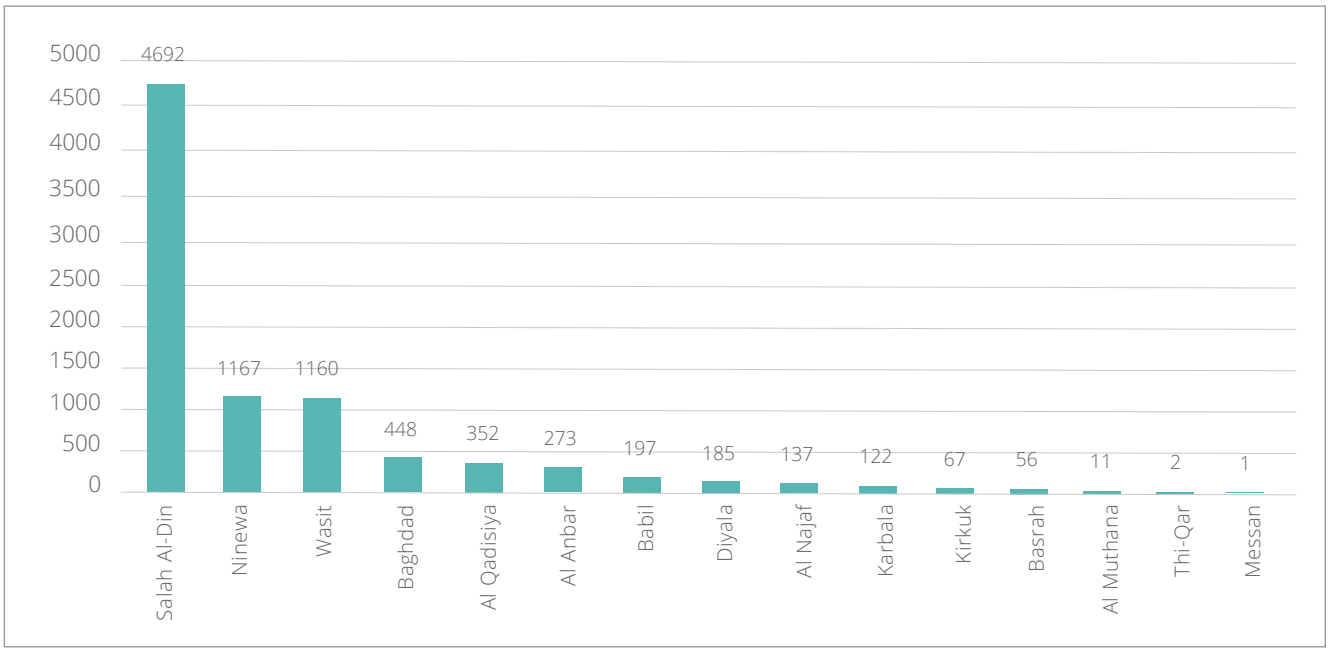


Figure 5: Production of figs in Iraq in 2019 (Ton); Source: CSO

69 Source: www.fao.org/3/Y9870E/y9870e07.htm

70 Source: https://knoema.com/data/figs+iraq

71 Source: https://knoema.com/data/figs+agriculture-indicators-production

Value Chain map for Figs - Ninewa

Inputs:

- Seeds
- Fertilizers
- Pesticides

Production:

- Production of figs by small farmers in the mountain areas of Sinjar and in the southern part of Tel Afar district
- Most of the figs are sold fresh or dried
- A small part is converted to jam or figs sweets (Figs Kibbeh)

Distribution:

- Wholesalers collect the figs at the farm or on the roadside

Retailers:

- Small shop keepers and grocery stores at local markets

Export:

At present, there is no export but there is potential for export of dried figs

Sales to other Governorates:

Upon request, figs are transported to Baghdad and Basra

Local consumers:

Most figs are consumed locally or in Mosul city

In Sinjar, fig production is rainfall-dependent. Due to a lack of irrigation channels, it is difficult to plant figs, especially in western Ninewa. In around 30-40 per cent of the fields, farmers combine fig production with other fruits such as pomegranates. Farmers start cultivation in March, while the harvest starts in August and continues until September.

Before 2013, the fig production area was more than 560 donum in Ninewa, but nowadays it is only 20 per cent of the original size, due to the damage caused by ISIL. Many Sinjar farms were burned down and abandoned after the attacks, so it is estimated that only half are still operating. The same goes for Tel Afar, where most orchards were burned down by ISIL. In Sinjar, figs are mainly planted on the Sinjar mountains because the soil is very suitable for this fruit. Karsi, Solagh, and Bara villages are very famous for planting figs. According to one farmer in Sinjar, "fig trading is not huge in the Sinjar area. We just plant the same donums every year to meet the market needs." In Tel Afar, the main fig orchards are located in the southern part of the district.

With regards to waste, if the figs are not harvested as soon as they are mature or big enough, they will go to waste. The same happens when the figs are left in the sun for more than two days after harvesting. There is also waste from figs that have fallen from the tree or when they are ripe but at an unreachable place, so they get eaten by birds and rodents. Some trees collapse due to strong winds. Total waste ranges between 15 and 20 per cent for figs (compared to 5% in pomegranates and 10% in mulberry).

Farmer's rated the following factors in their decision to do business with their major buyer(s) (from irrelevant to highly significant):

The price buyers offer	Significant
The security of ongoing business with buyers	Significant/ Highly Significant
The volume buyers will buy from the farmer	Average/Significant
Lack of alternatives	Relevant
Practical help/advice offered	Relevant/ Significant
Finance offered	Relevant/ Irrelevant
Long-term prospects of continued sales	Average/ Highly Significant
The strength of the personal relationship with buyers	Average/ Highly Significant

Distribution

Normally, figs are taken to the market immediately after being harvested. In Sinjar, farmers bring their figs from the mountains by donkey or car to the sidewalks on the main road and small markets to sell them to the local people or to wholesalers and retailers, because there are no nearby official markets. The wholesaler interviewed in Sinjar usually buys more than 50 bags of figs (more than 250 kg) at once.

In Tel Afar, the fruits are placed in plastic boxes or reed baskets, loaded on the farmer's truck and then delivered to the wholesalers/retailers who sell the figs in the green grocery markets. Alternatively, the wholesaler goes to the orchards to collect the boxes and baskets of figs and pomegranates, which are loaded by workers onto a motorbike or truck owned by the trader. The wholesaler has been buying from the same suppliers, a group of 20-25 orchard owners, for more than 10 years.

There is no storage because all figs are sold in the market as there is strong demand for this fruit during the season. Figs do not require refrigeration.

Farmers have dealt with the same buyers for 20-25 years; dealings do not involve contracts, but are based on respect, trust and mutual benefits. Every week, the farmer and wholesaler decide on the required quantities and the prices together. They also decide how many fresh and dry figs are in demand; dried figs are often the most popular.

Around 95 per cent of the figs are sold in the local markets in Ninewa whereas a small amount is also sold in Tel Afar and Mosul City. Upon request, farmers also prepare figs for selling in Baghdad and Basra, which are then transported by local residents.

The wholesaler from Sinjar usually has revenues of figs of around USD 200 per week. He estimates that his market share is around 65 per cent, and there are only three competitors in Sinjar.

For the wholesaler from Tel Afar, the sales of fresh figs during the season are around 300-500 kg per day, whereas before 2014 it was 800-1000 kg per day. The quantities produced are expected to increase in the coming years as the rehabilitated orchards are still small and only a few years old since they were recovered after returning from displacement. In Tel Afar, before 2014 there were between 6-11 wholesalers of figs, whereas now there are only two who collect and wholesale in the main market. The wholesaler interviewed estimates his market share at 60-65 per cent. He sells to 18-25 retailers whom he supplies with figs and pomegranates.

In Tel Afar, figs are also imported from Aqra, Sinjar and Sulaymaniyah, but in relatively smaller quantities.

The main causes of waste are the losses incurred during transportation from orchards to the market (3-5%) and also at the retailer's level due to tasting before purchase, as well as due to heavy weighting during sales (2-3 kg in total). When figs become putrid, they cannot be sold by the wholesaler, who has to bear their cost. This waste could be reduced if the wholesaler had suitable machinery to store the fresh figs for longer periods.

The wholesalers have no certificate or professional practicing document, but people buy from them due to their experience. Fig growing is an inherited business from one generation to another.

Processing

Farmers sell either fresh figs, or process them into dried figs or jam. Most farmers dry the figs while some convert them to jam. A small part of figs is converted into fig sweets (Figs Kibbeh), which are very expensive. For 3-5 kg, the price is almost IQD 70,000. There are seven dried fig producers in Tel Afar

Consumption

In both Sinjar and Tel Afar, local people are the main consumers of figs. Consumers demand clean figs of high quality, preferably slightly soft and not very sticky. For fresh figs, consumers prefer a fig that has not been stored for more than three days. For dry figs, they want to buy figs that have not been handled much so that they are still clean. The source of figs is very important for consumers. According to the wholesaler in Sinjar: "it is important to know where the figs originate from because people ask for local figs from the Sinjar mountains and I need to make sure that the farmers are not giving me figs that were not grown in Sinjar. They buy from me because Sinjar's figs are very famous."

In Tel Afar, people usually look for the desired fresh fig types like Ahmed Qara and Qaseb Qara; these are most in demand as they are tasty, sweet and large, and do not waste easily. There are also less demanded types like Qezla or Qezler Aghaje. Older people prefer this type due to its taste and smell. Agh Aghaj and the black fig are mainly used for drying.

Dried figs imported from Turkey, the United Arab Emirates and Saudi Arabia are present in the market. According to one industry expert interviewed, if the Tel Afar orchards were totally restored (there were more than 560 donum before ISIL), the products would meet the local needs and it would be possible to export dried figs to other governorates or to neighbouring countries.

According to industry experts, consumers prefer different kinds of figs depending on the region. In Sinjar, consumers prefer fresh figs, whereas in Tel Afar, they prefer dried ones. This is based on local customs and traditions in eating figs; the taste of figs grown at the top of the mountain differs from the taste of figs grown in the middle or in the valley below the mountain. Taste also depends on the method of irrigation, the amount of water used and climate.

Hygiene is important for customers, as they always want a clean product. The main problems are damaged figs, figs with holes (caused by wasps) or figs that were not picked correctly. The traders select and sell only clean figs. According to one wholesaler interviewed, on average, 10 per cent of harvested figs are wasted.

Cost structure and prices

The main cost drivers for farmers are fig seeds, fertilizers and pesticides. The main cost drivers for wholesalers in the value chain are transportation from orchards into the market, labour costs for loading and unloading the figs, and the cost of plastic boxes and reed baskets.

The buying price of the wholesaler is determined in close consultation with the farmer, while the selling price depends on local demand. As one wholesaler from Sinjar expressed: "I have good relationships with farmers and buyers, we easily make price decisions. Farmers need a reasonable price and I give it to them, and when selling the figs, I only add a little bit of value so that the price is reasonable for consumers." According to the wholesaler in Tel Afar, the price is defined depending on demand in the market by retailers and consumers, and the supply by the orchard owner. The desired types have a higher price and are sold more quickly.

The price of dried figs is much higher than the price of fresh figs. The price of fresh figs is currently relatively high because the orchards were ruined and burned during ISIL's occupation , so the supply is lower than before. After returning from displacement, the farmers cooperated to get some plants of trees that had various burnings.

The average prices of figs along the value chain, produced in Ninewa, are as follows:

ACTOR IN THE CHAIN	SALES PRICE
Farmer	Fresh figs: 1,500-2,000 IQD/kg Dried figs: 7,000-9,000 IQD/kg
Wholesaler	Fresh figs: 1,750-2,250 IQD/kg Dried figs: 7,500-10,000 IQD/kg

Retailer	Fresh figs: 2,500-3,000 IQD/kg Dried figs: 11,500-15,000 IQD/kg

The profit margin is different depending on the wholesaler. The wholesaler interviewed in Sinjar makes a profit of USD 0.50 per kg of figs. The wholesaler in Tel Afar mentioned profits ranging 250-500 IQD/kg and sometimes up to 750 IQD/kg. This is the gross profit including the transportation fee and labour cost as well as baskets costs. His net profit is estimated at 150-400 IQDs/kg.

Communication and information flows

Farmers stated that they receive information about fertilizers as well as about pesticides. They receive instructions from agricultural engineers and from the sellers. Farmers get information about good quality types of trees and sometimes exchange plants among themselves, especially those that are fruitful and desired in the market. Farmers also receive information from nursery owners about the best types of trees.

Sometimes they also get information from actors downstream the value chain such as collectors, wholesalers and retailers about the desired types and quantity. They also get information from them on how to reduce the wastage in transporting, loading and putting the boxes and baskets.

One farmer indicated that it would be useful to have more information about storing and taking care of the buds, to help farmers to grow more figs. Also, he mentioned that it would be good to have information from wholesalers or retailers about prices. Farmers would like to know when the supply is high, because then the price decreases, for instance figs are imported from other places in Ninewa, or from Sulaymaniyah Governorate.

Wholesalers would like to learn more about the preferences of consumers, especially from outside of their known markets. One wholesaler would like to know the desired types of figs by consumers and retailers in every season. For instance, in June, there is just one kind, called Yele Enjere, which is very desired due to its taste and size, but the quantity available is usually small.

Relationships (governance) in the value chain

Farmers noted that there is little investment and cooperation between different actors in the value chain. According to one farmer, "in the past (before 2005), there was more social cohesion among Tel Afar citizens and there was investment in time and money, for instance some persons would come to me and buy a number of trees for one season for an agreed amount of money. This is no longer happening now, everyone is on his own."

Both farmers interviewed stated that they are willing to cooperate with other farmers, because it would help them revive the sector in terms of planting fig trees. The farmers could share useful information and exchange trees of good quality types. As one farmer expressed, "after the ISIL attacks, many fig businesses have stopped and it would be great if there was support bringing us together and helping more farmers to start their businesses."

Both farmers interviewed stated that they are willing to invest in the future based on a continuing relationship with their buyers or other downstream members. One farmer stated that he feels incentivized and encouraged by the buyers both morally and materially as his products are praised in the market because they are of good quality and the figs offered are clean and fresh.

Generally, the wholesalers interviewed are satisfied with their relationships with farmers as there is mutual trust, but sometimes farmers raise their price when the harvest is small. This will cause consumers to look for cheaper imported figs. One wholesaler stated that he is very satisfied with the relationship with retailers and consumers as there is mutual trust, credibility, and cooperation. He even shares losses when there is no adequate demand due to imports of cheaper figs.

There are no formal contracts other than verbal agreements between farmers and wholesalers. Sometimes the orchard owners ask the wholesalers to pay money in advance so they are obliged to buy the farmers' products.

One of the main problems noted by wholesalers is the farmer's inability to produce sufficient quantities of figs to meet the demand. A higher number of orchards would address the issue. The wholesaler from Tel Afar mentioned that he feels motivated by the future prospects of the figs value chain, as more and more orchards will be rehabilitated, which will lead to higher supply of figs in the market. He mentioned that "the retailers pay a higher price for my goods than for the figs from competitors and imported figs, because my figs are clean and of high quality, which is very encouraging." Both wholesalers are open to the idea of working with other upstream or downstream chain members because "it will help many more people to revive their fig businesses and start again".

Entry barriers for farmers include a lack of experience and knowledge in the fig types in demand, knowledge about irrigation as well as fertilizers and a lack of transportation. Producers need financial support and training. If this support was provided, the fig value chain would offer very good business opportunities. Competition is already increasing as

more and more people are rehabilitating their orchards.

An industry expert estimated that in Sinjar, in one year more than 100 households could plant fig trees to make a living. In Tel Afar, it is also expected that jobs will be created, but no estimate was made on how many.

Fig orchards are run by both men and women. Many widows and even girls manage their orchards to earn an income. There are specific job opportunities for women because they are generally responsible for harvesting figs and managing the processes of dried fig production. This includes laying the figs to dry on the roofs, stirring and moving them, removing the wasted figs, as well as washing and cleaning them.

Government support to development of the value chain

Government authorities offer limited support to the fig value chain. In Sinjar, this is caused by a lack of staff and financial resources. In Tel Afar, the human resources are available, including engineers and technicians. They also have an annual plan in terms of priorities and cost. However, financial support is not available, including from NGOs.

According to the Directorate of Agriculture in Sinjar, farmers are provided with support - fertilizers and sometimes petrol. Also, coordination with other government authorities to maintain the security of the farms exists. The Tel Afar Irrigation Office is planning a programme to line the irrigation channels inside the orchards to reduce losses, streamline water and distribute it to all the orchard to increase productivity. The programme is focused on giving instructions and technical information to the orchard owners on how to increase the productivity, as well as providing technical advice such as separating fig and pomegranate trees into different lines, as they need different quantities of water, in providing instructions on how to use sprinkling and distilling pipes, as well as advice on planting fruitless trees around the orchard to protect the fruitful trees such as figs, as they need a clean environment to grow. At the moment, the Irrigation Office has not received approval for this programme yet. The office had provided similar support before 2014 and had noticed a positive effect on productivity.

The wholesalers interviewed have not received any support from Business Support Providers (BSP), donors or state-owned agencies. One wholesaler mentioned that support should be directed at opening more grocery shops in Sinjar, who would buy figs from farmers and help the markets flourish. In turn, this would also help the wholesalers to make a living.

According to an industry expert, if there was government or NGO support to restart the halted businesses and support the ongoing ones, demand and economic activity would increase in the fig market in Sinjar. There are prospects of increasing dried fig production as the orchards are increasingly restored (but they still need support from the government or NGOs for improving irrigation and transportation facilities). Also, there is a need for support in agricultural engineering to help farmers find suitable soil and take care of the planted trees during the different seasons. Training courses in fig jam industrial production are also needed.

At present, no organizations/institutions provide vocational training or skills development to fig farmers. The NGO WHH is providing training to farmers on starting a business (but not specifically to the fig value chain development).

Opportunities and challenges for value chain development

Opportunities:

- The Sinjar mountains are very suitable for fig production because of the soil. Karsi, Solagh, and Bara villages are very famous for their figs.
- There is a huge opportunity to restore the destroyed fruit orchards both in Sinjar and Tel Afar because of the high demand for figs and other fruits. In one year, more than 100 households could plant fig trees in Sinjar to make a living.
- People all over Iraq have a strong preference for figs from Ninewa because of their good taste and quality.
- There are prospects for increasing dried fig production as the orchards are being restored with support required in irrigation and transportation.
- There is potential for exports of dried figs or figs sweets (Figs Kibbeh), if production could be increased.
- Total waste currently ranges between 15 and 20 per cent for figs during production, transport and sale. If waste would be reduced, fig production would become more profitable. One of the solutions would include wholesalers' access to suitable machinery for storing fresh figs for longer periods of time.
- Farmers are willing to cooperate with other farmers, because it would help them revive the sector through planting fig trees. The farmers could share useful information and exchange good quality trees.

Challenges:

- Many Sinjar orchards were burned down and abandoned after the arrival of ISIL; only half of them are estimated to be still operating. The same goes for Tel Afar, where most orchards were also burned down.

- Farmers have access to a limited number of suppliers. A higher number of suppliers would be beneficial as it would increase farmers' choices.
- Farmers sometimes cannot obtain the required type of tree plants on time or the appropriate tools needed for fig production.
- There are entry barriers for farmers like the lack of experience and knowledge in demanded fig types, knowledge about irrigation as well as fertilizers and lack of transportation.
- Producers need financial support and training. There is a need for support in agricultural engineering to help farmers find suitable soil and to take care of the planted trees throughout the seasons. Training courses in fig jam production are also needed.
- Irrigation channels need to be cleaned from reeds in Tel Afar.
- Due to the lack of irrigation channels in Sinjar, it is difficult to plant figs; at present, farmers depend on rainfall only.
- Most farmers do not have the means of transportation to transfer their products to the local market.
- Grocery shops selling only figs currently do not exist in the area.

Potential for investment and job creation in the value chain

In conclusion, the highest potential for investment and job creation in the fig value chain in Ninewa includes dried figs and fig jam production.

1. Production of dried figs:

Dried figs are produced in Iraq by farmers, and northern Iraq is famous for producing high quality dried figs. Dried figs are produced by farmers' families and not in large factories. In each family, three persons can carry out the process of drying figs:

– After harvesting the figs, the harder ones are selected to withstand the drying process without being damaged.

– Thick strings of rope are used to tie together different sizes of figs into a sort of necklace, which accommodates about 1 kg of figs.

– No preservatives are added to the figs. Rather, drying happens by suspending the fig knots in the air and begins with dehydration followed by hardening.

– When the drying process has ended, figs can be packaged and sold to retailers.

Some small factories produce figs, where labels are added and figs are wrapped with nylon to protect them from insects and dirt. These are sold to central and southern markets of Iraq.

Economic feasibility of the project:

The price of 1 kg of fresh figs in the season does not exceed IQD 1,500. After drying, each 1.25 kg of fresh figs gives 1 kg of dried figs, so the cost of raw materials to produce 1 kg of dried figs is about IQD 1,800. Dried figs are available in the market at a price of IQD 8,000-10,000, meaning that the profit rate is about 6,000-8,000 IQD/kg of dried fig, which is an excellent profit rate.

Employment creation:

Since this is not a formal business opportunity but an additional activity that families can do to earn some extra income, no estimates could be made of the employment created.

2. Production of fig jam:

Most Iraqis prefer to produce jam in their homes because they thus avoid including harmful additives. But this does not mean that producing fig jam and selling it locally would not be profitable. On the contrary, there are many areas in Iraq where figs are not produced, so people from these areas buy fig jam manufactured in northern Iraq. It is also believed that producing fig jam would be profitable if the jam was produced organically for export outside of Iraq. Fig jam could be sold at very high prices, as shown by the neighbouring countries of Iraq, such as Turkey and Iran, who enjoy climates similar to northern Iraq.

Project for fig jam production – estimated investment cost and job creation
Initial investment cost:

– Nylon (shrink) packing machine = USD 5,000
– Vessel made of copper or stainless steel = USD 500
– Burner working on gas or gasoil = USD 150

Initial investment needed: USD 5,650

Operating cost:[72]

– Salaries of five workers: USD 600 x 5 workers = USD 3,000 per month

72 It should be noted that the cost of inputs (buying fresh figs, sugar, jars, nylon shrink, labels) have not been included here. This should be added when developing a more specific cost-benefit analysis, based on the estimated production per year.

– Gas or gasoil for burner: cost per batch of 625 jars = IQD 25,000 or USD 17 production of 25 batches per month = USD 425 per month

Operating cost per year: USD 3,425 per month x 12 = USD 41,100

Total investment cost for the first year:
(Initial investment + operating cost) = USD 5,650 + USD 41,100 = USD 46,750

Employment creation:

It is estimated that five people could be employed in each factory. In Ninewa, it is estimated that a minimum of 25 factories could be established in total. This means that at least 125 people could be employed.

Total potential job creation: 125 jobs

As an additional input for evaluating the investment potential, a rough estimate is provided for the economic feasibility of the project. If implemented in the form of a small project, it would be possible for five people to produce 0.5 tonnes of fig jam per day. Sugar is used in the production of jam, at a percentage of about 10-15 per cent of the weight of the figs, and the sugar solution is the preservative that keeps the jam from spoiling, provided that the jam is not exposed to water during the storage process.

Cost of equipment and other costs for establishing a small jam factory:

1. Vessel with a 1-meter diameter, and 0.5 m and 0.5 tonne of jam capacity, made of copper or stainless steel. Cost = USD 500.
2. Burner working on gas or gasoil. Cost = USD 150.
3. A glass package size of 0.5 kg and 1 kg with a tight cover. Price of 0.5 kg package = IQD 500 and of 1 kg IQD 750 IQD.
4. A nylon (shrink) packing machine. Cost = USD 5,000.
5. Label printing cost for 1,000 pieces = USD 100.
6. The monthly salary of one worker = USD 600.
7. Sugar is added at a rate of 10-15 per cent of the total weight of the mixture. For each half a tonne of fig jam, 50-65 kg of sugar is added. Based on a price of IQD 2000 per kg of sugar, the cost of sugar for each batch would be between IQD 100,000-130,000 or USD 80-90.

Cost evaluation for one batch of 500 kg of figs is as follows:

1. 500 kg of figs x 1500 IQD/kg = 750,000 IQD /fresh fig.
2. 50 kg of sugar x 2000 IQD/kg= 100,000 IQD /sugar/batch.
3. Workers (5 x USD 600/month = USD 3000/month), 25 working days, meaning 3000/25= USD 120/day workers wage = 174,000 IQD /day. That is, 174,000/2= 87000 IQD/ batch.
4. Based on the weight of one batch of 500 kg and jam jar capacity of 800 mg, the total number of jars produced/ batch = 500 kg/0.8= 625 jars/day. Each shrink = 6 jars, meaning the factory will have produced 104 shrinks / batch. Since each shrink will cost IQD 250 of nylon, the total cost of nylon shrink / batch would be = 104 x IQD 250 = IQD 26000.
5. Jar cost = 750 IQD/jar. Since we produce 625 jars/batch x 750 = IQD 468,000.
6. Gas or gasoil / batch = IQD 25,000.
7. Label / batch = 1 label= IQD 150, so 650 labels x IQD 150 = IQD 97.500

Total cost / batch = IQD 1,553,500 = 1,071 USD /batch.

Selling price = 4000 IQD/jar, total selling price/batch = 625 jars x 4000= IQD 2,500,000

Profit margin=2,500,000 – 1,553,500 = IQD 946,500 = 652 USD batch of 500 kg (or 38%).

4.2.4 SESAME

Focus area: Mosul and Tel Afar

Context

It is generally assumed that the sesame plant originated in Asia or East Africa, and it has been used by the ancient Egyptians, Chinese and Romans. Mystical powers have been assigned to it, and sesame still retains a magical quality, as shown in the expression "open sesame," from the Arabian Nights tale of "Ali Baba and the Forty Thieves."[73]

The whole sesame seed is used in the cuisines of the Middle East and Asia. Sesame oil is used as dressing or cooking oil, in shortening and margarine, and in the manufacture of soaps, pharmaceuticals and lubricants. Sesame oil is also used as an ingredient in cosmetics. The leftovers from oil extraction are also highly nutritious.[74]

73 Source: www.britannica.com/plant/sesame-plant

74 Ibid.

Sesame is one of the main crops for producing cooking oil in Iraq along with sunflowers. One of the most popular derivatives from sesame seeds is tahini, a paste of crushed sesame seeds, which is widely used in middle eastern cuisine.

The cultivated areas for sesame seed fluctuated substantially in recent years. The area increased up until 2005, after which it has decreased by almost tenfold, from 35,500 hectares to 3,714 hectares (in 2019).[75] Sesame production showed a similar decline, from 24,000 metric tonnes in 2005 to around 3,000 metric tonnes in 2019.[76] Most of the production is processed and consumed locally. Iraq is a net importer of sesame seeds due to low domestic production.

Value chain map

The value chain map for sesame in Ninewa is presented on the following page.

Value chain actors

Input suppliers

The only inputs needed for sesame production are seeds and fertilizer.

Sesame seeds are sometimes produced by the farmers, but most often bought from input suppliers (locally produced or imported from Afghanistan, Sudan, Turkey or South America). Sometimes, the quality of seeds sold by suppliers is low, but overall they are good. Only small quantities of fertilizer are needed for sesame cultivation.

Production

Sesame seeds are planted in March, April and May. Usually, sesame is planted in combination with tomatoes as a windbreak to protect tomatoes. The harvest time of sesame is usually between October and December.

When leaves start falling off the sesame plant, it is a sign that the seeds are ready for being harvested. According to one farmer interviewed in Mosul, it is a very difficult crop, both in terms of production and processing. Sesame requires a high number of workers for harvesting.

For every kilogram of seeds planted, the yield is around 100 kg. The average yield is 1-2 tonnes per donum. Two factors determine sesame productivity: the quality of soil and the right amount of water. Sesame cannot be cultivated on salty ground and the sesame plant needs to be watered every day. According to one farmer interviewed, the time of watering is very important. For instance, it is not recommended to water the plant in the afternoon.

Waste is not significant. If any waste occurs, it is during the harvesting process due to the large number of labourers.

The competition with imported sesame, which is cheaper than the Iraqi one, affects local production. The imported sesame is usually cleaner than the local one, because export countries use better technology and tools in harvesting and processing. However, locally produced sesame is generally considered to be of higher quality.

Farmer's rating of the following factors in their decision to do business with their major buyer(s) (from irrelevant to highly significant) include:

The price buyers offer	Significant
The security of ongoing business with buyers	Highly Significant
The volume buyers will buy from farmers	Average/Significant
Lack of alternatives	Average/ Irrelevant
Practical help/advice offered	Average/ Relevant
Finance offered	Irrelevant/ Significant
Long-term prospects of continued sales	Significant/ Highly Significant
The strength of the personal relationship with buyers	Significant/ Highly Significant

Distribution

The farmers do not store the seeds but sell to wholesalers immediately after the harvest. One farmer mentioned highly depending on the wholesaler: "The only way to sell my products is through the wholesalers. I know him only and do not have any network or any way that would enable me to reach the tahini factories." The same farmer mentioned having an agreement with a buyer to sell all his production. The farmer transports the sesame seeds from his farm to the wholesaler's warehouse using his own truck. The wholesalers are based in Al Qadima Industrial Zone in Mosul.

75 Source: https://knoema.com/FAOPRDSC2020/production-statistics-crops-crops-processed?tsId=1166930

76 Source: www.tridge.com/intelligences/sesame-seed/IQ

Value Chain Map for Sesame - Ninewa

Inputs:

- Seeds
- Fertilizers

Production:

- Sesame is usually cultivated together with tomatoes
- Both small and large producers
- The yield is around 100 kg of sesame seeds per 1 kg of seeds planted

Distribution:

- Seeds are sold to wholesalers immediately after the harvest
- Outside of the harvest season, wholesalers import sesame seeds to meet the local market demand

Oil extracting companies:

- Production of sesame oil

Bakeries:

- Production of sesame pastry

Tahini factories:

- Processing of sesame into tahini
- Around 40 factories in Ninewa, located in Bashiqa, Telkaf and Mosul

Consumers:

Tahini is consumed on a daily basis by all Iraqi people for breakfast

Export:

Tahini from Mosul is sold to other governorates in Iraq and exported on a very small scale for sales to Iraqi diaspora

Two wholesalers of sesame seeds were interviewed. There are two supply channels:

- They buy seeds daily from local farmers during the harvesting season (from mid-October until the end of December);
- They import seeds from outside of Iraq (during the rest of the year).

The wholesalers store the seeds in their warehouse for a short period of time only, because of the high demand. They indicated that they sell around 2-3 tonnes per day. The wholesalers sell to different customers, but the majority are tahini factories. The main customers of sesame in Ninewa are:

- Tahini manufacturing companies (around 40 companies located in Bashiqa, Telkaif and Mosul)
- Bakeries
- Oil extracting companies

One wholesaler interviewed indicated that most customers have been buying from him for decades. Another explained, "We have been supplying the same tahini factories for decades since my grandfather started the business. They buy from me because I am honest. Also, I do not offer cheap products, but only high-quality products."

Iraqi sesame is in high demand. Sometimes the demand exceeds supply, especially during winter (outside the harvest season). Wholesalers are looking for high quality, large-sized, clean and reasonably priced sesame seeds.

Wholesalers usually have a hygiene certificate, but no other certificates or standards. Hygiene is very important for the wholesalers. They indicated that they pay higher prices for clean batches, and lower prices for batches that are not clean and/or contain mud. This means in practice that the wholesaler pays IQD 1,950,000 for a batch of clean sesame, while he pays only 1,800,000 for non-clean batches (7.5% price reduction). A batch of clean sesame usually has a weight of 16 tonnes.

Waste is not a major problem during distribution. Some waste results from improper storage. Improved standards of warehousing would help in reducing waste.

Processing

As indicated above, there are three main types of sesame processing:

- Tahini manufacturing
- Use of sesame in pastries by bakeries
- Oil extraction

Tahini is manufactured by extracting sesame oil in a special press, and the sesame residue is an excellent fodder for sheep and cows. A large tahini industry was located in Mosul, specifically in Bashiqa and the surrounding areas, which had many factories. Employment rates for each factory reached 30 to 40 workers, with a production rate of up to 40 tonnes of tahini per day. But after ISIL's occupation of Ninewa, all the factories were destroyed, and the equipment stolen. Recently, a process of renovation has begun in these factories, but on a smaller scale, providing employment for 7-8 workers and with a daily production of 4-8 tonnes. One kilogram of high-quality seeds can produce 800-900 grams of tahini.

The production stages of sesame oil (tahini) are as follows:

1. The first stage includes washing the sesame in water followed by soaking for five hours
2. Drying of sesame by exposure to sunlight
3. Sesame peeling (with specific machinery)
4. Washing of the sesame with water and salt to expel impurities
5. Washing with clear water, then drying the sesame by brushing it on the ground and exposing it to the air and sunlight
6. Roasting of the sesame in large ovens that run on gas oil and roasting to a certain level, known to the owners of the factories.
7. The pressing stage by using a pressing machine when the pure sesame oil is extracted
8. The final stage of packing in plastic or glass containers and labeling of the product.

It should be noted that most sesame producers in Bashiqa are Yezidis who left because of ISIL, abandoning tahini production too. Over the years, some have returned and resumed production. Sesame production and processing is now steadily increasing in Ninewa.

Consumption

The most popular use of sesame is in the local production of tahini, which is consumed by most Iraqi households, especially for breakfast. There is no demand for imported tahini because the quality is lower.

Other uses of sesame seeds include cooking oil (which is an expensive item), medicinal sesame oil, snacks and deserts (such as helwa), and pastries.

The tahini produced in Mosul is considered the best in all of Iraq. It is sold to other governorates and to a small

extent is also exported, including to the United Kingdom, the United States and Canada, where it is mainly sold to the Iraqi diaspora.

Cost structure and prices

The main cost drivers for farmers are seeds, fertilizer and labour. The main cost drivers for wholesalers in the value chain are rent, labour, petrol for transport and taxes.

The buying price of seeds is IQD 2,000/kg of high-quality Iraqi seeds and IQD 1,500 for imported seeds (depending on country of export).

The selling price of the wholesaler is determined on the basis of supply and demand in the market, the fluctuation in the exchange rate and the quality of the sesame. The selling price of locally produced sesame is higher than for imported sesame, but the quality is higher too.

The profit margin is a sensitive topic, and one of the wholesalers interviewed did not want to talk about it, which usually means the profit made is likely high. This is confirmed by the other wholesaler's response, who indicated that the profit margin is 50 per cent.

There is strong competition between wholesalers in Mosul: there are about 10 to 15 wholesalers, and each wholesaler's market share is 10 per cent or less.

The selling price of wholesalers is 3,500-4,500 IQD/kg for first class tahini. However, some producers sell it at lower prices because they mix peanuts to the sesame, which is cheaper.

The current market prices of sesame and Tahini along the value chain, produced in Ninewa, are as follows:

ACTOR IN THE CHAIN	SELLING PRICE
Farmer	1,800 IQD/kg for seeds
Wholesaler	1,820 IQD/kg for seeds 3,500-4,500 IQD/kg for Tahini
Retailer	1,850 IQD/kg for seeds 5,000-5,500 IQD/kg for Tahini

Communication and information flows

The farmers interviewed indicated that they do not receive any information from their buyers, nor from the Agriculture Directorate. They both expressed their need for better information about new technologies and new generations of seeds, as well as for trainings from consultants and engineers with international experience. As one of them expressed: "I urgently need support about the technologies that can be used in cultivating sesame". The farmers also need more information on the demand among final consumers, so they can adapt their production.

The exchange of information between farmers or between them and the suppliers of the main inputs and raw materials is a continuous process whereby farmers are keen to obtain information about the best types of seeds that are imported or the best fertilizers or pesticides.

The wholesalers interviewed indicated that they are well aware about the consumer's preferences. One of them indicated that he is interested to know if there are other ways to get more information on the sesame market.

Relationships (governance) in the value chain

According to industry experts, there are a lot of areas for improvement and innovation in the sesame value chain. Entrepreneurs experience some barriers for entering the sector, including lack of access to capital and lack of knowledge on how to produce high tahini. To open a very simple factory, access to finance is needed. As well, to be able to sell the products, a producer needs a network of merchants and wholesalers.

Farmers have a very good relationship with their seed suppliers, with whom they have worked for many years based on mutual trust, so they feel they do not require formal contracts. The same applies to buyers. As one farmer expressed, "I have known most of my buyers for decades. I am satisfied with our relationships since most of them have become friends. We do not have any kind of contracts in our business".

Both farmers interviewed are willing to strengthen cooperation with other actors, for instance buyers from factories, as long as this benefits the agriculture sector in Ninewa. They are not aware of any current initiatives to improve the value chain but are open to collaborate on projects supported by international organizations that aim to support the agriculture sector in Ninewa. One of the farmers mentioned that he has more than 250 donums of land (62,5 hectares) and is willing to allocate it for any kind of project. He stated that "the land in Rabiaa is one of the best lands in Iraq. With the right investments, it can cover all the food needs of Iraq."

The wholesalers interviewed have never received any support by Business Support Providers (BSP), donors or state-owned agencies. They both agree that the sesame value chain has very good potential for expansion. They are open to the idea of working with other upstream or downstream chain members. One wholesaler indicated that "sesame is a very important product that needs to be supported. The Iraqi

sesame is completely different from the imported sesame, it is of better quality and has a better taste. As wholesalers, we provide the link between the farmers and the factories so we can play a key role in improving the value chain."

The competition in tahini production is high but there is a lot of demand, so the market is not saturated yet. Many companies located in the Ninewa plains closed down in 2014; however, the number of new companies producing tahini is slowly increasing.

Working in a tahini factory requires some basic knowledge, for instance on how to roast the sesame and how to extract the oil, among others. Workers do not require any previous experience nor training in order to work in tahini production. However, some positions need previous experience such as working on the sesame grinder.

At the moment, no organizations provide any vocational training or skills development in sesame production or processing.

IOM and USAID are the only international agencies working on value chain development, but not focused on the sesame value chain.

Government support to development of the value chain

According to the Ninewa Chamber of Industry, before 2014, the tahini producers were getting support from the government through subsidized petrol. However, after 2014 this support stopped, and currently no support is provided. The Ninewa Directorate of Agriculture indicated that there are no government programmes, policies or strategies to support the value chain of sesame products. There is some coordination with the University of Mosul on research projects. Coordination with international NGOs is limited to data sharing and training of government employees.

With regards to access to finance, the Industrial Bank offers loans to businesses in general, and also to tahini factories, as they represent one of the main industries in Ninewa. The Agricultural Bank supports agricultural entrepreneurs, with a focus on barley and wheat production only. However, obtaining loans is very difficult.

Both government agencies interviewed indicated that they have no financial resources, but they have human capital and knowledge that could be capitalized on for any future intervention. The Ninewa Chamber of Industry is in touch with most of the manufacturing companies working in the private sector.

Throughout the period of sesame cultivation, there is a continuous flow of information from the Ministry of Agriculture to the farmers. One farmer interviewed indicated that he needs support from the government to prevent the import of sesame seeds or by increasing the import duties. He also suggested that sesame seeds should be included in the government's agricultural plans so that the government buys sesame seeds just as it does with barley.

In terms of education and training needs, knowledge on the cultivation process and harvesting is needed. The Ninewa Directorate of Agriculture employs experts who could provide training as well as land that could be used by new farmers. The directorate requires financial support to conduct the training At the moment, no organizations offer vocational training or skills development.

Opportunities and challenges for value chain development

Opportunities:

- Only low amounts of fertilizer is needed for sesame production.
- Many sesame farmers abandoned Ninewa after 2014 because of ISIL, but they are increasingly returning to cultivate sesame.
- Many tahini factories require sesame seeds so the market for sesame seeds is guaranteed.
- There is high demand for tahini, especially in winter. Demand is high in Ninewa, in other governorates with a potential increase of exports outside of Iraq too, especially to the United Kingdom, United States and Canada (due to the Iraqi diaspora).
- Sesame could be also used in new ways, such as in cosmetic products, if more advanced processing capacities were available. Production of sesame oil could also be developed.

Challenges:

- Iraqi sesame seeds are less liquid (due to a lack of water) and less clean, which discourages buyers from using Iraqi seeds compared to imported sesame seeds.
- Traditional methods of irrigation and fertilizing lead to dry seeds.
- Imports are generally of better quality and therefore preferred.
- Farms have been facing fires during the sesame harvesting seasons.
- Sesame is planted with tomatoes, mostly as a windbreak to protect the tomatoes.

- Planting is simple, but the harvesting is less so. There is a lack of technology to harvest high-quality sesame, and it is difficult to clean the sesame.
- Harvesting requires a high number of workers.

Potential for investment and job creation in the value chain

After analysing all data, the assessment concluded that the highest potential for investment and job creation in the sesame value chain in Ninewa is in increasing local sesame cultivation in combination with increasing local production of tahini. It should be noted that supporting tahini factories will have direct positive effects on job creation compared to local sesame production, which would take more time to develop. It is foreseen that tahini factories will continue to import sesame (as explained below), but that in the longer term, an increase in local sesame production is needed to supply the higher number of tahini factories in Ninewa.

Historically, the cultivation of sesame has been very important in Iraq, especially in northern Iraq (Ninewa and Erbil) and central Iraq (Babylon). Ninewa is very famous for planting sesame and producing tahini. However, sesame production showed a strong decline in the last 15 years, as shown in the context analysis. Iraq is currently a net importer of sesame seeds due to low domestic production.

At present, local tahini factories mostly use imported sesame. Around 75 per cent of the sesame used is imported from Afghanistan. This sesame is mixed with 25 per cent Iraqi sesame to add the Iraqi flavor to tahini, which is highly demanded by Iraqi consumers. Iraqi sesame has a very special taste that distinguishes it from other sesame varieties grown elsewhere, but its problem is that it contains less oil than other varieties. The Iraqi sesame contains around 55 per cent of fat, compared to Afghan sesame which has 61 per cent. As well, the color of Iraqi sesame tends to be darker than other varieties. If local sesame production increased, it would boost the production of tahini based on locally cultivated sesame.

One of the main problems that local sesame producers face is the scarcity of water. Sesame cultivation requires large amounts of water for irrigation. In Ninewa, the watering of crops depends on digging wells. In the northern region of Iraq, watering for crops depends on rainfall during four months per year (in the winter) and on wells for the rest of the year. Farmers are forced to dig wells at depths between 150 and 400 meters at a high cost. To drill a well, the approval of the Ministry of Water Resources is needed. The cost of drilling ranges from USD 18 to USD 80 per meter. This means that each farmer spends up to USD 2,000-3,000 per month on the purchase of gasoil to operate the generator to pump the water. As a possible solution, it is proposed to invest in solar-powered pumps to replace the traditional diesel-driven pumps, which would lower the production cost of farmers in the long term.

Establishment of a farm for sesame cultivation – estimated investment cost and job creation

For the present calculation, it is assumed that the following investments for establishing a medium-sized farm for the production of sesame seed are needed:

Initial investment cost:

– Solar powered pump	USD 10,000
– Sesame peeling machine	USD 5,000
Initial investment needed:	USD 15,000

Operating cost:

- Cost of inputs (seeds + fertilizer + pesticides)= USD 1,500 per month
- Salaries of workers: USD 500 x 3 workers = USD 1,500 per month

Operating cost per year: USD 3,000 per month x 12 = USD 36,000

Total investment cost for the first year:

(Initial investment + operating cost) = USD 15,000+ USD 36,000 = USD 51,000

Employment creation:

It is estimated that three people can be employed in each farm. In Ninewa, it is estimated that a minimum of 100 farms can be established. This means that at least 300 people can be employed.

Total potential job creation: 300 jobs

Establishment of a tahini factory – estimated investment cost and job creation

In addition to increased sesame cultivation, tahini production holds very high potential for investment and job creation in the sesame value chain in Ninewa. This is mainly due to the potential for planting sesame in Ninewa and the expertise available since it is a very old industry in Ninewa. Most importantly, tahini is in high demand all over Iraq, and could be possibly exported as well. Tahini factories also provide an opportunity for employing women, as many tasks in the production process are usually carried out by women.

Based on the many production stages involved in tahini production, a high number of labourers are required. For the purpose of calculation, it is assumed that the cost of establishing a small- to medium-sized factory for the production of tahini ranges from USD 7,000 to USD 10,000. The factory would also employ about eight workers and would produce six tonnes of sesame per day.

Initial investment cost:

- Cost of machinery = USD 10,000

Initial investment needed: USD 10,000

Operating cost:[77]

- Salaries of workers: USD 500 x 8 workers = USD 4,000 per month
- Gas oil for 25 working days = USD 1,333.33 per month

Operating cost per year: USD 5,333.33 per month x 12 = USD 64,000

Total investment cost for the first year:

(Initial investment + operating cost) = USD 10,000 + USD 64,000 = USD 74,000

Employment creation:

It is estimated that eight people could be employed in each factory. In Ninewa, it is estimated that a minimum of 20 factories could be established. This means that at least 160 people could be employed.

Total potential job creation: 160 jobs

As an additional input to evaluating the investment potential, a rough estimate is provided of the economic feasibility of the project:

1. Cost of sesame (6 tonnes) = IQD 12,000,000
2. Cost of 8 workers /Day = IQD 160,000 to produce 6 tonnes of tahini
3. Packaging (plastic jars and label) for 7500 jars (because each jar weighs 800 mg); cost of each jar + label = IQD 250, so the total cost of packaging = 7500 x 250 = 1,875,000 IQD /day/batch.
4. Gasoil for generator and burner = 80,000 IQD/day

The total cost for producing 6 tonnes/day of tahini is = IQD 14,115,000 = 9,735 USD/day.

The selling price for 6 tonnes of tahini /day = 6000 kg x IQD 5000 x 0.5 (% of extraction) = IQD 15,000,000.

This leads to a total profit margin / day = 15,000,000 – 14,115,000= 885,000 IQD/day (or 6%)

77 It should be noted that the cost of inputs (buying of sesame, jars, labels) have not been included here. This should be added when developing a more specific cost benefit analysis, based on the estimated production per year.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 INVESTMENT AND JOB CREATION POTENTIAL

This report provides an in-depth analysis of four agricultural value chains that were found to be among the most promising business opportunities in Ninewa (with a focus on Sinjar, Tel Afar and Mosul). The aim of this study was to understand economic opportunities and gaps in the local economy through value chain analysis. The four value chains analysed are:

- Barley
- Sheep
- Figs
- Sesame

For the first three value chains (barley, sheep and figs), the focus of the research was on Sinjar and Tel Afar, while for the last value chain (sesame), the focus was on Mosul and Tel Afar. For each value chain, the main conclusions and recommendations are presented below.

As an overall conclusion, it was found that three value chains are promising sectors for local economic development and decent job creation: sheep, figs and sesame. To stimulate local businesses, the sheep value chain looks the most promising in terms of job creation. With relatively small investments, this value chain offers opportunities to generate many jobs. For the figs and sesame value chains, there are also good opportunities, although the initial investments needed are significantly higher. Table 5 shows the opportunities for cash investment and job creation of these three value chains.

It was also concluded that there is very little potential for investment and job creation in the barley value chain in Ninewa, because the sector is highly controlled by the government, who buys and distributes barley, and due to limited business opportunities for other uses of the crop. Therefore, it is not recommended to invest in the barley value chain.

Table 5: Estimated investment and job creation per value chain in Ninewa

VALUE CHAIN/BUSINESS OPPORTUNITY	ESTIMATED INVESTMENT COST FOR THE FIRST YEAR PER BUSINESS	ESTIMATED JOB CREATION PER BUSINESS	ESTIMATED TOTAL JOB CREATION
Sheep - Raising sheep for meat	USD 10,900	2 jobs	100 new businesses x 2 = 200 jobs
Sheep - Raising sheep for dairy production	USD 29,700	3 jobs	100 new businesses x 3 = 300 jobs
Sheep - Raising sheep for wool and sheepskin production	No initial investment needed	No extra jobs created, but it can provide sheep breeders with additional income	No extra jobs created
Figs - Production of dried figs	No initial investment needed	No extra jobs created, but it can provide fig farmers with additional income	No extra jobs created
Figs - Production of fig jam	USD 46,750	5 jobs	25 new businesses x 5 = 125 jobs
Sesame - Establishment of farm for sesame cultivation	USD 51,000	3 jobs	100 farms x 3 = 300 jobs
Sesame - Establishment of Tahini factory	USD 74,000	8 jobs	20 factories x 8 = 160 jobs

From these data, it is possible to calculate the estimated social return on investment in terms of the investment in dollars per job created for each value chain (Table 6). The investment needed per job created ranges between USD 5,000 and USD 17,000. It appears that sheep breeding for meat offers the best social return on investment, raising

them for dairy production has a relatively high cost per job created. Investments in the processing of dried figs and sesame/tahini are also relatively capital intensive, but at the same time, these investments create significant numbers of jobs.

Table 6: Estimated social return on investment in terms of the investment in dollars per job created for each value chain in Ninewa

VALUE CHAIN/BUSINESS OPPORTUNITY	ESTIMATED INVESTMENT IN DOLLARS PER JOB CREATED
Sheep - Raising sheep for meat	USD 5,450
Sheep - Raising sheep for dairy production	USD 9,900
Sheep - Raising sheep for wool and sheepskin production	n/a
Figs - Production of dried figs	n/a
Figs - Production of fig jam	USD 9,350
Sesame - Establishment of a farm for sesame cultivation	USD 17,000
Sesame - Establishment of a tahini factory	USD 9,250

5.2 RECOMMENDATIONS FOR IOM

Based on the value chain study in Ninewa, the following recommendations can be made for IOM interventions to promote local economic development in conjunction with job creation for people who are in socioeconomically vulnerable situations.

To promote employment of target groups, IOM could consider many actions addressing the final beneficiaries as well as institutional recipients, boosting the sustainability of the intervention.

As immediate actions in support of unemployed people, IOM could:

- Support agricultural value chains of sheep (with a focus on meat and dairy), fruit production (with a focus on figs) and sesame (with a focus on tahini production). The selection of which value chains to develop and which businesses to support needs to be made based on proximity of markets, agricultural areas and accessibility for traders, as well as existing skills of the target beneficiaries;
- Develop skills of unemployed people in production, processing and trade of the identified value chains;
- Develop specific feasibility studies for the identified value chains with high market potential in each district of Ninewa;
- Provide financial support and technical training for start-up and management of micro-enterprises in the identified value chains;
- Consider partnering with public and private microfinance institutions (including the Agricultural Cooperative Bank) to increase the credit threshold and credit access/collaterals and guarantees;
- For the identified value chains, identify all existing and potential suppliers of vocational training including local businesses, craftsmen and small entrepreneurs, and involve them in the provision of skills development and as a pool of business counsellors and mentors to follow up on the target groups' new businesses. Skills development would include coaching of new entrepreneurs, making them part of their chains of production and value chains;
- Support the establishment of women and youth sustainable enterprises/cooperative societies involved in production, manufacturing and trading in the identified value chains;
- Support the establishment of self-help groups or cooperatives for promoting saving and credit schemes for setting up small businesses, including for farms, shops, storage facilities and means of transport;
- Promote gender-responsive individual and group endeavours for young women.

As immediate actions in partnership with national and local institutions and international stakeholders, IOM could:

- Cooperate with the local authorities (including Directorate of Agriculture and Directorate of Trade) in assigning agricultural land and providing extension services to the target beneficiaries;
- Address two of the major problems in agricultural value chains in Ninewa – the destruction of farms as a result of the 2014 crisis and high transport costs due to checkpoints – with international partners and with the relevant government authorities;
- Strengthen Business Development Services in collaboration with the Chambers of Commerce and Trade;

- Support the Directorate of Labour to extend coverage of active labour market measures for unemployed youth, including training needs assessment, initial Labour Market Information, and skills development/vocational training;
- Advocate for the improvement of local market structures and road infrastructure by the government and development partners as a necessary condition for the promotion of marketing of locally produced goods and for export of goods;
- Advocate for improved government policies around market prices, taxes and customs regulations, focused on a more business-friendly approach, including the facilitation of obtaining export licenses for small businesses;
- Advocate for the ending of the delays in payments to farmers by the government;
- Promote the opening of new tahini factories to increase the supply of locally produced tahini that is in high demand locally, in other governorates as well as possibly in export markets as well;
- Support small entrepreneurs in developing online shopping services.

To ensure gender-responsive programming, the following is recommended to IOM:

- Promotion of a more gender-balanced distribution of land by the Department of Agriculture and assistance to women to own land and have access to agricultural training, extension services, inputs and tools;
- Assistance to women to start up and develop business along the recommended value chains;
- Equal access for men and women to technical training and entrepreneurial skills development for decent employment.

ANNEX A: SWOT ANALYSIS FOR THE VALUE CHAINS WITH HIGH POTENTIAL

In this Annex, the SWOT analyses are presented for the eight value chains with high potential. The analysis was done during a workshop with the IOM team from the south region, guided by the value chain consultants. The information is based on the data collected during the earlier phases of the research, including the context analysis, the consumer and market vendor survey, as well as on the in-depth knowledge and experience of the IOM team in the region.

1. Barley

Strengths	Weaknesses
– Good skills and knowledge of farmers – Availability of equipment (harvesters/tractors) for producing barley	– Low profitability because of high imports of barley – As there are many varieties of barley, farmers select the cheapest varieties, which cannot be sold at a high price – Some farmers switched to other crops, other farmers plant barley on a seasonal basis (together with vegetables – especially tomatoes)
Opportunities	**Threats**
– Sometimes the Iraqi government sells the seeds to farmers at a lower price – Opportunity for exporting if the government signs trade agreements with other countries	– Barley depends on rain-fed agriculture – Burning of barley fields in the last 2 years (but it is unknown who caused these fires) – Destruction of grain silos during the war (in all Ninewa)

2. Figs

Strengths	Weaknesses
– High quality of products – High local demand (especially in Sinjar/Ninewa/Duhok) – Availability of special kind of figs (only produced in Tel Afar/Sinjar)	– Orchards were destroyed by ISIL for fuelwood. This has led to a higher price of figs (current price is 2500 IQD/kg compared to 750 IQD/kg before the war). – As a result of the destroyed orchards, farmers have lowered their production, leading to lower revenues.
Opportunities	**Threats**
– Opportunity to renovate fig orchards – Preventing the import of figs from outside Iraq – Opportunity for fig jam production	– Absence of new agricultural technologies in fig production – Unstable security situation in Ninewa; farmers are afraid to lose their orchard again

3. Olives

Strengths	Weaknesses
– Many orchards, especially in Ninewa Plains – Possible to use rainfed irrigation – In Bashiqa, many factories produce olive oil (olive oil from Bashiqa is very famous) – Locally produced goods in Ninewa use olive oil, like soap and shampoos – People prefer local products	– Lack of workers due to displacement of many people – Techniques used in Iraq are old and not very advanced, particularly in fertilization and tree care. With modern cultivation methods, a container of mud can irrigate the trees with better water quality. – Most orchards have been destroyed and new trees take time to produce enough to be profitable
Opportunities	**Threats**
– Olives and their products could benefit from better marketing and distribution strategies – There are additional products that could be developed such as face masks and moisturizer that are not yet produced in Iraq, as well as medical products that use olive oil	– Imported Turkish and Syrian olives are cheaper compared to Iraqi olives – They are better marketed and take advantage of the exchange rate difference

4. Sesame

Strengths	Weaknesses
– Many open areas are being used to cultivate sesame – Many people use sesame as livestock feed – There is high demand for sesame paste, especially in wintertime	– Iraqi sesame seeds are less liquid, which discourages buyers from using Iraqi seeds compared to imported sesame seeds – Old methods of irrigation and fertilization lead to dry seeds
Opportunities	**Threats**
– Many tahini factories require sesame seeds – Sesame can also be used in new ways, such as in cosmetic products, if more advanced processing capacities were available – Sesame oil production is not currently being done but could be developed	– Imports are generally of better quality and therefore preferred – Farms have suffered fires during sesame harvesting seasons

5. Sheep

Strengths	Weaknesses
– Availability of suitable areas for sheep raising – Presence of new factory for producing animal feed for sheep in Sinjar (supported by IOM/USAID) – High demand for sheep dairy products (milk, yoghurt, cheese) – High demand for sheep meat	– No big dairy factory in Ninewa, despite the availability of high quantities of milk – Due to high demand for dairy products, sometimes the small producers use inadequate products to mix with the milk, leading to low quality products (e.g. in the case of Iraqi cream)
Opportunities	**Threats**
– Shortage in fattening farms leads to high price for sheep; opening such farms would reduce the price – Increase the number of modern sheep markets – Old technology to feed sheep (moving them around leading to weight loss) can be replaced with zero-grazing methods	– Not enough veterinary clinics to serve all producers – Due to high price of Iraqi sheep meat, not everyone can consume it daily or weekly

6. Poultry

Strengths	Weaknesses
– Most people prefer local chicken – People prefer fresh chicken meat over frozen meat which means imported chicken is less popular – Eggs are already being produced and processed at scale	– The price of fresh chicken is higher than frozen chicken – Growing chicken takes time, which can create difficulty to compete with imports – Packaging is not good, chicken are typically sold whole rather than in pieces
Opportunities	**Threats**
– Piecemeal packaging usually comes from Syria or other countries as factories in Iraq don't have the machinery to package cut chicken pieces. With proper machinery, frozen chicken could be produced locally and then imports would be less favored – Local production doesn't currently cover local demand in terms of meat and eggs – Government has prevented the import of eggs, which led to an increase in price	– Some diseases can affect poultry farms, causing farmers to lose their entire growing cycle – Traders smuggle eggs from Turkey and other illegal channels

7. Buffalos

Strengths	Weaknesses
– In Mosul, the area near the river is the best area to grow buffalos – Production is very high and products from Mosul are exported to other provinces – The taste of the Gamer buffalo from Mosul is considered the best – There is less competition with imports for buffalo meat	– Only a few families work in Gamer production – Packaging is not done properly – Expiration dates are short due to poor packaging
Opportunities	**Threats**
– There is a high demand for Gamer cream – Buffalos can produce milk, cream, gamer and gishwa – If better packaged, products could be kept on the shelf for a longer time	– Farmers are obliged to live near rivers to be able to raise buffalos – Cheating in the process of production occurs, negatively influencing the quality and taste of the Gamer/giswha (such as mixing non-pure substances into it)

Selection of four most promising value chains

Based on a comparison of the SWOT analyses for each potential value chain, a final selection of the four most promising value chains was made. The main arguments for selection or deselection are listed in the table below. During the workshop, a score was assigned to each potential value chain on a scale of 1-10, to be able to compare and rank them

POTENTIAL VALUE CHAIN	MAIN ARGUMENTS FOR SELECTION/DESELECTION	SCORE BETWEEN 1 AND10
1. Barley	• High job creation potential • Opportunity for exporting barley • High competition from imported barley so reducing local production cost is needed • Fires and destruction of silos • Widely accepted by many people as an interesting income generating opportunity	9
2. Sheep	• High demand for both meat and dairy products • High prices • Lack of processing capacity, but could be developed	8.5
3. Figs	• High demand • Special fig varieties only produced in the region • Insecurity may lead to destruction of orchards	7.5

4. Sesame	• High demand • Much tahini factories that need sesame • Lack of rainfall leads to lower quality seeds • Problem of fires destroying the farms • Potential is better than in other regions in Iraq	7
5. Olives	• Olive oil from the region is very famous (Bashiqa) • Existing processing capacity in the region • Additional products can be produced from olive oil • Low job creation potential for farming, but high job creation potential for processing	6.5
6. Buffalos	• High production of special type of buffalo (Gamer) • High demand for cream • Other products can also be produced from buffalo milk • Lack of processing capacity • Quality is sometimes below standard	6.5
7. Poultry	• High demand for local chicken • High competition of imported chicken • Processing capacity could be improved/upscaled • Government has limited the import of eggs • Ninewa is not especially famous for poultry (compared to sheep/olives)	6

The four selected value chains for Ninewa region are as follows:

- Barley
- Sheep
- Figs
- Sesame

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