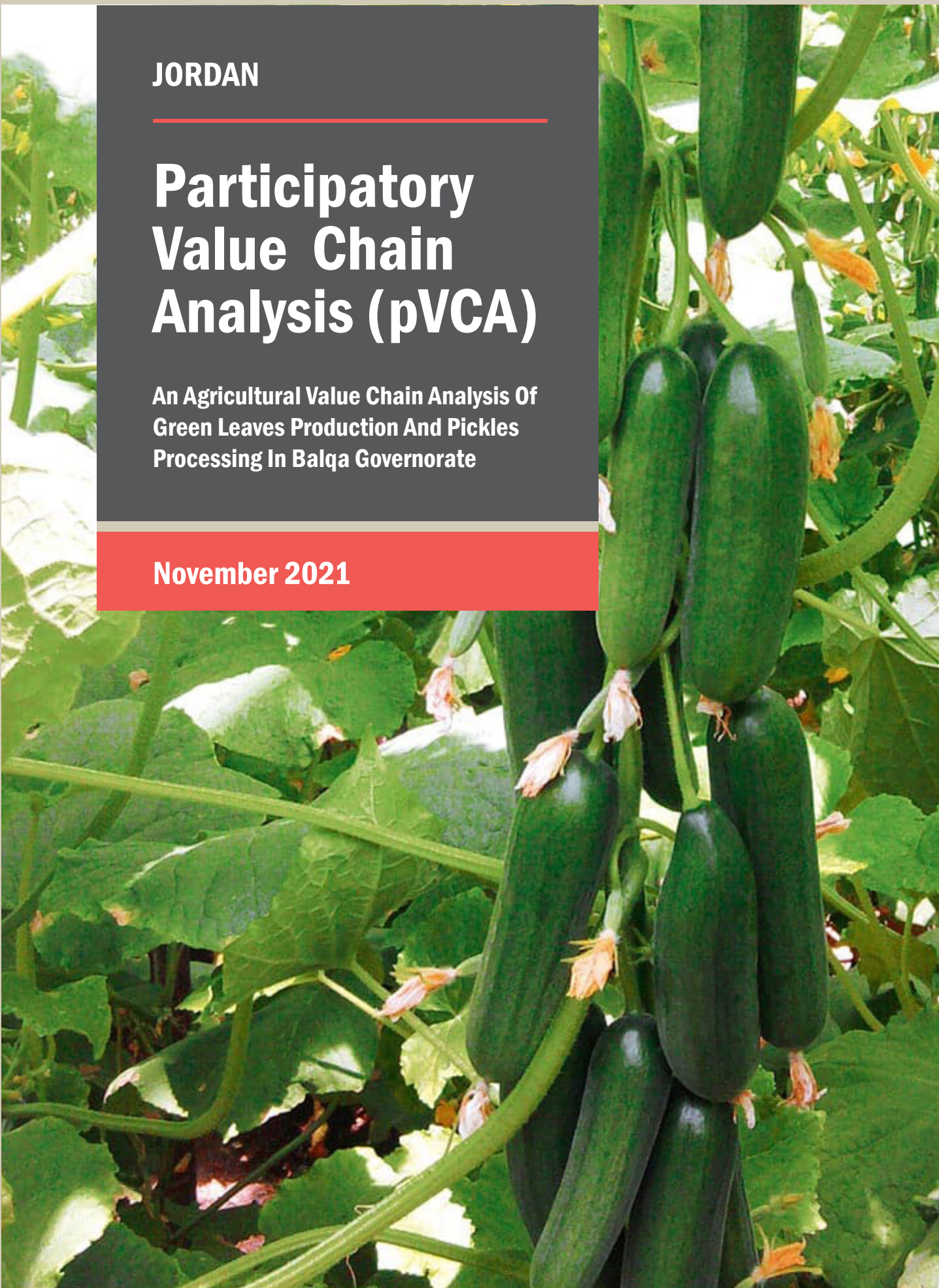


JORDAN

Participatory Value Chain Analysis (pVCA)

An Agricultural Value Chain Analysis Of
Green Leaves Production And Pickles
Processing In Balqa Governorate

November 2021



**Population, Refugees,
and Migration**
U.S. DEPARTMENT of STATE

REACH Informing
more effective
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About REACH

REACH facilitates the development of information tools and products that enhance the capacity of aid actors to make evidence-based decisions in emergency, recovery and development contexts. The methodologies used by REACH include primary data collection and in-depth analysis, and all activities are conducted through inter-agency aid coordination mechanisms. REACH is a joint initiative of IMPACT Initiatives, ACTED and the United Nations Institute for Training and Research - Operational Satellite Applications Programme (UNITAR-UNOSAT). For more information please visit our website: www.reach-initiative.org. You can contact us directly at: geneva@reach-initiative.org and follow us on Twitter @REACH_info.

SUMMARY

Jordan has one of the largest numbers of refugees relative to its population and it represents a common host country of a large number of registered displaced persons from Syria, along with asylum seekers, refugees, and migrants from other countries such as Egypt, Iraq, Pakistan, Sudan, Palestine and Yemen. As the vast majority of those refugee communities live outside the formal refugee camp, the Government of Jordan and non-governmental organisations (NGOs) have collaborated in developing durable solutions for the people in need. Among the 658,756 registered Syrian refugees in Jordan, 81% live out of camps.¹ In response to the increasing unemployment rate among vulnerable Jordanians and Syrian refugees as well as challenging labour market conditions, the Agency for Technical Cooperation and Development (ACTED) has been conducting livelihoods programming seeking to enhance the livelihoods of both Syrian refugees and vulnerable Jordanians.

REACH Initiative (REACH) has conducted a participatory value chain assessment (pVCA), meant to fill the information gaps related to the local economy in Jordan. Additionally, this assessment seeks to support the implementation process of the livelihood project run by ACTED. Through this assessment, REACH seeks to support ACTED's intervention and to inform livelihoods programming with a better understanding of the structure, challenges and opportunities within two identified agricultural value chains (green leaves and pickles). The two value chains were selected based on their potential market growth, the level of support from the public, private and NGO sector, level of (potential) engagement of the target population, and opportunities for micro-businesses, including home-based businesses (HBBs) in Balqa Governorate. In light of the COVID-19 outbreak, this assessment helped understand the impact of the COVID-19 pandemic and restriction on the selected value chains. The assessment was completed with input from the Training for Rural Economic Empowerment (TREE) committee, which includes the Ministry of Agriculture, Jordan Cooperative Corporation (JCC), local NGOs, the Enhanced Productivity Centres Program (IRADA), National Agricultural Research Centre (NARC),² the private sector and community leaders from Balqa.

The assessment was completed in three separate phases:

- A comprehensive secondary data analysis that informed the identification of existing agricultural commodities/value chains in Balqa Governorate. In addition to the desk review, value chains were identified through consultations with the Training TREE committee, which had been initiated by ACTED in the previous phase of the project. Once existing agricultural commodities/value chains were identified, REACH (in consultation with ACTED), explored the two agricultural commodity/value chains that could benefit from livelihoods programming and could provide opportunities for micro-businesses, including HBBs.
- The second stage of research comprised the primary data collection in the form of key informant interviews (KIIs), with respondents from different phases of the value chain (providers of physical inputs, producers, processors, wholesalers and retailers), as well as subject matter experts who have detailed knowledge of the agricultural sector (i.e. government actors and exogenous stakeholders such as United Nations agencies, local/international non-governmental organizations (NGOs) and private sector actors.

¹ UNHCR data-portal as of August 2020.

² More information on NARC is available [here](#).

- A four-day workshop with selected cooperatives and the TREE committee to discuss the results and outputs with stakeholders. The workshop also enabled the cooperatives to conduct their own value chain analysis as needed.
- The last stage of this assessment is this comprehensive final report that aims to inform ACTED in developing its programme interventions. It was planned to equip 400 new beneficiaries and up to 500 from its previous project with skills to engage in micro-businesses. The beneficiaries selection criteria will consider both with previous skills within the identified value chains or with no previous experience. Also, the cooperatives will learn, through a four-day workshop with the Training for Rural Economic Empowerment (TREE) committee (initiated by ACTED), to develop community profiles and to discuss the overall feasibility of value chains in Balqa as well as conduction value chain analysis in the future.

Due to the COVID-19 epidemiological situation in Jordan, REACH collected data through remote telephone surveys. As such, this could result in an underrepresentation of key informants who were accessible via telephone. As a result, findings are not generalizable to the status of all agricultural stakeholders in Jordan.

Key findings

Consultations with ACTED identified green leaves and pickles as two major value chains products in Balqa Governorate. The selection was based on a set of factors that influence the desirability of an agricultural product and was informed by a combination of desk research and 52 ad-hoc structured interviews with agricultural actors.

Further analysis identified that green leaves production and pickles processing represent alternative livelihood opportunities and potential for household economic growth. The two products take advantage of the geographic and morphologic conditions of Balqa Valley, including access to cheap raw materials, knowledge about the production process and a tradition in producing pickles in the area. Moreover, the findings of the assessment revealed that local preferences could potentially create demand for both products, and improvement in production practices and quality could contribute towards increasing the scope of the market for green leaves and pickles. Several areas of improvement were reported by farmers and producers in terms of support from the governmental institutions, NGOs and local agricultural cooperatives. As reported by the value chain actors and subject matter experts, demand for support would remain although within and after several livelihood interventions and programming. Moreover, the institutional framework appears to be adaptable to the local conditions and beneficiaries.

Value chains for green leaves and pickles are deeply influenced by the size of producers' endowment. As found by the assessment, a large part of the production of both items come from HBBs, which often sell directly to consumers. Large-scale farmers reported selling to bulk-buyers or retailers, an aspect that influenced some degree of improvement in the quality of their products, whereas posing an economic threat to smaller-scale producers who cannot achieve similar economies of scale. The impact of COVID-19 seemed to be linked to the size of the business, as smaller producers could adapt rapidly following a decrease in demand or the potential increase in stocks.

Producers of green leaves often complained about the high prices of inputs, which rarely were linked to similar levels of quality. Among the inputs, seeds were seen as the most likely to be affected by low

quality, which also had the highest impact on farmers' production. Subsequent discussions with experts in the field revealed that farmers' practices related to storing and planting seeds could be improved in order to avoid losses further into the production cycle. Similarly, to green leaves producers, pickles producers reported complaints about the high prices of some inputs, including the storage items.

Overall, all respondents agreed that improvement in the quality of the small and micro-scale products remained one of the major interventions necessary for the improvement of their practices. Moreover, pickle producers reported a need to increase the marketing of their products to expand their market scope in order to include more buyers. An increase in the quality of presentation of the products was also mentioned during the discussion with informed stakeholders through the KIIs as well as the TREE committee members at the workshop, who all agreed on the potential of the two products to improve the livelihoods of the people in need.

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List of Acronyms

CBO	Community-Based Organisation
FGD	Focus Group Discussion
HBB	Home-Based Business
ILO	International Labour Organization
JVA	Jordan Valley Authority
KII	Key Informant Interview
MoA	Ministry of Agriculture
MoL	Ministry of Labour
MoMA	Ministry of Municipal Affairs
NARC	National Agriculture Research Center
PVCA	Participatory Value Chain Analysis
JRF	Jordan River Foundation
TREE	Training for Rural Economic Empowerment committee

Geographical Classifications

Governorate Jordan is divided into 12 governorates. The highest form of governance is below the national level.

- The governorate has an executive and advisory board.
- The governorate is headed by the governor.
- The governor is the highest executive authority in the governorate and the representative of the executive authority and leads all government employees in the governorate. The governor also has the authority over all governorate departments except for the judge.

District Governorates are divided into 51 districts.

- The district has an executive and advisory board.
- The district reports to the governorate.
- The district office is an administrative area within the governorate, headed by the district officer or district administrator.

Sub-District Districts are divided into 89 sub-districts.

- The governorate, district and sub-district represent the government and are designed to enforce the law.

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INTRODUCTION

With roughly 750,000 registered refugees and asylum seekers, Jordan is one of the world's largest hosting countries compared to its population, with 89 refugees per 1,000 inhabitants. The majority of refugees are Syrians, along with a considerable population of displaced people from Iraq, Sudan and Yemen.³

Among the 658,756 registered Syrian refugees in Jordan, 81% live out of camps.⁴ Syrian refugees are facing increased vulnerability as their savings, assets and resources are long exhausted. The situation for Jordanians has also been exacerbated by pre-existing vulnerabilities, including the increase of the unemployment rate to 19.3% during the first quarter of 2020, with the rate being 24.4% for women.⁵ In response to the increasingly challenging labour market conditions, humanitarian actors are conducting livelihoods programming seeking to enhance the livelihoods of both Syrian refugees and vulnerable Jordanians. One of these programs is led by ACTED and aims to equip beneficiaries with skills to engage in micro-businesses in line with identified value chains.⁶ ACTED will select two cooperatives in Balqa based on their experience in running agricultural projects within their catchment areas as well as their existing capacities in local development. ACTED will strengthen its technical and marketing capacities. Moreover, the cooperatives will benefit from a four-day workshop with the Training for Rural Economic Empowerment (TREE) (initiated by ACTED) focused on developing community profiles and discussing the overall feasibility of value chains in Balqa. The workshop will also enable the cooperatives to conduct their own designed value chain analysis as needed.

This REACH assessment seeks to support this intervention and will inform livelihoods programming with a better understanding of the structure, challenges and opportunities within an identified agricultural value chain. The value chains are selected based on their potential market growth, the level of support from the public, private and NGO sector, the level of (potential) engagement of the target population, and opportunities for micro-businesses, including HBBs, in Balqa Governorate.

This report outlines the findings from interviews with Syrian refugees and Jordanian host community members involved in agricultural activities or involved in the value chain of agricultural products in Balqa governorate, as well as subject matter experts who have detailed knowledge of the agricultural sector (i.e., government actors and exogenous stakeholders such as United Nations agencies, local/international non-governmental organizations and private sector actors). First, the report briefly explains the agricultural context of Balqa Governorate, followed by the results of the systematic selection of the two value chain products selected for analysis. The results are presented in two separate sections, one on the value chain analysis of green leaves production and one on the pickles processing. The report will also briefly outline the findings related to the institutional support received by producers engaged in the two value chains selected. Lastly, the report will present the results of the workshop completed with the TREE-committee members, discussing the main challenges faced by the producers, the severity of these challenges and potential solutions.

³ UNHCR Data-Portal unite. Accessed in Dec 7th 2020.

⁴ UNHCR Data-Portal unite. Accessed in Dec 7th 2020.

⁵ [Jordan Department of Statistics. Unemployment Rate, figures from April 2020.](#)

⁶ 400 beneficiaries will be supported to start micro businesses in Balqa, while 500 will be supported to continue their businesses in Mafraq and Irbid governorates.

METHODOLOGY

The assessment employed a qualitative approach comprising of interviews with farmers and representatives from the TREE committee, including the Ministry of Agriculture, Jordan Cooperative Corporation (JCC),⁷ local NGOs, the Enhanced Productivity Centres Program (IRADA),⁸ National Agricultural Research Centre (NARC),⁹ the private sector and community leaders from Balqa Governorate (See Map 1). Data collection took place during three weeks of November 2020, covering Jordanian host community members involved in the value chain of agricultural products in the Balqa governorate, as well as subject matter experts who have detailed knowledge of the agricultural sector. Additionally, extra qualitative data was collected in a participatory discussion among the TREE committee members at a four-day workshop held in February 2021 along with the validation of the findings from the previous data collection round from November 2020. Participants in the value chain analysis were selected through a combination of purposive and snowball sampling. ACTED had provided initial contacts to value chain actors and TREE committee members. Enumerators asked participants to nominate additional knowledgeable individuals until the targeted number of participants had been reached, and collected data until the saturation point was reached.

The research cycle was divided into three stages, 1) the value chain selection phase, 2) the analysis of the most feasible value chains, and 3) a four-day workshop with selected cooperatives and the TREE committee members.

For the first phase, REACH launched an initial systematic selection process to identify the two most promising value chains with a potential of growth and feasibility for micro-scale and HBBs. This was done through interviews with farmers and representatives from the TREE committee. In the first stage, 52 key informants were asked about their capacity to provide information about a pre-defined list of agricultural products. Afterwards, for each product about which respondents could provide details, a questionnaire related to items' accessibility, price, productivity, and profitability was applied. Results were then inputted into a results matrix, from which green leaves and pickles were selected. Table 1 presents the list of agricultural products considered and the results matrix.

Table 1: Score matrix for the first phase of agricultural products¹⁰

Product	Final Score	Product	Final Score
Almonds	116	Pepper	150
Chickpeas	100	Lemon	149
Cucumber	152	Makdous	143
Dairy products	175	Okra	116
Decoration Plants	130	Onion	128
Eggplant	117	Pickled olives	155
Fava beans	126	Pickles	171
Cauliflower	117	Radishes	132
Grape leaves	106	Tomato	146
Green leaves	156	Zucchini	120
Honey	126		

⁷ More information on JCC is available [here](#).

⁸ More information on IRADA is available [here](#).

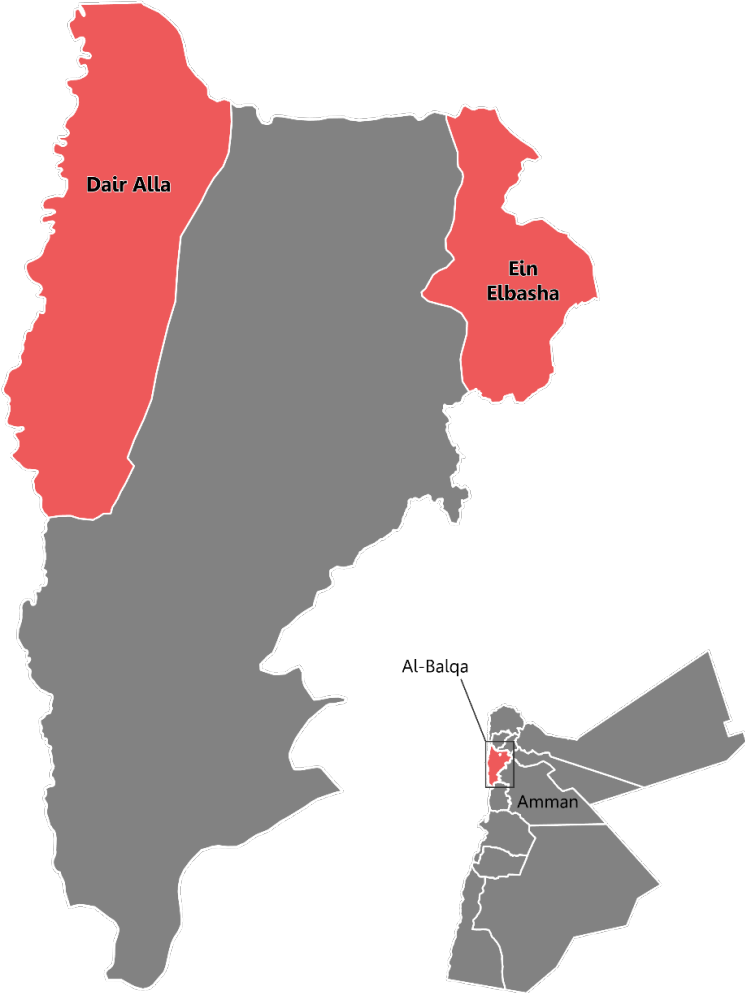
⁹ More information on NARC is available [here](#).

¹⁰ Dairy products value chain analysis was not considered due to high costs of entry and preponderance of large-scale market players, beyond the scope of the ACTED project.

The second stage of research comprised the primary data collection in the form of KIIs. Respondents to this stage were individuals from different phases along the value chain (providers of physical inputs, producers, processors, wholesalers and retailers), as well as key stakeholders from Balqa district. Following these KIIs, additional KIs were identified using a snowballing approach. During the third phase, the results and outputs from the KIIs were discussed in a workshop with stakeholders. In line with the workshop’s objectives, several pieces of training were delivered to enable cooperatives’ representatives to conduct their own value chain analysis as needed.

Data collection was initially planned to be in-person interviews and focus group discussions (FGDs). However, due to the COVID-19 situation in Jordan and following IMPACT’s [SoPs for data collection during Covid-19](#) guidance, REACH adopted a remote, telephone-based approach and only collected data from individual key informants.

Map 1: Balqa governorate location and targeted districts



Sampling Strategy

The research focused on 2 key value chains – green leaves and pickles. Interviews were conducted with key actors within the value chain including producers, processors, transporters, retailers and wholesalers in Balqa Valley. (See Table 2) The profiles of KIIs are listed below:

Table 2: Number of KIIs conducted from each group

KI Group	# Of value chain actors KIIs	# Of subject matter experts KIIs	Location
Green leaves	12	6	Dair alla
Pickles processing	8	4	Ein Elbasha
TOTAL	20	10	

Value chain actors	Subject matter experts
Input suppliers	Farmer associations or cooperatives
Aggregators	Local/international NGOs
Producers	Local/national government actors
Storage facility owners	Members of TREE committee
Processors	
Transporters	
Wholesalers/Exporters	
Retailers	

Analysis

Data was summarized after each KII and then analysed using NVivo qualitative analysis software. A data saturation grid was used to ensure all the adequate data was gathered in order to fully answer the research questions and their sub-questions.

Challenges and Limitations

- Due to the limited scope of this assessment, the findings should be seen as indicative only and reflective of the context in the location where data was collected. Findings should not be seen as representative of all producers’ experiences and they cannot be applied to other value chains or other locations.
- Data collection was initially planned to be conducted through in-person interviews with the study participants. However, due to Jordan’s COVID-19 situation, the data collection method was revised into remote, phone-based interviews and according to IMPACT’s [SoPs for data collection during Covid-19](#). This research’s initial design suggested conducting focused-group discussion sessions in both targeted districts, but due to the restrictions, the FGDs were replaced with KIIs
- The information shared by KIIs, related to past behaviours, could be subject to recall bias

FINDINGS

Value Chain Systematic Selection

Jordan is a country with limited cultivatable land, oil resources and a scarce water supply.¹¹ Despite the low level of agricultural endowment, the agricultural sector in Jordan provides a critical source of livelihoods and income, particularly for the poorest levels of society. According to official estimates, 25% of poor households rely on the agricultural sector for their income.¹² The increased proportion of the agricultural sector to Jordan's gross domestic product from 3.5% in 2010 to 5.2% in 2020¹³ shows a promising image of an enhanced role of agriculture in Jordan's economy over the past decade.

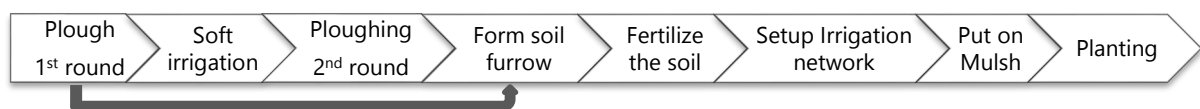
Balqa Governorate has large cultivation areas and favourable weather conditions largely unique in Jordan in terms of its climate and land diversity. Compared to other governorates in Jordan, the area has greater annual rainfall, a cold climate in the winter and moderate temperatures in the summer. These characteristics make Balqa Governorate one of the most agriculturally productive regions in the country, a breadbasket of large crops of numerous varieties of fruits and vegetables. In 2017, Balqa governorate reached 32,185 dunums,¹⁴ covered by trees and 2983 dunums of field crop.

In order to understand the potential of agricultural production in Jordan, and Balqa Governorate specifically, this assessment selected two locally produced agricultural products sourced from Balqa Governorate. The selection was based on a set of factors that are built around their benefit for the livelihoods programming and can provide opportunities for micro-businesses and was informed by a combination of desk research and 52 ad-hoc structured interviews with actors in Balqa. The final selection criteria were co-designed by REACH and ACTED.¹⁵ The responses were then fed into a score-powered selection matrix. Based on the final scores of each product and in consultation with ACTED's project management unit, the assessment team chose to include the value chains for green leaves and pickles.¹⁶ The remainder of this report will focus on the value chains of these two agricultural products.

Green Leaves Value Chain Analysis

Green leaves production is a round-year endeavour, with a productivity peak during the winter and spring seasons. The vast majority of respondents (91%) reported that green leaves cultivation is done at micro and small-scale level farms, with plots of land between 500 sq meters and 5 dunums.

Figure 1: Steps and practices followed by green leaves producers in land preparation and planting



All respondents reported that both men and women were involved in the green leaves production. Moreover, the production reportedly often employed outside family support through the involvement

¹¹ The World Food Programme, [Jordan Annual Country Report 2019](#) (2020).

¹² The Economic Policy Council, [Jordan Economic Growth Plan 2018-2022](#) (2017).

¹³ World Bank. "Agriculture, forestry, and fishing, value added (% of GDP) - Jordan." World Development Indicators, The World Bank Group. Available at: <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=JO>.

¹⁴ In Jordan and other surrounding countries, the dunam is 1,000 square metres (10,764 sq ft).

¹⁵ The selection factors included characteristics of the agricultural product such as availability of inputs and price, potential issues with the seeds, size of producers, labor force nationality, storage and processing easiness, level of required skills, etc.

¹⁶ Green leafy vegetables, also called dark green leafy vegetables, leafy greens, or greens, are edible plant leaves. Green leaves produced in Jordan include, but are not limited to, lettuce, spinach, parsley, green onion, coriander, etc.

of Syrian refugees in land preparation, cultivation, weeding, harvesting, and packaging. Women were reported to be the most involved members in the small- and micro-scale production of green leaves, while men were more likely to engage in the production of large-scale farms.

Table 3: The reported average size of cultures and productivity of selected green leaves items¹⁷

Commodity ¹⁸	Size of culture (in dunums)	Productivity kg/dunum
Lettuce	79	1,800
Spinach	10	5,000
Parsley	16	4,900
Green onion	15	1,800

Green Leaves Pre-Production

KIs agreed that all required inputs were available at the local markets and were reported as accessible by all farmers. Accessibility was also confirmed by interviews with suppliers and representatives from the Ministry of Agriculture (MoA). However, issues related to quality were often mentioned by producers during the interviews, along with complaints about high prices.

Participants emphasised the importance of accessibility to land and water for production. Most of the participants, especially the small and large-scale producers, reported that they need to rent a tractor to plough the land, whereas micro-scale producers were more likely to report using manual tools to prepare their land. Table 3 exemplifies a list of inputs required for green leaves cultivation.

Table 4: Reported required tools and materials for green leaves cultivation

Material/ Tool	Availability	Quality of accessible tool	Cost	Utility
Land lease	Owned by producers or available for rent	Good	50 JODs per Donum per season for rented lands. No cost for owned lands	Landless farmers can cultivate the land from the local community, the state or through the MoA and JVA.
Tractor	Available for rent	Good	5-8 JODs per Donum	During the land maintenance and preparation phase, farmers use the tractor to facilitate the soil plough.
Pesticide sprayer	Available for rent	Medium	25 JODs per hour ¹⁹	To spray the pesticides as needed during the production phase.

¹⁷ Jordanian DoS – Agriculture statistics 2018.

¹⁸ Other identified products statistics were not available in the DoS agricultural statistics report.

¹⁹ 1 Hour of pesticides spraying is enough to cover 3 donums of land cultivated with green leaves.

Manual tools	Available for purchase	Good	3 – 5 JODs per tool	Manual tools include hoe, axe, mini-grader and garden rake. Farmers reported using such tools when the use of heavy machinery would risk harming the plants.
Black plastic sheets (Mulch)	Available for purchase	Good	10 – 15 per 100 meters	To cover the planting bed and as such warm up the soil which will accelerate and enhance the plant growth.

In the colder seasons, nearly all the interviewed green leaves producers and input suppliers reported the importance of using black plastic sheets (Mulsh), which provides additional heat to the plants, influencing a higher level of agricultural output.

“According to my experience with green leaves cultivation in Dair Alla, for each donum of land I intend to grow with green leaves, I need to secure a budget ranging between 250-350 JOD, to cover the cost of all the required inputs and materials, depending on the cultivated type of green leaves and land size”

Micro-producer in Dair Alla

The high cost of inputs was mentioned by 5 out of 11 producers and subject-matter experts interviewed during the value chain selection process.²⁰ Notably, producers reported that the high cost of inputs is a barrier in ensuring the high productivity of their crop. In some cases, producers reported unusually high prices set by retailers in Balqa, leading to demands from producers for some kind of protection through subsidies or price freeze. (See Table 5 for disaggregation of prices for a selection of agricultural inputs).

Table 5: Reported prices of agricultural inputs required for green leaves cultivation (in JOD)

Input type	Measurement unit	Price range (in JOD) ²¹	Source ²²	Availability	Area cultivated
Coriander, Parsley, Mulokhiyah, Rocca (seeds)	1 kg	4-16	local, imported	available	1 dunam
Lettuce Seeds	250 grams	30-55	imported	available to some extent	1 dunam
Lettuce Starter plants	tray (200 plants)	2-3.5	local	available	50 m ²
Thyme Starter plants	tray (200 plants)	6-9	local	available	100 m ²
Sage Starter plants	tray (200 plants)	6-9	local	available	100 m ²

²⁰ Reported findings are not representative of the green leaves' producers or any other involved actors. These findings were quantitatively presented from the selection process interviews.

²¹ Price reported per kilogram of seeds, tray of 200 saplings, 25-kilogram bag of fertilizers, 10-liter gallon of pesticides.

²² Order reflects the main and secondary sources of inputs.

Mint Starter plants	tray (200 plants)	3-7	local	available	250 m ²
Fertilizers	25 kg	10-35	imported, local	available	2 dunams (1 round of application)
Pesticides	20 liters	20-50	imported, local	available to some extent	2 dunams, (3 rounds of application)
Irrigation network	full irrigation set, hoses and connections	100-150	local, imported	available	1 dunam

All interviewed KIs reported King Talal Dam²³ as the primary source of water for irrigation in Balqa Governorate, notably in Dair Alla district, under the jurisdiction of the Jordan Valley Authority (JVA). The JVA provides farmers with access to irrigation through the JVA water network charging a three-month fee based on the irrigated land size with prices ranging between 20 – 30 JODs. JVA distributes water to registered agricultural lands and units' networks twice per week for approximately 6 hours per time. No challenges concerning access to water and its availability were reported by the medium and small producers of green leaves. However, micro-producers, mostly cultivators of lands close to their residential areas, reported facing difficulties accessing water through the JVA irrigation network, influencing them to switch to the public water supply and leading to higher water bills.

Nearly all participants (17 of 18) indicated the lack of drought-tolerant seeds as the main issue affecting their output. On the other hand, interviews with inputs suppliers revealed that a reason for a lower quality of green leaves production could be due to inappropriate storage of seeds at the shops or storage facilities.

"After losing my cultivation season because of the low-quality seeds, I invested some extra money and bought imported high-quality seeds, and since then I am reproducing the seeds from the following season."

Micro-producer in Dair Alla

Subject matter experts and TREE committee members agreed that the risks of rotten or bad seeds could be eliminated by using starter plants that were produced at the plantation houses rather than putting seeds directly in the soil. As reported by input suppliers, the starter plant production process should not exceed 25 days, starting from growing the seeds in the starter plant trays until moved and planted in the soil. However, on some occasions, starter plants were kept for longer than 25 days, due to the weak purchase power, which directly affected their productivity.²⁴

Green Leaves Post-Production

Small and micro-producers were most likely to report the use of soft tools such as knives and scissors for their harvesting. As reported by farmers, green leaves are frequently harvested in small quantities due to the lack of storage facilities for producers, but also the high level of perishability. The small quantities harvested were reported as means to avoid post-harvest losses. As reported by the

²³ King Talal Dam is located between Jerash and Balqa governorates. The total storage capacity of the dam is 85 million cubic meters.

²⁴ Reported by plantation house owner and operator in Dair Alla.

interviewed producers, they reaped the green leaves products themselves with support from Jordanian, Syrian and Egyptian workers. Both men and women were involved in the harvesting process.

Table 6: Reported quantities of the harvested green leaves products per dunum

Product	Quantity of each harvesting round	Productivity main affecting factor	Harvesting frequency per season
Parsley	900-1000 kg	Kind, season, and size at harvesting	2-3 times
Coriander	900-1000 kg	Kind, season, and size at harvesting	2-3 times
Rocca	900-1000 kg	Kind, season	2-3 times
Mulockiah	1000-1100 kg	Kind and size at harvesting	1-2 times
Lettuce	1200 – 1500 kg	Kind and season	One-off
thyme	800-1100 kg	Kind, season	1-2 times
Mint	800-1100 kg	Kind, season	1-2 times
Cabbage	8 – 10 tons	Kind and size at harvesting	One-off
Sage	600-800 kgs	Kind and size at harvesting	1-2 times
Spinach	900-100 kgs	Kind and season	1-2 times

Green leaves post-harvesting processing was always minimal and limited to tying the leaves together into bundles. When the prices are low or the producer cannot market their product, small and micro-producers reported drying some of their products for later sale.²⁵

The drying process occurred mainly in the processors’ houses, instead of a particular processing area, and the products were kept in a well-ventilated and warm space, for 7 to 10 days to dry. Producers grounded the dried leaves and filled them into safe well-closed containers. Reportedly, the drying duration of green leaves products was affected by temperature, product type and plant size (see Table 7). The added value of such processing was selling the dried products off-season by its producers at higher prices. Dried Mulukhiah, as reported by nearly all interviewed green leaves producers and processors, is the most valuable green leaf in its dried form, due to its year-round demand, and high price off-season.

Table 7: Green leaves drying processing duration and ratio to raw inputs

Product	Processing duration	fresh-to-dried ratio
Mulukhiah	10 to 14 Days	2:1
Mint	7 to 10 Days	3:1
Thyme	10 to 14 Days	3:1
Sage	15 to 20 Days	4:1

²⁵ Green leaves producers reported drying Mint, Sage, Mulukhieh and Thyme, to sell it the off-season for higher prices.

Nearly all respondents reported late harvesting due to COVID-19 as a critical challenge. The green leaves must be harvested as the plant shape and size were preferred by the consumers and retailers, which a couple of days overdue might make the harvested products unpreferred. The lockdown has caused such delays in the harvesting and led to product losses by all producers.

Green Leaves Market

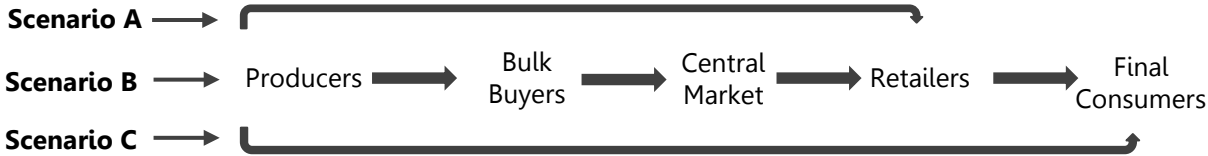
The market of green leaves was found to be mostly influenced by the size of the producer. Micro-scale producers reported selling their products mostly through their social networks, whereas small and large-scale producers were more likely to report selling their products to retailers or bulk buyers.

“All of my fresh and dried products were sold out as soon as I started marketing them. In Jordan such products are essential in our daily food routine. I am sure that this will remain in demand all around Jordan”

Micro-producer in Dair Alla

As illustrated in Figure 2, several marketing scenarios were reported by the green leaves producers within the marketing chain. Micro-producers reported that they usually sold their products directly to the final consumers without interfering with bulk buyers or retailers. Small-scale producers reported that they usually transported their products to local retailers with lower prices to guarantee the selling of all their products. Larger-scale farmers, producing over 10 tons of green leaves per season, sold their products at the farm gate to bulk buyers and transporters. Bulk buyers then transported the products to the central market.

Figure 2: Reported Green Leaves Marketing Chain



A single bundle price was determined by its size, product type, and buyer, ranging between 0.15 JOD to 3 JOD. As reported by the processors, dried products yield higher returns, with prices ranging between 8 and 15 JOD per kg (see Table 8).

Table 8: Reported selling prices along the marketing chain²⁶

Product	Selling price to retailers	Quantity to retailers	Selling price to the final consumer	Quantity to the final consumer
Parsley	10 - 15 JODs	15-20 kg box	0.15 – 0.25 JOD	bundle (200 grams)
Coriander	10 - 15 JODs	15-20 kg box	0.15 – 0.25 JOD	bundle (200 grams)
Rocca	15 – 20 JODs	15-20 kg box	0.25 – 0.35 JOD	bundle (250 grams)

²⁶ Illustrated prices in the table were reported by producers, processors and retailers.

Fresh Mulukhieh	0.20 – 0.30 JOD	kg	0.35 – 0.50 JOD	kg
Lettuce	6 – 8 JODs	15 kg box	0.20 – 0.35 JOD	piece (250 grams)
Fresh Thyme	1 – 1.5 JOD	kg	0.35 – 0.50 JOD	bundle (200 grams)
Mint	10 - 15 JODs	15-20 kg	0.15 – 0.25 JOD	bundle (200 grams)
Cabbage	0.15 – 25 JOD	kg	0.50 - 0.75 JOD	kg
Fresh Sage	1 – 1.15 JOD	kg	0.35 – 0.50 JOD	bundle (250 grams)
Spinach	0.20 – 0.30 JOD	kg	0.35 – 0.50 JOD	kg
Dried Mulukhieh	8 JODs	kg	10 JODs	kg
Dried Thyme	10 JODs	kg	12 JODs	kg
Dried Sage	3 JODs	kg	4 JODs	kg

One of the key challenges reported by the green leaves producers was the lack of efficient marketing channels. TREE committee members reported that the lack of awareness of the optimal packaging practices was a key challenge faced by the producers. Such practices include the size of the single bundle of green leaves product and the existence of weeds within the bundle, which causes the products to get rejected by the retailers and final consumers.

Another challenge identified by the study was linked to the competitive advantage of the large-scale producers to set lower prices compared to the small or micro-level producers. However, TREE committee members reported that the higher production costs for the small and micro-level producers were compensated by the reduced proportion in the donum share of cultivation cost for bigger producers.

Since the beginning of the lockdown, the green leaves producers and processors have been negatively affected. For example, the purchasing power of the population did decrease and as such the prices as well. In terms of the impact on the green leaves marketing, interviewed producers reported that the large-scale farms were the most affected. Retailers, due to the green leaves short shelf life, were carefully restocking green leaves on the daily basis to avoid losing the products at their shops. Hence, this has caused a loss of product in the farms and the central market. On the other hand, some of the small and micro-level green leaves producers reportedly were able to market their products locally among the local retailers and final consumers.

Pickles Value Chain Analysis

Pickles Pre-Processing

Primary inputs for pickles processing, as reported by its processors, are raw vegetables, lemon, salt and vinegar. Balqa Valley enjoys a climate that favours vegetable production. The additional inputs, such as lemon juice, salt and vinegar were also reported to be available in sufficient quantities, low prices and good quality (see Table 9).

Table 9: Required tools and materials for the pickles processing²⁷

Input	Availability	Price	Quality
Fresh vegetables	Available in the area year-round	0.5 – 2 JOD per kg	High-quality vegetables and diverse kinds
Salt	Available in the local market	0.25 JOD per kg	High-quality
Vinegar	Available in the local market	1 – 2 JOD per litre	High-quality
Containers	Available in the local market	(Depending on the container size) Plastic – 0.15 to 1 JOD Glass – 0.25 to 2.5 JOD	High-quality glass containers Poor-quality plastic containers

Nearly all interviewed processors reported facing no issues concerning inputs availability, quality, or prices for their pickles processing activities. However, before the reform in 2018, that simplified the rules and process of registering one’s business, it was reportedly a difficult process for small businesses

Pickles Post-Processing

Interviews revealed that pickle processing was most often done as an HBB, at the processors’ own houses, often in a separate space from the residential living area. Production tends to be small, due to the high perishability of the products.

Interviewed participants reported that the Syrian refugees were rarely involved in the pickles processing, which they found surprising since they were perceived to have the best skills in such food processing. Interviewed producers and other involved actors, including the TREE committee members, reported that it is historically known that pickles produced by Syrian processors were of the best quality among the countries in the region.

Practices and production processes were explored briefly with the interviewed key informants of pickles producers. Of the highlighted best practices, selecting the suitable vegetable size was essential for better pickles processing duration for the processors benefit as well as the preferred size of pickled vegetables by consumers. Although it is more expensive than the larger ones, the baby cucumber (small size cucumber) was reported to be the preferred type of pickle by final consumers for their consumption at home, while restaurants chose the larger size and cheaper price cucumber since they add them as a primary element in the appetisers. Customizing the pickles production was reported to be directly linked

²⁷ Illustrated prices in the table were reported by producers, processors and retailers.

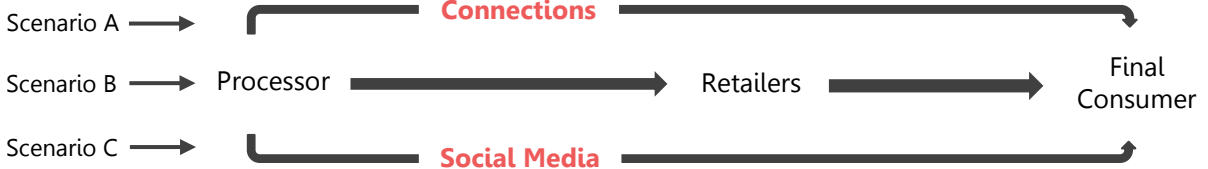
to better marketing. The customization included the size of used vegetables, the products' chilliness, sourness and saltiness.

The duration of pickle processing depends on the vegetable type, size, quality, and method of production. On average, soft vegetables such as cucumber and kakri cucumber needed 5 to 6 days to be ready under normal circumstances and temperature. Hard vegetables such as carrot and turnip took a longer processing duration, 8 to 10 days to get ready for consumption. Pickles producers reported that selecting the right type of containers used for processing was essential for the product quality and processing duration, which by default reflected on the selling price and processors' reputation.

Pickles Market

Marketing of pickles products was reported done mostly at the local level, among neighbours, friends, and relatives, especially in closed communities such as villages. Marketing of the pickles and other home-based produced food was reported to be mostly built on relationships and connections. Small-scale producers were linked with retailers and restaurants to market their products on a fixed basis.

Figure 3: Reported Pickles Marketing Chain



Pricing for pickles was reported to be transparent and stable over time. However, respondents reported that higher quality products were sold to retail chains, increasing the profit margins. Table 10 illustrates the average reported prices for pickles to retail stores and final consumers.

Table 10: Reported selling prices to retailers and final consumers

Product	Selling price to retailers	Selling price to final consumers	Sold quantity
Cucumber pickle	2 JODs	2.75 JODs	1 kg
Baby cucumber pickle	2.25 JODs	3 JODs	1 kg
Turnip with chard	2 JODs	3 JODs	1 kg
Cauliflower	2 JODs	3 JODs	1 kg
Makdous with olive oil	4 JODs	6 JODs	1 kg
Chilli pepper and garlic sauces	3 JODs	5 JODs	1 kg
Olive in salt and water	3.5 JODs	4.5 JODs	1 kg
Olive in oil	4.5 JODs	6 JODs	1 kg

The impact of the COVID-19 lockdown on pickle production was limited due to the flexibility of the producers to rely on local markets and capacity to decrease their production in order to limit the losses. However, the restrictions on movement across governorate lines limited pickle producers' access to

retailers and restaurants. The respondents also reported that pickles marketing was affected to some extent during the full lockdown.

Institutional Support

This section will illustrate the available institutional support for green leaves small and micro-producers and pickles processors in Balqa Governorate. This section will discuss the availability, adequacy and effectiveness of these services and the extent to which producers had reportedly approached them as well as reported needs and suggestions for additional support and services. Due to the limited scope of pickles processing, this section will cover the institutional support of both value chains analysed in this report.

According to representatives at the directorate of agriculture, all necessary support and extension services were available at any time for all agricultural actors in Balqa.²⁸ For the green leaves production, the directorate of agriculture reported attempting to establish a specialised agricultural cooperative in green leaves and herbs production in 2018, but small and micro-producers did not join as planned for unclear reasons.²⁹ In terms of the agricultural extension services, all interviewed producers reported that they could reach out to the agricultural directorate or its local sub-offices and get the required assistance and consultation concerning their green leaves production anytime they wanted. Interviewed green leaves producers also appreciated the existence of some other available services provided by the MoA, NARC, NGOs and other various actors. However, some issues were reported relevant to the quality and adequacy of these services. (see Table 11).

“Whenever I needed support, I approached the extension department at the directorate, and always found the support I desired”

Micro-producer in Dair Alla

In Dari Alla, green leaves producers reported approaching such assistance through the directorate of agriculture, and its extension department. On many occasions, as reported by the interviewed producers, the extension engineers visited their farms, to assess the issue and provide them with consultancy services. In Ein Elbasha, producers reported reaching out to NARC for inputs and production-related consultancies and they were, in this way, able to get the services needed.³⁰ Pickles producers in Balqa reported that they were receiving a limited level of support from the government, local or international organizations.

Table 11: Reported available services for local green leaves and pickles processors in Balqa governorate

Support/Service	Provider	Quality / adequacy	Issues with accessibility	Associated cost Y/N
Agriculture extension services	MoA, DoA, NARC	High quality and effective	No issues reported	No
Skills and technical training	MoA NARC Local CBOs and NGOs ³¹	Adequate quality	Not adequate in terms of the parts covered by the training	No

²⁸ Information provided by the agricultural directorate of Balqa governorate.

²⁹ Verbal information from the director of agriculture in DairAlla. Interviewed in Sep 22nd 2020.

³⁰ NARC is located in Ein Albasha, which made it more accessible to Ein Elbasha farmers.

³¹ Local NGOs including JRF, Nama, Agricultural cooperatives.

Financial support	Various INGOs Jordan River Foundation (JRF) Farmer's union	Useful support	The amounts are usually not enough to establish the activity	No
Loans	Farmer lending fund	Useful support but not enough amounts	Conditions to get the loans are hard to meet	Yes

Overall, low levels of requested support were reported, due to the already existing knowledge and skills in green leaves production and pickles processing that local farmers and individuals have. However, some ideas for additional useful support were reported and can be found in the list below.

Key Interventions Desired By All Producers To Support Livelihoods Opportunities

- 1- **Closer attention and follow-up** by the agricultural authorities and cooperatives on the input suppliers, to maintain agriculture inputs of good quality and fair prices. Such an arrangement will generate a better relationship between public and private actors and enhance the producers' trust in agricultural authorities.
- 2- **Lack of irrigation water or inability to access the existing irrigation water network for small and micro-producers** was reported as a challenge and needed enhanced operation by JVA. The producers' recommended solution was to expand the network catchment area to include left-out lands and increase the pumping frequency since they do not have water storage facilities or collective water pools like larger producers.
- 3- **Financial support and loans** were available for small and micro-producers only through the private lending facilities, which they tended to avoid because the requirements and conditions were too difficult to meet. They perceived themselves as financially vulnerable to any shocks or production losses, which would leave them unable to repay their loans. Producers proposed the creation of a lending facility with simplified conditions for small and micro-producers. Some producers desired additional efforts from the MoA and the Ministry of Planning and International Cooperation (MoPIC) to encourage international funds to establish or expand their production.
- 4- **Further monitoring of the central markets'** prices and wholesalers by the governmental authorities. Each of the many actors involved in the marketing chain takes a portion of the profits and the chain includes collectors, transporters, intermediates, wholesalers, storage facility owners, stocking distributors³² and retailers. Participants reported their interest in having separate markets for the green leaves products and other low priced products so that small producers could get a higher proportion of the final consumers' buying price.

"Despite the high expenses and effort we spend on the production, typically we get the lowest benefit"

Micro-producer in Dair Alla

³² Distributors reported by the small producers and retailer as people responsible for getting the products from the central markets and distribute them among the retailers, which was an additional step of the marketing chain.

- 5- More effort on the marketing channels** should be made by the concerned government institutions to facilitate the marketing of small and micro-producers products. Small and micro-level producers reportedly had limited marketing channels, which occasionally, due to these limitations, were forced to sell their products to bulk buyers at the local or central markets at lower prices. An increase in access to marketing channels could enable increased sales for small and micro-level businesses. An interviewed subject matter expert reported that the Jordan River Foundation (JRF)³³ has established a partnership with the private sector to market small and micro-level products at some hypermarkets. Through this partnership hypermarkets and malls market, the home-based produced food products and get reduced fees or benefits in return.

Such initiatives might encourage the small and micro-producers to produce more quantities and enhance their quality to compete in these markets. Also, the initiative sought to change consumers' behaviours toward buying more home-based produced food items. The home-based micro-producers and TREE committee members reported the bazaar as another form of marketing channel to market their products. This form of the market could be held and managed by the ministry of commerce and industry and could be held in all governorates. Similar to what was reported by the interviewed small and micro-producers on these markets' accessibility, TREE committee members highly recommended that these community-based markets must be assigned only for micro-producers to avoid competition from other producers and retailers.

- 6- Pickles processing workshops for local women and girls** would help them to overcome the burden of start-up costs and a higher unemployment rate. A key informant at the agricultural directorate reported that a unique opportunity would be created by establishing a pickles processing workshop in Balqa. They could produce various types of pickles packaged in well-closed and branded small containers (50 grams) sold directly to restaurants.

³³ Local non-governmental organization established in 1995 with a focus on child safety and community empowerment. More information about JRF is available [here](#).

CONCLUSIONS

In the context of the increasing unemployment rate during the first quarter of 2020 and the sudden influx of Syrian refugees to Jordan, REACH conducted this value chain analysis to inform ACTED's livelihoods programming. The specific objectives of this analysis were to gain a better understanding of the structure, challenges and opportunities within two identified agricultural value chains in the Balqa governorate based on which ACTED aimed to support vulnerable individuals and households to establish micro-businesses, including HBBs.

The first phase of the assessment consisted of a systematic selection process to identify the two most promising value chains with a potential of growth and feasibility for micro-scale and HBBs through interviewing farmers and representatives from the TREE committee. In this phase, green leaves production and pickles processing were selected as two relevant value chains for the Balqa Governorate economy.

Findings confirmed that Balqa Governorate is producing a large array of agricultural products. With low entry costs and relatively accessible agricultural inputs, green leaves production is an economically sustainable activity that can provide a stable income to farmers. However, almost half of the interviewed green leaves small and micro-level producers and subject matter experts revealed that producers of green leaves complained about the high price of inputs. Accessibility of water sources, while available, remained a problem for micro-scale farmers, who often needed to rely on the public water distribution system, which is more expensive than the water provided by the JVA. Green leaves producers, subject matter experts and the TREE committee all agreed that the quality of seeds is essential.

The inputs for pickles processing are available, in good quality, and purchasable at low prices. However, pickles processing, as well as other food-processing workshops, requires a proper infrastructure and registration with the local authorities and this process is often reported as difficult. Since the MoMA and the USAID Jordan Local Enterprise Support Project (LENS) reform in 2018, the HBB registration process got easier and affordable for vulnerable households. Home-based pickles processing has been a resilient business due to producers' capacity to adapt to the changes in demand, especially during the COVID-19 crisis.

Balqa Governorate farmers and producers were, according to governorate representatives, benefitting from institutional support, with a large degree of input from local authorities. In this regard, interviewed key informants from the public authorities reported that the directorate of agriculture, through its governorate local departments, provide support to green leaves small and micro-level producers, through visits and product-related consultancies. However, pickles processors reported a relatively lower degree of support from public authorities. Common demands, among both green leaves and pickles producers, were more support through the more efficient use of water irrigation, subsidized agricultural inputs, access to state-backed loans and support with the marketing of products.

Findings from these assessments were presented and validated at the workshop with the TREE committee members. Additionally, a comprehensive risk analysis exercise was performed with representatives from the Balqa directorate of agriculture, agricultural cooperatives, JCC, Irada, local small-scale farmers and ACTED programme staff (see Annex 2). Following this assessment, the plan for the two selected agricultural cooperatives in Dair Alla and Ein elbasha, with support and mentorship from ACTED and IRADA, is to start developing their business ideas based on the given value chains. Through another component of ACTED's interventions, a number of beneficiaries from vulnerable households within the two mentioned districts within Balqa will be supported with technical pieces of

training, materials and grants to start up their micro-level businesses. Based on the programme selection criteria, both Jordanian and Syrian beneficiaries are considered in the identification process. Beyond the technical support and grants, following the approval of their business ideas by IRADA, beneficiaries will benefit from mentorship services from ACTED programme staff and agricultural cooperatives.

ANNEXES

Annexe 1: Identified potential products and their seasonality in Balqa governorate³⁴

Commodity	Area	Winter	Spring	Summer	Fall
Almonds	Ain Al-Basha				
Chickpeas	Both				
Cucumber and Kakri	Both				
Dairy products	Both				
Decoration Plants	Ain Al-Basha				
Eggplant	Both				
Fava beans	Both				
Cauliflower and Broccoli	Both				
Grape leaves	Ain Al-Basha				
Green leaves	Both				
Honey	Both				
Hot pepper / sweet pepper	Dair Alla				
Lemon	Both				
Makdous	Both				
Okra	Ain Al-Basha				
Onion	Both				
Pickled olives	Both				
Pickles	Both				
Potato	Both				
Radishes and carrots	Dair Alla				
Tomato	Both				
Zucchini	Ain Al-Basha				

High productivity	
Medium productivity	
Low productivity	
Not available	

³⁴ Several factors were considered and assessed in the systematic selection process.

Annexe 2: Green Leaves production risk analysis

Annexe 2 below presents the results of the discussion from the TREE committee workshop. Some of the reported risks in this section, related to green leaves production, were collected from KIIs. At the TREE committee workshop, the reported risks, as well as additional ones, were identified, analysed and validated against likelihood, severity and farmers' resilience. During the workshop, the participants were asked to agree on a score for likelihood, severity and coping ability related to that risk. Following the assessment of the risk, participants were asked to provide some potential mitigation measures.

Risk	Likelihood	Severity	Farmers' Resilience	Mitigation measures
	1=Lowest	A=Lowest	1=Lowest	
	5=Highest	E=Highest	5=Highest	
Increased inputs prices	4	C	3	<ul style="list-style-type: none"> ○ Further attention from the project mentors to avoid buying very expensive agricultural inputs. ○ Identify alternative sources of inputs for fair prices. ○ Further attention from the MoA on the prices of the inputs at the local markets. ○ Cover the micro-scale farmers under CBOs and agricultural cooperatives to ensure better access to agricultural inputs for fair prices.
Lack of inputs	1	A	5	<ul style="list-style-type: none"> ○ No need for mitigation measures
Poor inputs quality	3	D	3	<ul style="list-style-type: none"> ○ Further attention from the project mentors to avoid buying bad quality agricultural inputs. ○ Consult the agricultural extension services to select the best inputs. ○ Identify alternative sources of good quality inputs. ○ Further attention from the MoA on the quality of the input at the local markets.
Farmers get misled in selecting the right seeds	4	D	3	<ul style="list-style-type: none"> ○ Provide technical training and awareness-raising ○ Increase coverage of CBO or agricultural cooperatives
Soil fertility	3	B	4	<ul style="list-style-type: none"> ○ Perform soil fertility tests before the cultivation ○ Remove the harmful weed from the cultivation land
The quality of water for irrigation	0	B	2	<ul style="list-style-type: none"> ○ Consult the extension services ○ Test the water quality of irrigation
Lack of money	3	C	1	<ul style="list-style-type: none"> ○ Provide financial support and farmers lending facilities for small and micro-level producers ○ Ensure proper follow-up and technical support for those farmers with no associated cost

Lack of machinery and equipment	1	B	5	<ul style="list-style-type: none"> ○ Rent or borrow required equipment ○ Agricultural cooperatives to ensure availability and tools and types of equipment available for local small and micro-producers
Climate shocks	4	D	3	<ul style="list-style-type: none"> ○ Rise the farmers' awareness of how to cope with climate shocks
Poor final product quality	5	E	1	<ul style="list-style-type: none"> ○ Provide farmers with knowledge training
Low productivity	5	E	2	<ul style="list-style-type: none"> ○ Selection of good seeds and good quality inputs to ensure better productivity ○ Rise farmers' awareness of the best agricultural practices ○ Ensure close mentorship by agricultural experts ○ Learn from other farmers' past experiences
Misuse or overuse of fertilizers or pesticides	5	E	2	<ul style="list-style-type: none"> ○ Select the best seeds and other inputs to ensure better productivity ○ Rise farmers' awareness of the best agricultural practices ○ Ensure close mentorship by agricultural experts ○ Learn from other farmers' past experiences
Lack of awareness of harvesting best practices and techniques	5	E	2	<ul style="list-style-type: none"> ○ Select the best seeds and other inputs to ensure better productivity ○ Rise farmers' awareness about the best agricultural practices ○ Ensure close mentorship by agricultural experts ○ Learn from other farmers' past experiences
Sabotage of products by wild animals	1	E	3	<ul style="list-style-type: none"> ○ Protect the cultivated land with a fence
Pests and diseases	4	D	4	<ul style="list-style-type: none"> ○ Select the proper pesticides ○ Rise farmers' awareness of how to early discover pests and diseases and how to handle them
Lack of harvesting materials	1	A	NA	<ul style="list-style-type: none"> ○ Subsidize rent for harvesting materials
Lack of post-production best practices such as sorting, storing, packaging and processing	5	D	3	<ul style="list-style-type: none"> ○ Conduct training with the farmers and raise their awareness of the best post-production practices ○ Close attention from the agricultural cooperatives and mentors
Final products do not meet consumers preferences	5	D	3	<ul style="list-style-type: none"> ○ Conduct training with the farmers and raise their awareness of the best post-production practices ○ Close attention from the agricultural cooperatives and mentors

Lack of awareness of the period of safe consumption after using pesticides	5	E	5	<ul style="list-style-type: none"> ○ Conduct training with the farmers and raise their awareness of the best post-production practices ○ Close attention from the agricultural cooperatives and mentors
Availability of packaging materials and selecting the right containers	5	C	4	<ul style="list-style-type: none"> ○ Provide financial resources ○ Consult feasibility studies to better understand the cost and potential benefit. ○ Conduct training with the farmers and raise their awareness of the best post-production practices ○ Close attention from the agricultural cooperatives and mentors
Unpredictable transportation cost of the final products	5	E	1	<ul style="list-style-type: none"> ○ Join other farmers and producers to transport the final product together ○ Approach logistical and transportation services providers with fair prices
Lack of awareness in evaluating the product price based on its quality.	5	E	0	<ul style="list-style-type: none"> ○ Conduct training with the farmers and raise their awareness of the best post-production practices ○ Close attention from the agricultural cooperatives and mentors
Awareness about the available marketing channels	5	D	5	<ul style="list-style-type: none"> ○ Conduct training with the farmers and raise their awareness of the best post-production practices ○ Close attention from the agricultural cooperatives and mentors

Annexe 3: Pickles production risk analysis

The below table presents the results of the discussion from the TREE committee workshop. Some of the reported risks in this section, related to pickles processing, were collected from KIIs. At the TREE committee workshop, the reported risks, as well as additional ones, were identified, analysed and validated against their likelihood, severity and processors' resilience. During the workshop, the participants were asked to agree on a score for likelihood, severity and coping ability related to that risk. Following the assessment of the risk, participants were asked to provide some potential mitigation measures.

Risk	Likelihood	Severity	Processors' Resilience	Mitigation measures
	1=Lowest	A=Lowest	1=Lowest	
	5=Highest	E=Highest	5=Highest	
Increased prices of vegetables and other raw materials	3	D	4	<ul style="list-style-type: none"> Establish networks with small and micro-producers to get the raw vegetables and materials Consider the anticipated prices in each season and plan accordingly Increase productivity during the low seasons to gain better benefit
Lack of availability and seasonality of key raw vegetables and other raw materials	3	D	4	<ul style="list-style-type: none"> Establish networks with small and micro-producers to get raw vegetables and materials Consider the anticipated prices in each season and plan accordingly Increase productivity during the low seasons to gain better benefit
Lack of proper processing infrastructure, equipment and storage for safe and healthy processing	5	D	2	<ul style="list-style-type: none"> Increase the processors' awareness of the required infrastructure to ensure safe production Training of processors on the best processing practices
Low quality of raw materials	4	E	2	<ul style="list-style-type: none"> Agricultural cooperatives should provide support securing such materials or help the processors to get the right raw materials of high quality. Establish a relationship with small and micro-level vegetable producers to keep raw inputs of high-quality and fair prices.
Lack of proper storage	4	E	3	<ul style="list-style-type: none"> Increase processors' awareness Invest in storage facilities
Pesticides residues left on vegetable skin	5	A	1	<ul style="list-style-type: none"> Check the used pesticides and their safe measurements Increase processors' awareness

				<ul style="list-style-type: none"> ○ Buy the raw vegetables from reliable producers ○ Provide the processors with the required tools
Lack of awareness of the best processing practices	3	C	5	<ul style="list-style-type: none"> ○ Increase the processors' awareness through training
Limited knowledge of the processable food items	2	E	5	<ul style="list-style-type: none"> ○ Increase the processors' awareness through training
Lack of awareness of the proper packaging of the final product	4	E	4	<ul style="list-style-type: none"> ○ Increase awareness through training
Lack of marketing channels or awareness of the existing ones	5	E	4	<ul style="list-style-type: none"> ○ Increase awareness through training
Maintain the same quality and taste of the final product over time	5	E	3	<ul style="list-style-type: none"> ○ Increase awareness through training
Lack of awareness on how to evaluate the final product price	4	E	4	<ul style="list-style-type: none"> ○ Training of the processors on prices evaluation