



Final Report
Achieving Land Degradation Neutrality Targets through
Restoration and Sustainable Management of Degraded Land in
Northern Jordan (ALDNT)
Assessment of the Vegetables Value Chain in Northern
Governorates.

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Additionally, I recommend adding a "List of Acronyms" section at the beginning of the report.

List of Acronyms

LDN	Land Degradation Neutrality
VVC	Vegetables Value Chain
FAO	Food and Agriculture Organization of the United Nations
MoA	Ministry of Agriculture
RSS	Royal Scientific Society
ILO	International Labour Organization
FGDs	Focus Group Discussions
WUR	Wageningen University and Research
EBRD	European Bank for Reconstruction and Development.
WFP	World Food Programme
EMV	Economic Modernization Vision
GEF	Global Environment Facility
GAP	Good Agricultural Practices
VC	Value Chain
DOS	Department of Statistics
NGO	Non-Governmental Organization
JEDCO	Jordan Enterprise Development Corporation
IFI	International Financial Institution
UN	United Nations
SDG	Sustainable Development Goals
GDP	Gross Domestic Product
SME	Small and Medium Enterprises
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
USAID	United States Agency for International Development
ICT	Information and Communication Technology
JSMO	Jordan Standards and Metrology Organization
JFDA	Jordan Food & Drug Administration

EXECUTIVE SUMMARY

The project “Achieving Land Degradation Neutrality Targets through Restoration and Sustainable Management of Degraded Land in Northern Jordan (ALDNT)” focuses on leveraging the vegetables value chain to support land restoration and sustainable resource use in the governorates of Irbid, Ajloun, and Al-Mafraq. These areas are experiencing increasing land degradation due to unsustainable agricultural practices, deforestation, and water scarcity. Since vegetables are hold significant economic importance, the sector presents a unique opportunity to integrate sustainable land management with rural development.

The assessment revealed that, while the vegetables sector has strong potential, it faces challenges such as low productivity, fragmented value chains, and limited market access. By promoting improved cultivation techniques, soil and water conservation, and enhanced value chain linkages including processing and marketing land health can be restored while improving livelihoods.

The report recommends integrated approaches that combine technical support, policy alignment, and community engagement to restore degraded land, increase the resilience of local ecosystems, and contribute to Jordan’s Land Degradation Neutrality (LDN) targets.

الملخص

يركّز مشروع "تحقيق أهداف الحياد في تدهور الأراضي من خلال استعادة الأراضي المتدهورة والإدارة المستدامة لها في شمال الأردن" (ALDNT) على الاستفادة من سلسلة قيمة الخضروات لدعم جهود استعادة الأراضي والاستخدام المستدام للموارد في محافظات إربد وعجلون والمفرق. تعاني هذه المناطق من تدهور متزايد في الأراضي نتيجة للممارسات الزراعية غير المستدامة، وشح المياه. ونظرًا لأن الخضروات تعد ذات أهمية اقتصادية كبيرة، فإن هذا القطاع يوفر فرصة لدمج إدارة الأراضي المستدامة مع التنمية الريفية. وقد أظهرت الدراسة أن قطاع الخضروات يمتلك إمكانات قوية، لكنه يعاني من ضعف الإنتاجية، وتجزئة سلاسل القيمة، وضعف الوصول إلى الأسواق. ومن خلال تعزيز تقنيات الزراعة المحسنة، والحفاظ على التربة والمياه، وتعزيز الروابط في سلسلة القيمة بما في ذلك التصنيع والتسويق، يمكن استعادة صحة الأراضي وتحسين سبل عيش المجتمعات المحلية. ويوصي التقرير باتتباع منهجية متكاملة تجمع بين الدعم الفني، ومواءمة السياسات، ومشاركة المجتمعات المحلية من أجل استعادة الأراضي المتدهورة، وزيادة قدرة النظم البيئية على الصمود، والمساهمة في تحقيق أهداف الأردن المتعلقة بالحياد في تدهور الأراضي.

1. CHAPTER ONE: INTRODUCTION

1.1. Project Background:

This section provides a comprehensive analysis of the vegetable value chain, highlighting key actors, processes, market dynamics, and bottlenecks across all stages; from input supply to final product marketing. The analysis aligns with the project's objectives of strengthening farmer capacities, improving market access, and fostering sustainable economic opportunities through the application of circular economy principles. Specifically, the circular economy is applied by promoting practices such as organic waste recycling (e.g., composting crop residues), reusing agricultural inputs where feasible, and encouraging closed-loop systems that minimize waste and resource use. By enhancing efficiency and value addition in the vegetable cultivation sector, the project contributes to Land Degradation Neutrality (LDN) by promoting sustainable land use, reducing pressure on natural resources, and increasing the resilience of Agro-ecosystems in targeted areas. The project's outcomes are aligned with the LDN indicators established by the United Nations Convention to Combat Desertification, which include trends in land cover, land productivity, and soil organic carbon.

1.2. Overview of Vegetables Cultivate Sector in Jordan

The agricultural sector in Jordan contributes approximately 5.5% to the country's Gross Domestic Product (GDP). In 2022, the sector added JD 1.7 billion to the national economy, ranking fourth among value-added sectors (Share-Net Jordan, 2018). Vegetable farming constitutes a significant sub-sector, accounting for an estimated 35–40% of total crop production value, which translates to approximately JD 600–700 million annually or about 2–2.3% of Jordan's total GDP (Medium, 2021). Given the vital role of vegetable farming, several initiatives have been implemented to support smallholder farmers, focusing on enhancing productivity, sustainability, and market access (Jordan Times, 2024). These initiatives aim to improve livelihoods by providing financial assistance, capacity-building, and resources promoting sustainable and climate-resilient agricultural practices. In January 2025, the Ministry of Agriculture allocated JD 5 million to the Rural Financing Program targeting residents of rural and desert areas, with a particular focus on unemployed women and youth (Jordan Times, 2024). This program offers loans up to JD 10,000 at a 2.5% interest rate for projects related to vegetable and fruit production, processing, and marketing. The objective is to create permanent employment opportunities and empower local communities.

Furthermore, under the "Building Resilience to Cope with Climate Change in Jordan" project, the Food and Agriculture Organization (FAO) developed a curriculum for Climate-Smart Farmer Field Schools. The curriculum incorporates modules on high-value vegetable agribusiness, hydroponic leafy vegetable production, and integrated homestead gardening. These programs seek to improve water-use efficiency and promote sustainable agricultural practices among smallholder farmers (FAO, 2025). Despite these efforts, smallholder vegetable farmers face numerous challenges that affect their productivity and income. One of the most pressing issues is water scarcity. Agriculture consumes a large portion of Jordan's already limited water resources, with vegetable crops such as tomatoes requiring approximately 214 liters of water per kilogram and cucumbers about 237

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liters per kilogram (FAO, 2021). In governorates like Mafraq, the situation is particularly severe due to dwindling water availability, rising irrigation costs, and declining water quality, all of which negatively impact crop yields and soil health (Jordan Times, 2024).

In addition to water constraints, farmers face escalating costs of agricultural inputs. Fertilizers, pesticides, and fuel necessary for irrigation pumps have become increasingly expensive, placing considerable financial pressure on smallholder farmers. This situation is further exacerbated by fluctuating and often low market prices for their produce, making it difficult for farmers to cover production costs and maintain stable incomes (DOS, 2023). Market access remains another significant barrier. Many smallholders have limited opportunities to sell their products beyond local markets, restricting their customer base and subjecting them to the influence of intermediaries who often set low prices. This dynamic results in unstable income streams and diminishes the profitability of vegetable farming (Jordan Times, 2024). Compounding these issues are deficiencies in infrastructure. Poor road conditions and insufficient storage facilities, particularly in rural areas, lead to substantial post-harvest losses estimated at 20–30% for crops such as tomatoes (FAO, 2019). These losses reduce the volume of marketable produce and further strain farmers' earnings. Moreover, climate change poses increasing risks. Northern Jordan is experiencing more erratic rainfall patterns, higher temperatures, and an increase in pest and disease outbreaks, all of which disrupt planting and harvesting schedules and undermine the resilience of farming systems (Jordan Times, 2024). Smallholder farmers often lack access to modern agricultural technologies and adequate extension services that could help them adapt to these changing conditions. While the Ministry of Agriculture provides some support, limited staffing and resources reduce the reach and effectiveness of these services (World Bank & FAO, 2020).

Finally, women farmers, who play a crucial role in vegetable production, face additional challenges due to social and economic constraints. They frequently encounter limited mobility, reduced access to financing, and gender-based disparities in land ownership and participation in decision-making. As a result, only 15–20% of female farmers have access to formal agricultural finance, and fewer than 10% benefit from regular extension services, restricting their ability to adopt improved practices and technologies (Jordan Times, 2024). Addressing these gender-specific barriers is essential for promoting inclusive growth within the sector.

Addressing these challenges requires a multifaceted approach that includes improved water management, reduction of production costs, enhanced market access, investment in infrastructure, and expanded training and financial support targeting all farmers, especially women and youth. Collaboration among government agencies, non-governmental organizations, the private sector, and international partners is essential to building a sustainable and resilient vegetable farming sector that contributes meaningfully to Jordan's economy and food security.

1.3. The ALDNT Project

Achieving Land Degradation Neutrality Targets Through Restoration and Sustainable Management of Degraded Land in Northern Jordan (ALDNT) Project is a four-year project with estimated financing of US\$ 3.86 million, all are from the Global Environment Facility (GEF), under the supervision on the Food and Agriculture Organization of the United Nations (FAO), and implemented by the Royal Scientific Society (RSS) through OPIM agreement.

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The overall goal of the project is to support achieving land degradation neutrality (LDN) targets in Jordan during the project period. Land Degradation Neutrality (LDN) represents a paradigm shift in land management policies and practices through three major indicators: land cover, land productivity, and soil organic carbon (SOC). It is a unique approach that counterbalances the expected loss of productive land with measures to avoid or reduce that degradation and the recovery of degraded areas. It places the measures to conserve, sustainably manage, and restore land in the context of land use planning. It has strategic implications to how the country plans and manages its land resources. To date, 120 countries have committed to achieve LDN by 2030. LDN foundational principles are the necessary minimum requirements for successful implementation and attainment of the LDN. UNCCD COP calls upon the Parties to observe these principles.

1.4. Project Intervention Areas (governorates and landscapes)

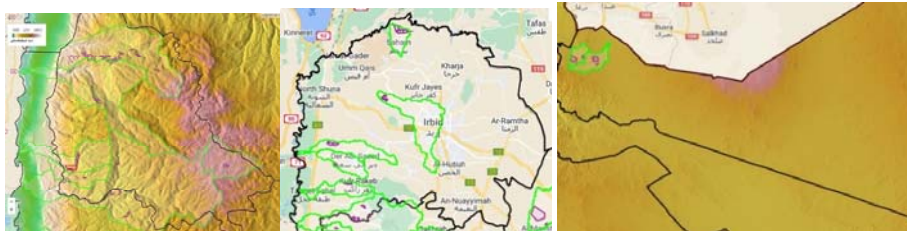
The main objective of the project is to undertake a comprehensive assessment of the Vegetables Value Chain (VVC) to identify Market access mechanisms, technical and business development capacities needed, design and preparation of intervention solutions that provide the highest positive impact on the livelihoods, income and recommend needed capacity building training program topics to strengthen the Vegetables Value Chain (VVC). As a cross-cutting concern the assessment should include the identification of activities that can contribute to the economic empowerment of local women and women NGOs. Fieldwork, involving the consultant, took place in selected areas and villages in each of the three governorates - Irbid (Saham, Dair Abi Saeed, Kufr Asad, Jenin Es-Safa, Dhouqra, Al-Kourah), Ajloun (Kufranjah, Rajeb), and Mafrq (Hosha) as shown in (Figure 1) below, with main focus on the selected sites in these governorates as shown in blew maps.

Figure 1: Targeted Governorates

1 Ajloun

2 Irbid

3 Mafrq



1.5. Study objectives:

The methodology focuses on identifying key products related to the circular economy of vegetables, such as the recycling of organic waste (e.g., composting crop residues), the reuse of agricultural inputs where feasible, and the promotion of closed-loop systems that minimize waste and optimize resource use. It also involves analysing market access mechanisms and examining the associated challenges, opportunities, strengths, weaknesses, and potential solutions. The approach aims to enhance stakeholder knowledge and promote the exchange of best practices through case studies. Ultimately, the goal is to build the capacity of farmers by strengthening their understanding of value chain dynamics, conducting market and competition analyses, and applying

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effective marketing strategies. These strategies are to be aligned with consumer needs and preferences by identifying and utilizing the components of the marketing mix (4 P's): Product, Price, Place, and Promotion.

Additionally, the primary objectives of the value chain analysis are to identify opportunities to maximize benefits for stakeholders, generate added value, and ensure financial and business sustainability. The methodology encompassed all stages of the product marketing process—pre-production, production, and post-production. A non-probability sampling method was used, specifically the purposive sampling technique, due to challenges in defining the target population. The data collection process included field visits to beneficiaries, interviews with key informants, discussions with market suppliers and retailers, and a review of relevant national and international initiatives implemented through small-scale collaborative projects. These efforts aim to leverage existing knowledge and experiences to support sustainable development within the vegetable sector.

2. CHAPTER TWO: METHODOLOGY AND DATA COLLECTION

2.1. Desktop Review

A desk analysis of secondary data was conducted to enhance the current understanding of the studied governorates. Recent peer-reviewed publications and official reports from FAO, DOS, and MoA were given priority. Additionally, a range of other sources of information was reviewed, including scientific and non-scientific reports produced by various organizations, as well as data available on websites such as those of FAO, ILO, GIZ, and Jordan Times. During our field visits, we met many stakeholders who provided us with factsheets and unreleased paperwork, including production quantities, cost bills, proposals, and more.

2.2. Mixed data collection methodology:

The study utilized a mixed-method approach, combining qualitative methodology (focus groups, interviews) and Quantitative data (Electronic questionnaire) begin with a desk review, following by a data collection composed of field interviews with key informants, heads of cooperatives, and farmers; and concluding with an analysis of the value chain. This study relies on more than one methodology:

The consultant conducted field study and data collection work, for which have contacted stakeholders and concerned individuals, as well as group discussions. Targeted purposive sampling technique was used to select the lead informants for individual interviews, the focus group members was applied the different stakeholders include service providers from the private sector, producer organizations, NGO's, Manufacturers, contemporary owners, retailers, wholesalers, Directorate of agriculture, consumers and the beneficiaries, so that the focus is on gender and the greater representation of women by targeting outreach.

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2.3. Structured Questioners

a data collection tool was developed in consultation with the project management, selected nominators for each governorate were trained, during the period form (February 10, and April 24, 2025), the nominators had interviewed a total of 31 farmers (29 Men and 2 Women) as in the table below.

Table 1: shows the numbers of men and women responding to questionnaires, by governorate

Governorate	Men	Women
Irbid	6	1
Ajloun	14	0
Al-Mafraq	9	1
Total	29	2



"Consultant's Meeting with Target Audience Focus Groups"

This data reveals a significant gender gap: only 2 women reported working in vegetables crop activities, compared to 29 men. Several key factors explain this disparity, particularly related to the method of data collection was personal electronic questionnaires:

1. Limited Access to Technology Among Women

In rural and agricultural areas, women often have less access to electronic devices (smartphones, tablets, or computers) compared to men. Even when access exists, digital literacy may be lower among women, making them less likely to complete or engage with electronic questionnaires.

2. Social and Cultural Norms

In such conservative communities, women's work in agriculture, especially in family-based or informal roles is not always formally recognized, and they may not report it through electronic self-reporting tools. Additionally, women may be less comfortable or less likely to participate in electronic surveys due to privacy concerns or lack of confidence in using digital tools.

3. Perception of Agricultural Labor

Women's roles in vegetables production often include tasks such as picking, cleaning, and post-harvest processing. These tasks are frequently seen as extensions of domestic duties, and women may not identify these activities as formal "work" when responding to a questionnaire. In addition, women's mostly work in table vegetable products such as pickling and jam products. As a result, their participation may go unreported, particularly in electronic formats where clarification from a data collector is not immediately available.

4. Self-Selection Bias in Responses

Electronic questionnaires typically require self-initiation to respond. Men, who may feel more responsibility for or visibility in formal agricultural roles, are more likely to respond. Women, especially those in informal or supporting roles, may exclude themselves from responding because they don't see their role as relevant to the questionnaire.

Conclusion

The low number of women reported in the vegetables crops sector is likely influenced by both social realities and the limitations of electronic data collection methods. While the actual involvement of women in vegetables farming may be higher, issues like limited digital access, under recognition of informal work, and cultural factors have contributed to underreporting. Therefore, this gender gap in the data may not reflect the true scale of women's contributions, but rather the constraints of the data collection method used.



"Consultant's Meeting with Target Audience Focus Groups"

2.4. Semi structured interviews:

The data collection phase was implemented between February 10, and April 24, 2025 by Consultant. A total of 213 (126 women and 87 Men) key informant interviews were collected as below table.

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Table 2: shows the numbers of men and women responding to interviews, by governorate

Governorate	Men	Women
Irbid	٤٥	٦٢
Ajloun	٢٢	٣٧
Al-Mafraq	٢٠	٢٧
Total	87	126



"Consultant's Meeting with Target Audience Focus Groups"

The data shows a clear difference in participation, with 126 women compared to 87 men. This discrepancy can be understood through several social, economic, and methodological factors, especially considering the data was collected through personal interviews:

1. Gender Roles in Vegetables Cultivation

In the targeted regions (Irbid, Mafraq and Ajloun), vegetables cultivation is often a family-based activity. Women typically play a central role in labor-intensive parts of the harvest, such as hand-picking, sorting, and food processing. These are tasks that are culturally associated with women's work in rural communities.



"Consultant's Meeting with Target Audience Focus Groups"

2. Availability and Flexibility

Many men in rural areas may have full-time or seasonal employment outside of agriculture. In contrast, women, especially homemakers are more available for seasonal agricultural work like vegetables picking. Their flexibility makes them more likely to participate during harvest periods.

3. Trust and Accessibility in Interviews

Since the data collection was conducted through personal interviews, it is possible that women were more readily available at home or in the fields during the interviews, especially if interviews occurred during working hours. This accessibility could have led to higher reported participation among women.

4. Underreporting of Male Participation

Due to the personal interview method, some working men may have been absent during the data collection period, particularly if they were employed elsewhere. This could have contributed to underreporting of male involvement in vegetables farming, even if they participate occasionally or during peak days.



"Consultant's Meeting with Target Audience Focus Groups"

5. Cultural and Family Structures

In many of these governorates, entire families work together pre, during and post vegetables cultivation. However, women may be more visible and consistently involved in day-to-day tasks, making them more likely to be identified and reported as active workers in personal interviews.

Conclusion

The observed difference in the number of women compared to men engaged in vegetable cultivation is influenced by both cultural labor patterns and the nature of the data collection method, specifically, the use of personal, semi-structured interviews. In the studied governorates, women are traditionally more involved in harvesting and post-harvest tasks, and they are often more available at home during field visits. This increased accessibility, coupled with their prominent but informal role in agriculture, contributed to the higher number of reported female participants. Importantly, this highlights a key methodological strength of semi-structured interviews over electronic questionnaires: the ability to capture gender-differentiated roles more effectively. While electronic tools may overlook women with limited digital access or literacy, particularly in rural areas, personal interviews allow for flexibility, cultural sensitivity, and deeper engagement, resulting in a more accurate representation of women's contributions within the agricultural value chain

2.5. Focus group discussions:

To complement the individual interviews, the research team conducted 15 focus group discussions (FGDs) across the governorates of Irbid, Ajloun, and Al-Mafraq. These sessions were designed to

generate in-depth qualitative insights into community-level experiences, group dynamics, and shared challenges in the vegetables value chain. The focus group discussion session was conducted during the period of (February 10, and April 24, 2025), participants were selected using purposive sampling technique, as shown in below table.

Table 3: numbers of men and women responding to F.G, by governorate

Governorate	Number of FGDs	Men	Women
Irbid	5	102	116
Ajloun	5	87	163
Al-Mafraq	5	82	29
Total	15	271	308

This data shows a higher number of women (308) compared to men (271), with particularly large differences in Ajloun and Irbid. The reasons for this difference can be explained through a combination of socioeconomic, cultural, and methodological factors related to both the nature of vegetables cultivation and the focus group method used:

1. Regional Labor Division in vegetables cultivation

In governorates like Ajloun, Al-Mafraq and Irbid, women are traditionally involved in table products like pickling and jam products, with less portion are involved in vegetable farming as observed in field visits. These tasks are generally considered suitable for women due to being less physically intensive and more compatible with family labor patterns. In contrast, Al-Mafraq shows a different trend where male participation is higher. This could be due to its more rural or tribal context, where women's participation in agricultural work may be less visible or less commonly reported.

2. Influence of Focus Group Methodology

Focus groups often rely on group interaction and self-reporting, which can lead to more open and detailed discussion, especially among women who may not participate in formal interviews. Women may have felt more comfortable sharing their involvement in group settings, leading to more accurate or even higher reporting of their roles. In some communities, men might underreport women's agricultural roles due to traditional gender norms, while women's focus groups might highlight their significant and active contribution, even in mixed-gender focus groups.

3. Social Norms and Visibility of Labor

In Ajloun, the high number of women (163) compared to men (87) could reflect strong local traditions of female participation in vegetables farming, where women are seen as essential labor during harvest season. In Al-Mafraq, the relatively low number of women (29) compared to men (82) may be due to cultural restrictions or lower visibility of women in agricultural spaces, influencing both actual participation and what was reported in focus groups.

4. Economic Contribution and Household Involvement

Vegetables farming in Jordan is often a family-based activity. Women are involved not only in field work but also in post-harvest tasks such as cleaning, pressing, and preparing vegetables for

Commented [K14]: Specify how participants were recruited for FGDs to avoid selection bias. Was purposive sampling or random selection used? Clarify the group size per session and criteria for grouping (e.g., by gender, age, role).

Commented [K15]: Recommend citing relevant studies or regional labor surveys supporting this gendered division of labor for stronger empirical backing.

Commented [K16]: Add whether focus groups were gender-segregated, as mixed-gender groups might inhibit open discussion, especially in conservative communities.

Commented [K17]: Clarify whether FGDs explored informal and non-market labor contributions, as these are often undervalued in economic analyses.

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market or home use. These informal and domestic roles are more likely to be recognized and shared in the open discussion format of focus groups, leading to more accurate representation of women's contributions.

Conclusion

The higher number of women involved in vegetables crop activities in Irbid and Ajloun compared to men is consistent with local agricultural practices and family labor structures. The focus group methodology further amplified this by creating a setting where women's voices and roles were more clearly expressed. In contrast, the lower female representation in Al-Mafraq reflects different cultural dynamics. Overall, the data highlights how both regional differences and the method of data collection can influence the reported gender distribution in agricultural labor.

Commented [K19]: Recommend concluding with a reflection on how these gendered findings should inform tailored interventions and capacity-building efforts in project design.

2.6. Analysis of findings

After completion of the field work, Consultant analyzed the data using developed frameworks to reach the following tasks: The main three vegetables are identified through questionnaire and focus groups and interviews as the following:

2.7. 2.7. Vegetable Crops by Governorate

Based on a combination of quantitative survey results and qualitative insights from focus group discussions and farmer interviews conducted in Ajloun, Irbid, and Mafraq, the following primary vegetable crops were selected for analysis, shown in table (4).

Table 4: primary vegetables crops in each governorate

Governorate	Selected Primary Vegetable Crops		
Ajloun	1. Pepper	2. Onion	3. Tomato
Irbid	1. Tomato	2. Lettuce	3. Potato
Mafraq	1. Zucchini	2. Cabbage	3. Lettuce

These crops were identified through a multi-step process that included:

- Analysis of survey data on crop frequency
- Direct validation with farmers during focus groups and interviews
- Assessment of Agro-climatic suitability, market relevance, and resource constraints

Justification by Governorate

Ajloun Selected Crops: Pepper, Onion, Tomato

- **Justification:**
Ajloun's highland climate is favorable for high-value crops like pepper and onion, which perform well under rainfed and semi-irrigated conditions. Tomato is widely cultivated as a staple. Farmers confirmed during interviews that these three crops are the most common,

and that crop diversity across small plots helps manage risk due to land fragmentation and lack of greenhouse infrastructure.

Irbid Selected Crops: Tomato, Lettuce, Potato

- **Justification:**

These crops are highly adaptable, widely marketable, and well-suited to the region's climate and irrigation availability. Focus group participants reported cultivating all three in rotation or intercropping systems, often planting multiple crops on a single donum to maintain continuous production and reduce exposure to market and climate risks.

Mafrq Selected Crops: Zucchini, Cabbage, Lettuce

- **Justification:**

Mafrq's semi-arid environment favors short-cycle, water-efficient crops. Farmers rely on open-field irrigation, and the selected crops were consistently identified in both surveys and focus groups as best-suited to local conditions. Their fast growth, low input requirements, and market value make them ideal for low-capital production systems. These vegetables were appeared in field survey as shown the frequency of each in the next table (5).

Table 5: Supporting data form survey

Crop	Ajloun	Irbid	Mafrq
Pepper	27	3	2
Onion	20	3	9
Tomato	12	6	4
Lettuce	0	3	4
Potato	0	3	3
Zucchini	7	2	5
Cabbage	1	1	4

Focus groups in each governorate confirmed these survey findings, with farmers asked to validate the frequency of crops and identify the three most commonly cultivated vegetables based on their own experiences. Their responses aligned closely with the quantitative data, reinforcing the reliability of the selection.

Conclusion

The selection of three key crops per governorate provides a clear and practical foundation for the rest of the report's analysis. These crops reflect:

- Actual cultivation patterns confirmed by local farmers
- Suitability to regional Agro-climatic conditions
- Compatibility with smallholder open-field systems
- Economic relevance and market demand

This targeted selection will be used to assess input needs, production costs, constraints, and potential support interventions in subsequent sections.

2.7.1. Value Chain Map:

Following the completion of fieldwork and stakeholder consultations across Ajloun, Irbid, and Mafraq, the consultant conducted a detailed analysis of the vegetable sector using Porter's Value Chain Model. This framework allowed the identification of value creation and loss points across each stage of the chain, while highlighting the key actors, functions, and constraints that influence smallholder performance. Porter's model distinguishes between primary activities, which directly add value to the product, and support activities, which enable the primary functions to operate efficiently.

A. Primary Value Chain Activities

Activity	Application in Northern Jordan's Vegetable Sector
Inbound Logistics	Involves the sourcing of inputs such as seeds, fertilizers, and pesticides. Farmers in all three governorates rely on local Agro-dealers, often facing high prices, poor-quality inputs, and limited product choice.
Operations	Vegetable production is predominantly open-field, using traditional methods. Constraints include water scarcity, low input efficiency, and minimal mechanization. Farming practices vary, with limited use of improved techniques.
Outbound Logistics	Post-harvest handling is typically informal. Produce is transported in bulk without grading or packaging, leading to high spoilage. Cold chain infrastructure is largely absent, particularly in Mafraq and rural areas of Irbid.
Marketing & Sales	Farmers primarily sell through intermediaries or at local wholesale markets, often with no price-setting power. Market information is limited, and cooperatives have weak links to urban and export markets.
Service (After-Sales)	Formal feedback mechanisms from markets or consumers are lacking. Producers rarely receive information on consumer preferences or quality expectations, limiting their ability to adjust practices and improve product value.

B. Support Activities

Support Function	Observations and Constraints
Procurement	Most smallholders source inputs individually, limiting bulk discounts and quality assurance. Weak institutional procurement (e.g., through cooperatives) persists.
Technology Development	Adoption of modern practices, such as drip irrigation, improved varieties, and pest control is limited. Innovation systems are fragmented and rarely reach remote areas.
Human Resource Management	Labor is seasonal and informal, with limited technical training. Cooperative staff and farmers often lack agronomic and business development skills.
Infrastructure (Firm-Level)	Cold storage, aggregation facilities, and transport services are underdeveloped. ICT tools for market access and cooperative operations remain scarce.

C. Constraints and Bottlenecks Identified

The Porter model revealed several systemic constraints across the value chain:

- **Input stage:** High input costs, weak access to certified seeds and fertilizers.
- **Production stage:** Inefficient irrigation, reliance on traditional methods, and labor shortages.
- **Post-harvest:** High perishability, lack of grading, and poor packaging practices.
- **Marketing:** Farmers have limited access to high-value markets and poor negotiation power.
- **Services and Infrastructure:** Inadequate extension services, cold chain absence, and limited business support for cooperatives.

D. Recommendations Based on Porter's Model

Based on this structured value chain analysis, the Consultant recommends the following targeted interventions to improve competitiveness and inclusivity:

1. Technical Training Programs

- Focus: Improved agronomic practices, pest/disease control, irrigation efficiency, and post-harvest handling.
- Target: Smallholder producers in Irbid and Ajloun.

2. Cold Storage and Transport Upgrades

- Focus: Reduce spoilage, extend shelf life, and improve timing of market entry.
- Target: Central collection points in Mafraq and Irbid.

3. Input Procurement Support

- Focus: Group procurement via cooperatives or NGOs to lower costs and improve access to quality inputs.
- Target: All governorates.

4. Market Linkages & Cooperative Strengthening

- Focus: Strengthen cooperatives' ability to negotiate prices, access urban buyers, and engage in contract farming models.
- Target: Irbid and Ajloun.

E. Conclusion

Applying Porter's Value Chain Model provided a structured framework for identifying gaps in value creation across the vegetable production system in Northern Jordan. By targeting weaknesses in both primary and support functions, particularly in operations, logistics, and input supply, the

proposed recommendations aim to improve the overall efficiency, profitability, and resilience of smallholder farming in the region.

3. CHAPTER THREE: DIAGNOSTIC REPORT OF THE VALUE CHAIN (STAKEHOLDERS, VALUE CHAIN GAP ANALYSIS, WEAKNESSES AND OPPORTUNITIES)

The vegetable cultivation sector is a vital component of agricultural and rural economies in many regions. Mapping the vegetables value chain helps identify the key actors, activities, and flows from input supply to final consumption. This report presents a comprehensive overview of the vegetables value chain, outlining each stage from input provision through to consumer services, and includes associated support activities.

3.1. Justification for a Unified Vegetable Value Chain in Northern Jordan

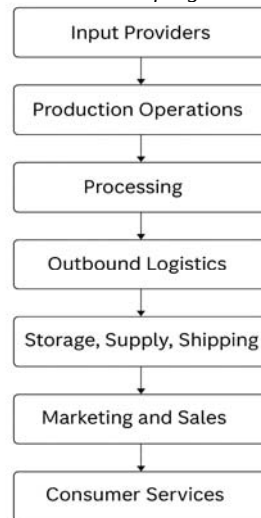
The cultivation and commercialization of vegetables in Ajloun, Irbid, and Mafrq, are characterized by overlapping practices, shared stakeholders, and integrated market systems. This makes it both practical and efficient to adopt a single value chain model for all vegetable crops in the region. Firstly, agricultural inputs such as seeds, fertilizers, irrigation systems, and pesticides are generally sourced from the same suppliers for all vegetable types, and smallholder farmers often plant multiple crops on the same plot to diversify income and reduce risk (Department of Statistics (DOS, 2023). Production systems, whether in open fields or protected greenhouses, follow similar agronomic patterns and labor needs across crops like tomatoes, cucumbers, and lettuce (Al-Bakri & Suleiman, 2017; WUR & FAO, 2021). In addition, post-harvest handling including sorting, grading, packaging, and transportation is performed using standardized methods regardless of crop type (FAO, 2020). These crops are then channeled into the same local and central wholesale markets, such as the Amman Central Market, indicating a shared marketing infrastructure (USAID, 2015; FAO & EBRD, 2019). Furthermore, policy documents and investment reports consistently treat the vegetable sector as a unified system, recommending cross-cutting interventions such as improved irrigation, cold storage, and farmer training programs that serve all vegetable producers (Ministry of Agriculture, 2021). In conclusion, due to the convergence in production methods, stakeholder roles, market structures, and policy approaches, it is both logical and effective to use one integrated value chain framework for vegetables in northern Jordan.

3.2. Value Chain

3.2.1. Value Chain Model for Vegetables

The below figure shows the value chain model for vegetables, this chain will be described in each stage as shown in the next table.

Figure 2: value chain of vegetables



As shown in next table, the vegetable value chain begins with input supply, including seeds, fertilizers, pesticides, water, and technical support. It then moves to production, where farmers cultivate vegetables under open-field or greenhouse conditions. After harvesting, the chain continues with post-harvest handling, involving sorting, grading, cleaning, and packaging.

The next stage is transportation and storage, which ensures produce reaches markets in good condition. This is followed by marketing and distribution, where wholesalers, retailers, and exporters manage sales through local markets, supermarkets, or for export. Finally, the chain ends at consumption, where consumers purchase vegetables for household or commercial use.

Table 6: Summary of value chain

Stage	Stakeholder	Role	Gap Addressed
1. Input Providers	- Agro-dealers - Input companies - MoA programs - Cooperatives	- Provide seeds, fertilizers, pesticides - Supply greenhouse and irrigation equipment	- Limited access to quality inputs - High cost of inputs - Weak last-mile distribution
2. Production Operations	- Smallholder farmers - Family/hired labor - Extension agents	- Cultivate crops - Manage land, irrigation, pest control, and harvesting	- Low productivity - Limited access to extension services - Poor agronomic practices
3. Processing	- Farmers - Local packhouses - Cooperatives	- Clean, sort, grade, and package produce	- Inadequate post-harvest handling - Lack of processing infrastructure - Quality losses
4. Outbound Logistics	- Local traders - Transporters - Brokers	- Aggregate produce - Transport goods to markets or collection points	- Poor rural road networks - High transport costs - Lack of coordination among actors
5. Storage, Supply, Shipping	- Storage facility owners - Exporters - Market agents	- Store produce - Handle cold chain logistics - Prepare for export	- Insufficient cold storage - High spoilage rates - Inconsistent supply volumes
6. Marketing and Sales	- Central market agents - Retailers - Wholesalers - Export buyers	- Sell produce through wholesale, retail, and export channels	- Limited market access - Price volatility - Poor market information systems
7. Consumer Services	- Consumers - Local grocery stores - Food service providers	- Purchase and consume fresh or processed products	- Limited availability of quality produce - Inconsistent supply - Weak traceability and food safety mechanisms

3.3. Agriculture Supply Stores by Governate

Irbid

- Large number of agricultural stores located in Irbid City and surrounding rural areas like Juhfiyeh, Habaka, and Hashimiyya.
- Key Stores:

- o Family Farm (مزرعة العائلة)
- o Mohammad Al-Ghraibeh Agricultural Supplies
- o Al-Asriya Agricultural Supplies

Ajloun

- Fewer stores compared to Irbid, mostly located in towns like Kafranjah, Anjara, and Ajloun City.
- Farmers usually access them directly but sometimes travel to Irbid for more options.

Mafrq

- Major Stores:
 - o Raed Mashaal Agricultural Materials Store
 - o Ahmed Ghosab for Agricultural Materials & Seeds
- Most are located in Mafrq City and on main agricultural routes, allowing easy access for local farmers.

Farmer–Store Relationship

- Generally direct and seasonal.
- Some stores offer advisory services or installment payments.
- Farmers usually maintain ongoing relationships with preferred stores for better pricing and trust.

3.4. Agricultural Labor Information

4. Most of the agricultural labor in the vegetables sector is Jordanian, some of farmers depends on non-Jordanian labor force.
5. The labor force includes family members and migrant workers, often working informally.
6. Daily wages range from 10 to 20 Jordanian dinars, depending on the region and work intensity.
7. Workdays can be long (8 to 13 hours), especially at peak harvest.

Women make up a significant portion of seasonal labor, particularly in rural Ajloun and Mafrq

1.5. Key Recommendations

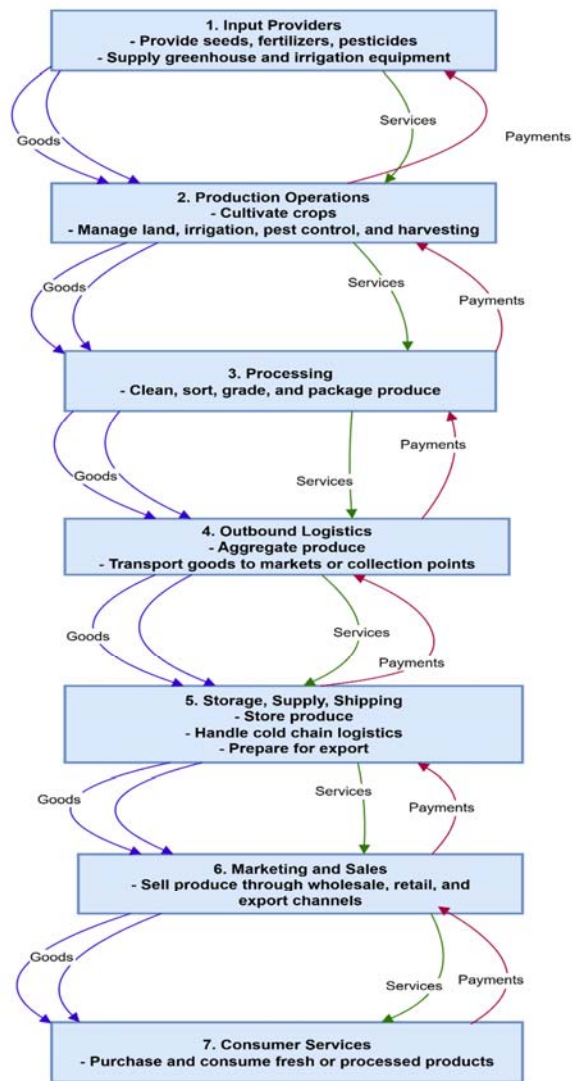
1. Strengthen Agro-input stores in Ajloun and Mafrq to provide a wider range of supplies.
2. Organize and regulate seasonal labor, ensuring fair wages and safe working conditions.
3. Enhance coordination between farmers and suppliers through seasonal contracts or bundled offers.
4. Increase access to training via agriculture directorates and input suppliers in partnership with development projects.

3.6. Vegetables value chain stakeholders in northern Jordan

The vegetable value chain in northern Jordan involves a range of critical stakeholders whose roles have been well-documented in various reports and studies. According to the *Jordan Times* (2023), farmers in the Jordan Valley face seasonal and logistical challenges that underscore the importance of efficient transporters, traders, and wholesalers in maintaining product quality and market flow. The Food and Agriculture Organization (FAO), in collaboration with the Ministry of Agriculture and UNIDO (2023), highlights the centrality of input suppliers, producers, and government institutions in transforming Jordan's agri-food system toward resilience and sustainability. A report by *HortiDaily* (2020) emphasizes opportunities within the tomato value chain, particularly in post-harvest handling and export, pointing to the significant roles of processors and exporters. Furthermore, a study by Alhammad and Awaideh (2023) explores how value chains enhance food security, stressing the interconnectedness of farmers, retailers, and support organizations. Market analyses, such as the one by DataM Intelligence (2024), underscore the foundational role of seed and input suppliers in driving productivity across the chain. Together, these sources illustrate the integrated efforts required among all stakeholders to ensure the efficiency and sustainability of the vegetable sector in northern Jordan. The below diagram presents a visual map of the vegetables value chain:

Commented [K20]: The mapping does not visually illustrate the roles and flows among stakeholders. Please include a comprehensive stakeholder map or diagram showing relationships and flow of goods, services, and finance.

Figure 3: Map of vegetables value chain



3.7. Gap Analysis of the Vegetables Value Chain in the Governorates of Irbid, Ajloun, and Mafrq – Jordan

The vegetable sector is a strategic pillar of Jordan's agricultural economy, contributing significantly to national food security, employment, and rural livelihoods. It is a major source of income for thousands of smallholder farmers and seasonal workers and plays a key role in supplying both local markets and regional export destinations. Despite its importance, the sector faces considerable structural and operational challenges that constrain its productivity, efficiency, and value creation potential.

This analysis outlines gaps across key stages of the vegetables value chain, including input provision, production, processing, logistics, storage, marketing, and consumer services. These challenges range from limited access to quality inputs and inefficient irrigation systems to post-harvest losses, weak cold chain infrastructure, and limited producer bargaining power in the market.

Quantitative indicators highlight the severity of these gaps. For example, open-field tomato yields in Jordan average approximately 7 metric tons per dunum, compared to potential yields of 11–12 tons under greenhouse systems using improved practices (DOS, 2023). Production costs vary by crop and region but typically fall between JOD 360 and 550 per dunum for open-field vegetables. When accounting for harvesting, packaging, and transport, total farm-level costs can rise to JOD 400–625 per dunum (FAO, 2022; GIZ, 2021).

Post-harvest losses are also a major concern, with estimates suggesting 25–35% of perishable vegetables are lost during handling and storage—especially during the hot season due to insufficient cold chain coverage and inefficient logistics (WFP, 2023).

Furthermore, farmers often receive a limited share of the final market price. In 2023, central market selling prices for key vegetables such as tomatoes, cucumbers, and squash ranged from 200 to 350 fils/kg, while farm-gate prices were substantially lower; between 150 and 250 fils/kg, meaning farmers retained only 40–60% of the retail value (DOS, 2023). Marketing and logistics costs, typically 20–50 fils/kg, account for an additional 10–15% of the consumer price.

These findings underline the urgent need for targeted interventions, including the promotion of farmer cooperatives, improvements in extension and irrigation services, development of aggregation and storage facilities, and streamlined access to local and export markets. Enhancing value chain governance and transparency will be key to ensuring better income distribution, reducing losses, and improving the sector's overall competitiveness. The following table highlights the key gaps identified throughout the chain:

Commented [K21]: The analysis is largely descriptive; lacks measurable indicators of performance (e.g., productivity per dunum, post-harvest loss %, input-output ratios).

Please Integrate quantitative benchmarks (e.g., yield comparisons, losses, labor productivity, costs per kg) to support findings and prioritize interventions.

Commented [NA22]: Consider adding a column for 'Affected VC Stages' to better show where each gap occurs (can be linked to Table 4).

Table 7: key gaps identified throughout the chain

Challenge	Impact	Key actors	Key entities
Limited access to quality inputs	Difficulty obtaining certified seeds, quality fertilizers, and pesticides, affecting yields and quality.	Input Providers, Production Operations	Agro-dealers, Input companies, MoA programs, Cooperatives; Smallholder farmers, Extension agents
Low adoption of improved practices	Predominance of traditional methods leads to lower productivity and greater vulnerability to pests and diseases.	Production Operations	Smallholder farmers, Family/hired labor, Extension agents
Poor post-harvest handling	Inadequate washing, sorting, grading, and packaging result in increased losses and reduced product quality.	Processing, Marketing & Sales	Farmers, Local packhouses, Cooperatives; Central market agents, Wholesalers
Inadequate transport infrastructure	Poor roads and high transport costs delay deliveries and increase spoilage risk.	Outbound Logistics, Marketing & Sales	Local traders, Transporters, Brokers; Market agents
Limited cold storage and facilities	Lack of sufficient cold chain and storage options causes rapid spoilage and limits supply consistency.	Storage & Shipping, Processing	Storage facility owners, Exporters, Market agents
Fragmented marketing systems	Disorganized and informal markets cause price fluctuations and restrict farmers' access to profitable markets.	Marketing & Sales, Consumer Services	Central market agents, Retailers, Wholesalers, Export buyers; Consumers, Grocery stores

3.7.1. Governorate-Specific Gap Analysis

Irbid Governorate:

The main challenges in Irbid include water scarcity due to climate change and small land ownership, which limit irrigation potential and farmers' ability to invest in improved technologies. While access to quality inputs is relatively better than in other regions, costs and occasional quality issues persist. Additionally, limited post-harvest facilities and fragmented marketing channels, with reliance on middlemen, reduce farmers' profitability and market reach.

Ajloun Governorate:

In Ajloun, key gaps center around weak marketing systems, particularly limited access to global Good Agricultural Practices (GAP) certifications, which restrict market opportunities.

There is also low awareness of best agricultural practices and limited capacity among farmers to manage their farms as businesses, hindering productivity and commercialization.

Mafrq Governorate:

Mafrq faces significant challenges including limited awareness of modern farming practices, severe water scarcity, and lack of financial resources. Cultural barriers further inhibit the adoption of improved agricultural methods, while infrastructure and market access remain underdeveloped, limiting overall sector growth.

3.7.2. Opportunities for Development

Despite the challenges facing the vegetable value chain in northern Jordan, there are several promising opportunities for development across the governorates of Irbid, Ajloun, and Mafrq:

- **Climate-Smart Agriculture and Efficient Irrigation:** Promoting water-saving technologies such as drip irrigation, rainwater harvesting, and climate-resilient crop varieties can address water scarcity while enhancing productivity and resilience to climate change.
- **Farmer Training and Capacity Building:** Expanding extension services and farmer field schools to promote good agricultural practices, pest management, and farm-business management can improve both yields and income.
- **Certification and Quality Standards:** Supporting farmers to achieve Global GAP and other certifications can unlock access to premium markets and export opportunities, particularly for growers in Ajloun and Irbid.
- **Post-Harvest and Cold Chain Investment:** Developing shared-use facilities for sorting, grading, packaging, and cold storage can reduce post-harvest losses and extend shelf life, increasing profitability.
- **Strengthening Cooperatives and Market Linkages:** Encouraging the formation and formalization of farmer cooperatives can enhance market access, reduce input costs, and improve negotiation power with buyers.
- **Access to Finance and Youth Engagement:** Introducing tailored microfinance programs and supporting Agri-entrepreneurship among youth and women can unlock innovation and investment in underdeveloped areas, especially in Mafrq.

3.7.3. Strategic Recommendations

Table 8: Strategic Recommendations

Governorate	Suggested Actions
Irbid	- Promote water-efficient technologies (e.g., drip irrigation, mulching) - Support cooperative/shared land-use models - Upgrade post-harvest infrastructure (sorting, cooling, packaging) - Facilitate digital and direct market linkages - Expand extension services for climate-smart practices
Ajloun	- Provide training on Global GAP and export-quality certifications - Strengthen farmer capacity in agribusiness and farm management - Build partnerships with agribusiness and exporters - Establish demonstration farms for good agricultural practices - Develop cooperative marketing hubs and collection centers
Mafaq	- Conduct awareness campaigns to encourage adoption of modern farming practices - Provide targeted subsidies and finance for irrigation systems and inputs - Deploy mobile extension units to reach remote farming communities - Empower women and youth through Agri-entrepreneurship training and funding - Invest in local storage, cold chains, and rural distribution centers

3.7.4. Conclusion

The vegetables sector holds great potential for advancing rural economic development in northern Jordan. To fully capitalize on this opportunity, it is crucial to overcome existing value chain challenges, especially those related to water resource management, farmer education, post-harvest processes, and market access. By prioritizing investments in modern technologies, capacity building, improved infrastructure, and strengthened marketing channels, the sector can boost productivity, enhance competitiveness, and promote long-term sustainable growth.

3.8. Value Chain Gap analysis (Weakness, Opportunities, and Constraints)

3.8.1. Key Gaps by Governate

Table 9: Key Gaps by Governorate

Governorate	Gap	Weaknesses	Opportunities
Irbid	Input Supply	Limited access to quality inputs due to small-scale farming and market constraints.	Promote local input supply networks; introduce drought-resistant seed varieties.
	Production	Water scarcity from climate change; small land ownership limits scale and efficiency.	Implement water-efficient irrigation; support land-sharing or cooperative models.
	Post-Harvest	Poor storage and handling facilities causing post-harvest losses.	Invest in cold storage and basic packaging solutions near farming communities.
	Marketing	Weak market linkages; limited access to digital or direct market channels.	Facilitate digital marketing platforms and local aggregation centers.
	Extension Services	Limited farmer access to up-to-date climate-smart farming practices.	Expand mobile and community-based extension services focused on water management.
Ajloun	Finance	Difficulty accessing affordable finance for irrigation and inputs.	Promote tailored microfinance products focused on irrigation technology adoption.
	Input Supply	Moderate availability of inputs but low awareness of best varieties.	Strengthen Agro-dealer networks; promote use of certified seeds and inputs.
	Production	Limited knowledge of best agricultural practices and farm management as a business.	Provide training on good agricultural practices (GAP) and farm business management.
	Post-Harvest	Basic packaging and handling practices leading to quality degradation.	Establish demonstration farms and cooperatives for improved post-harvest handling.
	Marketing	Marketing challenges especially related to global certification requirements.	Support farmers in obtaining certifications like Global GAP and facilitate linkages with exporters.
Mafrq	Extension Services	Extension services exist but need to be updated with modern agribusiness approaches.	Expand vocational training and farmer field schools focused on export quality standards.
	Finance	Moderate access but limited funds for value addition and certification.	Encourage partnerships with financial institutions for agri-business loans.
	Input Supply	Limited input availability and weak supply chain infrastructure.	Develop Agro-input distribution points; promote climate-resilient varieties.
	Production	Water shortage, cultural issues, and low adoption of best practices hinder productivity.	Launch awareness campaigns; introduce subsidized irrigation systems and technical support.
	Post-Harvest	Insufficient storage, cold chain, and processing facilities.	Invest in rural storage facilities and cold chains; support local processing initiatives.
Mafrq	Marketing	Poor market access and limited cooperative structures.	Strengthen cooperatives and market hubs to improve bargaining power.
	Extension Services	Low awareness and limited extension reach in remote areas.	Deploy mobile extension units and train community-based facilitators.
	Finance	Limited financing options, especially for women and youth.	Create targeted credit schemes and entrepreneurship training programs for marginalized groups.

3.8.2. Regional & National-Level Constraints

1. **Water Scarcity and Climate Change:**
Limited water resources and increasing drought frequency severely impact agricultural productivity and sustainability, especially in northern governorates.
2. **Infrastructure Deficiencies:**
Insufficient rural infrastructure such as roads, cold storage, and processing facilities hamper efficient post-harvest handling and market access.
3. **Limited Access to Finance:**
At a broader level, smallholder farmers face challenges securing affordable credit and investment for modernizing production and marketing.
4. **Regulatory and Certification Barriers:**
Complex certification requirements and weak enforcement of quality standards limit competitiveness in export markets.
5. **Market Fragmentation and Weak Value Chain Coordination:**
Poor coordination among actors, from input suppliers to retailers, reduces overall efficiency and limits economies of scale.
6. **Limited Extension and Research Support:**
National extension services often lack resources and capacity to provide timely and relevant support, while agricultural research does not always align with farmers' needs.
7. **Policy and Institutional Challenges:**
Inconsistent agricultural policies, limited incentives for sustainable farming, and weak institutional coordination hinder sector development.

3.8.3. Market Trends

1. **Growing Demand for Quality and Safety:**
Consumers—both locally and regionally—are increasingly prioritizing fresh, high-quality, and safe vegetables, driving demand for certified produce and traceability.
2. **Shift Toward Modern Retail Channels:**
Expansion of supermarkets, grocery chains, and organized wholesale markets is changing how vegetables are marketed and sold, requiring better packaging and consistent supply.
3. **Increased Interest in Organic and Sustainable Produce:**
There is a rising niche market for organic and sustainably grown vegetables, linked to health awareness and environmental concerns.
4. **Digitalization of Market Information:**
Mobile apps and online platforms are gradually being adopted for price information, weather updates, and direct marketing, although penetration remains limited.
5. **Export Market Potential:**
Regional and international markets are showing growing interest in Jordanian vegetables, provided that quality standards, certifications, and consistent supply chains are met.
6. **Seasonality and Supply Fluctuations:**
Seasonal variations in production impact supply volumes and prices, encouraging opportunities for off-season production and better storage solutions.

7. Consumer Preference for Convenience:

Increasing urbanization leads to demand for pre-cut, ready-to-cook vegetables and value-added products, signaling a potential area for Agro-processing development.

8. Agro-Tourism Development:

Growing interest in Agro-tourism provides opportunities for farms to diversify income by offering farm visits, educational tours, and direct sales, enhancing local economic development and consumer awareness of fresh produce.

3.8.3.1. Capacity Development Needs Report

Irbid

- Training on water-efficient irrigation technologies and climate-smart agriculture to combat water scarcity.
- Strengthening local input supply chains and Agro-dealer networks to improve access to quality seeds and inputs.
- Skills development in post-harvest handling, storage, and packaging to reduce losses.
- Capacity building on digital marketing and aggregation platforms for improved market linkages.
- Enhancing extension services with mobile and community-based advisory approaches focused on sustainable farming.
- Financial literacy programs and training on accessing and utilizing microfinance for irrigation and input investments.

Ajloun

- Training on Good Agricultural Practices (GAP) and farm business management to raise awareness of best practices and commercial farming.
- Capacity building for cooperative management and post-harvest handling to improve quality and reduce losses.
- Guidance on certification processes such as Global GAP to meet export requirements.
- Vocational training and farmer field schools focusing on modern agribusiness skills and export quality standards.
- Financial management training to access funds for value addition and certification.

Mafrq

- Awareness and training campaigns on modern, climate-resilient farming practices to overcome cultural and knowledge barriers.
- Technical training on irrigation system installation and maintenance with a focus on subsidized options.
- Capacity development in storage facility management, cold chain operations, and local processing techniques.
- Cooperative development and market linkage training to strengthen farmer groups and improve bargaining power.

- Training of extension agents and community facilitators to enhance reach in remote areas.
- Entrepreneurship and financial literacy training targeting women and youth, along with access to tailored credit schemes.

3.8.3.2. Recommended Training Program

The development of a resilient and competitive vegetable value chain in Jordan requires strategic investment in human capital across all stakeholder groups. Smallholder farmers, cooperatives, extension agents, Agro-dealers, market intermediaries, and other actors play critical roles in ensuring the productivity, efficiency, and sustainability of the sector. However, challenges such as low adoption of modern practices, poor post-harvest handling, weak market linkages, and limited business management skills continue to constrain performance.

This capacity building training plan has been designed to address these gaps through a targeted and inclusive approach. The training modules focus on key technical, organizational, and market-oriented competencies needed to enhance value chain performance. Each topic is tailored to the specific needs of stakeholders in Irbid, Ajloun, and Mafraq, with strong emphasis on the inclusion of women and youth.

To ensure equitable participation in the vegetable value chain, the training program adopts targeted strategies to include women and youth—groups often underrepresented in agriculture. Outreach efforts will specifically engage them through partnerships with local NGOs and cooperatives, while training content is tailored to address their unique challenges, such as access to finance, entrepreneurship, and digital marketing. Additionally, sessions will be scheduled flexibly and held in accessible locations to accommodate mobility and caregiving responsibilities.

The program also fosters an inclusive learning environment using gender-sensitive and youth-friendly facilitation methods. Successful women and youth from the sector will be featured as role models to encourage peer learning. Monitoring tools will collect age- and gender-disaggregated data to assess participation and adapt future trainings. These measures aim to empower women and youth as key contributors to agricultural development through improved skills, confidence, and market access.

Commented [NA23]: ToR Requirement: Identify training priorities for NGOs and farmers.

4. [Table 10: Capacity Building Training Plan for Vegetable Value Chain Stakeholders](#)

Training Topic	Target Group	Governorate(s)	Duration	Objective	Expected Outcomes	Institutions
Water-Efficient Irrigation Techniques	Smallholder Farmers, Extension Agents	Irbid, Mafraq	3 days	Equip participants with skills to install, operate, and maintain efficient irrigation systems.	Improved water-use efficiency, reduced water costs, higher crop yields.	Ministry of Agriculture (MoA), Local NGOs, Extension Services
Climate-Smart Agriculture Practices	Farmers, Extension Agents, Local NGOs	Irbid, Mafraq	3 days	Improve adoption of resilient farming methods to mitigate climate change impacts.	Increased resilience to climate risks, adoption of sustainable practices.	MoA, FAO, Local NGOs

Input Selection and Use of Certified Seeds	Agro-Dealers, Farmers	Irbid, Ajloun, Mafrq	2 days	Enhance understanding of quality inputs and promote use of certified seeds and fertilizers.	Increased use of certified inputs, improved crop quality and yields.	Agro-input suppliers, MoA, Cooperatives
Post-Harvest Handling and Storage	Farmers, Cooperatives	Irbid, Ajloun, Mafrq	2 days	Reduce post-harvest losses through improved harvesting, sorting, and storage techniques.	Reduced post-harvest losses, improved product quality and marketability.	MoA, Cooperatives, Post-harvest service providers
Digital Marketing and Market Linkages	Farmer Groups, Cooperatives, Local NGOs	Irbid, Ajloun, Mafrq	2 days	Build capacity to use digital platforms for market access and price information.	Enhanced market access, better price information, improved incomes.	MoA, Local NGOs, ICT service providers
Good Agricultural Practices (GAP) and Certification	Farmers, Cooperatives	Ajloun	4 days	Prepare farmers to meet quality standards for local and export markets.	Compliance with market standards, increased access to premium markets.	MoA, Certification Bodies, Cooperatives
Farm Business and Agribusiness Management	Farmers, Cooperative Leaders, Local NGOs	Ajloun, Irbid	3 days	Develop skills in record-keeping, budgeting, and marketing to manage farms as businesses.	Improved farm profitability, better financial management, enhanced marketing strategies.	MoA, Local NGOs, Cooperatives
Cooperative Formation and Management	Farmer Groups, Cooperative Leaders, Local NGOs	Ajloun, Mafrq	3 days	Strengthen cooperative structures to improve collective bargaining and service delivery.	More effective cooperatives, stronger collective bargaining power.	MoA, Cooperative Unions, Local NGOs
Extension Services and Farmer Field Schools	Extension Agents	Ajloun, Mafrq, Irbid	3 days	Update advisory methods and promote participatory extension approaches.	Enhanced extension effectiveness, increased farmer adoption of improved practices.	MoA, Extension Departments
Financial Literacy and Access to Credit	Farmers, Women, Youth, Local NGOs	Irbid, Mafrq, Ajloun	2 days	Improve understanding of financial products and credit management.	Greater access to finance, improved credit management, increased investment in farms.	Banks, Microfinance Institutions, Local NGOs, Providers
Agro-Processing and Value Addition	Farmers, Women Entrepreneurs	Mafrq, Ajloun	3 days	Build skills in simple vegetable processing and packaging for market diversification.	Increased value addition, income diversification, new market opportunities.	MoA, Cooperatives, Local SMEs

Agro-Tourism Development and Management	Farmers, Rural Community Leaders, Local NGOs	Mafrq, Ajloun	2 days	Train on Agro-tourism opportunities, farm hospitality, and direct marketing to visitors.	New income streams, improved rural livelihoods, enhanced farm visibility.	Tourism Ministry, MoA, Local NGOs
Mobile Extension and Community Facilitation	Extension Agents, Local NGOs	Irbid, Ajloun, Mafrq	3 days	Enhance skills to deliver mobile and community-based advisory services in remote areas.	Increased outreach, improved farmer knowledge, greater adoption of best practices.	MoA, Local NGOs, ICT Providers

3.8.3.3. Conclusion

To achieve sustainable and competitive development in the vegetables sector across Irbid, Ajloun, and Mafrq, it is essential to address both technical and organizational capacity gaps. Implementing focused and well-designed training programs will empower farmers and stakeholders, enhance production efficiency, and improve market access, thereby boosting the overall competitiveness of Jordanian vegetables in local and regional markets.

4. CHAPTER FOUR: CAPACITY NEEDS AND RECOMMENDATIONS FOR IMPLEMENTING MARKETING ACCESS AND TRAINING NEEDS FOR THE LOCAL NGOS AND SMALLHOLDER FARMERS REPORT

Identify the training needs of local non-governmental organizations (NGOs) and smallholder farmers in the targeted governorates, with the aim of enhancing and developing the vegetables value chain. The task also includes providing actionable recommendations on the most relevant training programs and priority topics for the project to follow up on.

4.1. Summary of Gap Analysis by Governorate

Table 11: Summary of Gap Analysis by Governorate

Governorate	Key Gaps Identified	Weaknesses	Opportunities
Irbid	- Water scarcity due to climate change - Small land size - High post-harvest losses - Weak	- Limited irrigation infrastructure - Fragmented land ownership - Lack of	- Promote water-saving technologies - Encourage cooperative farming -

	digital and market linkages	post-harvest handling facilities	Develop cold chains and aggregation centers
Ajloun	- Limited awareness of best practices - Lack of certification and farm business skills - Weak market access	- Low exposure to GAP and agribusiness - Limited capacity to meet export standards - Poor marketing infrastructure	- Provide training on Global GAP and farm management - Strengthen cooperatives - Facilitate market linkages
Mafraq	- Limited extension services - Cultural barriers - Water and input shortages - Weak financial and storage access	- Isolated farming communities - Gender-based participation challenges - Poor access to credit and cold chains	- Deploy mobile extension units - Promote women/youth Agri-entrepreneurship - Invest in rural infrastructure

4.2. Recommendations and Prioritization of Interventions

1. Capacity Building for Farmers and Workers

- Conduct training on Good Agricultural Practices (GAP) and modern production techniques to improve quality and safety standards.
- Enhance skills in modern irrigation methods and climate adaptation, especially targeting Mafraq where water scarcity is critical.
- Include modules on integrated pest management, post-harvest handling, and digital literacy.

2. Improvement of Infrastructure and Facilities

- Support the establishment and rehabilitation of post-harvest infrastructure such as:
 - Packaging, sorting, and cold storage centers (priority in Ajloun and Mafraq).
 - Aggregation hubs in Irbid for smallholder coordination.
- Set up regional quality testing laboratories for vegetable pesticide residue and nutritional analysis.
- Integrate solar-powered cold storage where feasible to reduce operating costs and improve sustainability.

3. Development of Marketing and Branding Skills

- Implement training on digital marketing, storytelling, and branding, tailored to local products (e.g., “Fresh from Irbid”, “Mountain Veggies of Ajloun”).
- Establish direct linkages with:
 - Local markets
 - Institutional buyers (schools, hotels)
 - Online platforms and farmer marketplaces
- Integrate vegetable products into Agri-tourism and eco-tourism in Ajloun to create added value through farm visits and local produce sales.

4. Strengthening Cooperatives and Local Associations

- Strengthen existing agricultural cooperatives to:
 - Pool inputs

- o Access markets
- o Manage aggregation and storage
- Build leadership, governance, and agribusiness management capacities in cooperatives and local NGOs.
- Promote inclusion of youth and women in cooperative structures.

5. Provision of Technical Support and Financing

- Facilitate access to extension and advisory services via:
 - o Mobile units
 - o Digital helplines
 - o Public-private partnerships
- Promote access to microfinance and blended finance models to help smallholders invest in inputs, technologies, and storage.
- Partner with financial institutions and donor-funded programs to:
 - o Develop tailored credit products
 - o Provide guarantee schemes for farmer groups

4.3. Expected Outputs/Deliverables

- A detailed report on capacity building needs and required interventions in Irbid, Ajloun, and Mafrq.
- A proposed training plan including prioritized programs, topics, and target groups.
- Strategic recommendations to empower cooperatives and local organizations to enhance the value chain.
- A roadmap for implementing interventions based on prioritized needs.

4.4. Conclusion

The successful development of the vegetable value chain in Irbid, Ajloun, and Mafrq depends on targeted interventions addressing technical gaps and infrastructure, alongside enhancing the capacities of workers and farmers. The recommendations in this report serve as a foundation for strategic planning that supports sustainable development and increases the competitiveness of vegetable products in local and regional markets.

Conduct a comprehensive assessment of current policies affecting smallholders' access to vegetable markets in the targeted governorates (Irbid, Ajloun, and Mafrq). Identify the barriers hindering market access and provide clear policy recommendations to address these barriers and improve the market environment. Table 11: Summary of Gap Analysis by Governorate

4.5. Key Barriers to Market Access by Governorate

Governorate	Key Barriers to Market Access
Irbid	- Fragmented land ownership limiting scale - High post-harvest losses due to lack of cold chains and aggregation centers - Weak digital and physical market linkages - Limited collective marketing and underperforming cooperatives
Ajloun	- Limited exposure to marketing best practices and digital tools

Commented [K24]: Barriers are listed generally, with no quantification or regional comparison. Could you please use tables or graphs to compare barriers across governorates, and prioritize them using a scoring system or stakeholder perception index.

	- Inadequate compliance with quality standards (e.g., Global GAP) - Underdeveloped branding and value addition strategies - Insufficient infrastructure for grading, sorting, and packaging
Mafraq	- Geographic isolation and poor transport infrastructure - Limited access to cold storage and market facilities - Cultural and gender-related barriers restricting participation - Inadequate access to financial services for market investment

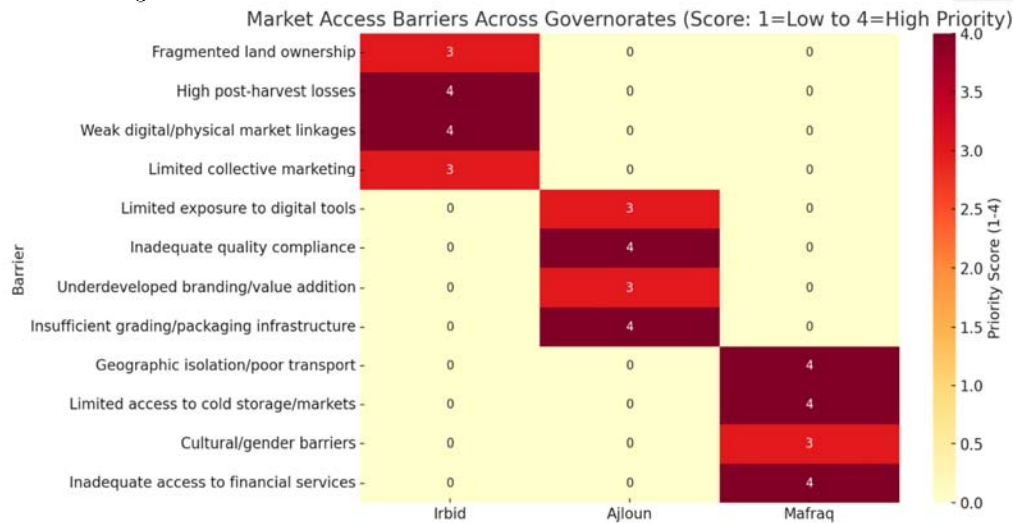
Table 12: Key Barriers to Market Access by Governorate

The heatmap below illustrates the severity of market access barriers across the three target governorates. Each barrier was scored based on stakeholder consultations, with higher values indicating more pressing constraints.

- **Irbid** faces severe issues with post-harvest losses and weak digital/physical market connections (both scored 4), along with fragmented land and poor collective marketing.
- **Ajloun** is highly affected by inadequate quality compliance and poor packaging infrastructure (score 4), as well as digital illiteracy and limited value addition.
- **Mafraq** demonstrates critical challenges across all listed barriers, especially isolation, storage access, and financial exclusion (scores 4), reflecting both structural and social constraints including gender barriers.

This visual prioritization guides intervention design and resource allocation by pinpointing governorate-specific needs.

Figure 4: Market Access Barriers Across Governorates



4.6. Proposed Policy Recommendations

1. Simplify Regulatory and Licensing Procedures

- Develop streamlined licensing processes to facilitate sales and exports.
 - Establish one-stop service centers offering technical and administrative support to producers.
- This aligns with the Jordan National Export Strategy (2021–2025) and the Economic Modernization Vision (EMV 2033), both of which emphasize easing regulatory barriers to improve competitiveness and attract private investment.*

2. Improve Infrastructure and Logistics Services

- Support the establishment of storage and cooling centers in key production areas.
 - Enhance transport networks to improve access to local and regional markets.
- This supports the National Agricultural Strategy (2016–2025) and the Green Growth National Action Plan (2021–2025), which call for reducing post-harvest losses and enhancing infrastructure to improve market efficiency and sustainability.*

3. Enhance Financial and Technical Support for Smallholders

- Launch targeted subsidized financing programs tailored for small-scale farmers.
 - Provide comprehensive technical and marketing training to strengthen capacity.
- This recommendation reflects priorities in the Agricultural Modernization Framework and Food*

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Security Strategy (2021–2030), which advocate for inclusive rural development through access to finance and capacity building.

4. Promote Inclusive Value Chain Participation and Coordination

- Implement programs that empower women and youth within the value chain.
- Foster multi-stakeholder platforms to coordinate efforts across public, private, and community actors.

This is in line with the National Strategy for Women (2020–2025), the National Youth Strategy, and EMV 2033, which promote inclusive economic participation and integrated development planning.

4.7. Recommended Interventions Ranked by Priority

The recommended interventions were prioritized through a multi-criteria evaluation framework focusing on: **Urgency:** How immediately the intervention addresses key challenges identified by stakeholders. **Impact:** The extent of positive change expected across the value chain, benefiting producers, processors, and markets. **Feasibility:** The practicality of implementation based on existing institutional capacity, resources, and socio-political context. This ensures recommendations are both strategically important and realistically achievable.

Prioritization was informed by consultations with smallholder farmers, cooperatives, and the Ministry of Agriculture across northern Jordan's governorates. Stakeholders emphasized regulatory hurdles and infrastructure gaps as urgent issues, while also highlighting the need for financial support and greater inclusion of women and youth. Resource constraints such as funding availability, technical readiness, and institutional mandates were integrated into feasibility assessments to align with national development plans and donor programming. The table below summarizes the prioritized interventions, expected impacts, estimated costs, responsible parties, and key monitoring indicators to guide implementation and accountability.

Table 13: Recommended Interventions Ranked by Priority

Intervention	Urgency	Impact	Feasibility	Expected Impact	Cost	Responsible Party
Simplify Regulatory and Licensing Procedures	High	High	High	Faster licensing, reduced costs, improved market access	Low	Ministry of Industry & Trade, MoA
Improve Infrastructure and Logistics Services	High	High	Medium	Reduced losses, better quality, expanded market reach	High	MoA, Ministry of Transport, Municipalities
Enhance Financial and Technical Support	Medium	Medium-High	Medium	Increased productivity and financial inclusion	Medium	Agricultural Credit Corp., MoA, JEDCO, IFIs
Promote Inclusive Value Chain Participation	Medium	Medium	Low-Medium	Greater inclusion of women/youth, improved coordination	Medium	MoA, Ministry of Social Development, NGOs, UN Agencies

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4.8. Expected Outputs/Deliverables

- A detailed policy assessment report on barriers to smallholders' market access in Irbid, Ajloun, and Mafraq.
- A prioritized list of recommended policy interventions based on priority, feasibility, and cost.
- Practical recommendations for relevant stakeholders to implement supportive policies.

4.9. Conclusion

The assessment results indicate a range of political and logistical barriers limiting smallholders' effective market access in Irbid, Ajloun, and Mafraq. By implementing the recommended interventions, the vegetables value chain can be strengthened

4.10. Analysis of Gender, Age, and Climate Change Considerations by Governorate

Table 14: analysis of gender, age, and climate change consideration by governorate

Governorate	Gender Considerations	Age (Youth) Considerations	Climate Change Considerations
Irbid	- Women are underrepresented in formal agricultural roles.- Limited access to land and credit for women.	- Youth show interest in Agri-tech but lack access to training and start-up capital.- Few youth-led initiatives in farming cooperatives.	- Increasing water scarcity due to changing rainfall patterns.- High vulnerability to temperature fluctuations impacting crop yields.
Ajloun	- High potential for women's participation in Agri-tourism and value-added products.- Social norms still restrict field-level involvement.	- Youth engagement is low due to migration and limited local job opportunities.- Need for targeted agri-business incubation.	- Soil erosion and land degradation linked to intense rainfall and slope farming.- Irrigation challenges due to reduced groundwater recharge.
Mafraq	- Cultural norms strongly limit women's participation in production and marketing.- Opportunities in home-based processing exist.	- Youth face high unemployment and are mostly disengaged from agriculture.- Barriers include isolation and lack of extension services.	- Severe water shortages and desertification risks.- High sensitivity to climate shocks due to arid conditions.

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4.11. Recommended Interventions and Prioritization

As shown in table (16) recommended interventions regarding age, gender, and climate change, illustrated by place of intervention, priority, and estimated cost, with timeline needed to execute these suggested interventions. A notable suggested intervention with prioritized in high level for all governorates is **"Simplify regulatory and licensing procedures"**, which includes policy workshops, IT systems for licensing, and capacity-building.

Table 15: Recommended interventions regarding age, gender, and climate change

Intervention	Governorate	Priority	Estimated Cost (USD)	Timeline (Years)	Notes
Facilitate women's access to credit and land through cooperatives and microfinance	Irbid	High	\$150,000 – \$250,000	2 – 3	Pilot credit schemes, cooperative strengthening, and training.
Establish Agri-tech training centers and innovation hubs for youth	Irbid	High	\$200,000 – \$400,000	3 – 4	Facility setup, equipment, trainers, and initial operations.
Rehabilitate traditional irrigation systems and promote climate-smart practices	Irbid	High	\$500,000 – \$800,000	4 – 5	Infrastructure investment plus training for smart agriculture.
Support women-led Agri-tourism and value-added production	Ajloun	Medium	\$150,000 – \$300,000	2 – 3	Includes branding, marketing, equipment, and training.
Launch youth-focused rural entrepreneurship and agribusiness bootcamps	Ajloun	Medium	\$100,000 – \$200,000	1.5 – 2.5	Covers training, mentorship, seed grants, and monitoring.
Install water harvesting systems and slope-adapted drip irrigation	Ajloun	High	\$300,000 – \$500,000	3 – 4	Infrastructure, community mobilization, and maintenance support.
Empower women through home-based processing and e-commerce training	Mafrq	High	\$100,000 – \$200,000	1.5 – 2.5	Training, basic tools, digital marketing platforms.
Deploy mobile training and extension services for youth in remote areas	Mafrq	High	\$120,000 – \$180,000	2 – 3	Mobile units, curriculum, trainers, and transport.
Introduce solar-powered irrigation and drought-resilient crop varieties	Mafrq	High	\$500,000 – \$900,000	4 – 5	Equipment, installation, training, and maintenance.
Simplify regulatory and licensing procedures	All governorates	High	\$100,000 – \$150,000	1 – 2	Includes policy workshops, IT systems for licensing, and capacity-building.

4.12. Expected Outputs/Deliverables

- A detailed report outlining how gender, age, and climate change considerations are integrated into the vegetables value chain analysis in the targeted governorates.
- A prioritized list of recommended interventions ranked by priority, location, and cost, with explanations on how these factors are addressed.
- Practical recommendations for relevant stakeholders to implement programs that incorporate these considerations to achieve sustainable development.

4.13. Conclusion

Integrating gender, age, and climate change considerations is a crucial factor for the successful development of the vegetables value chain in Irbid, Ajloun, and Mafraq. The recommended interventions provide a comprehensive framework to support all targeted groups, enhance production sustainability, and increase competitiveness in local and regional markets.

4.14. Summary of Overall Findings

- **Regulatory and Legal Barriers:** Complex procedures affecting smallholders' ease of access to markets, especially regarding licenses and administrative processes.
- **Lack of Financial and Technical Support:** Limited funding and advisory services needed by smallholders to develop and improve their production and product marketing.
- **Weak Infrastructure:** Poor storage, transportation, and packaging facilities negatively impacting product quality and marketing opportunities.
- **Gender and Age Considerations:** The need to include women and youth in production and marketing activities, while considering the impacts of climate change on different groups.

4.15. Stakeholders' Inputs and Recommendations

- **Government Entities:** The necessity to simplify regulatory procedures and provide financial incentives for smallholders.
- **Farmers:** The need for continuous training and specialized technical support programs tailored to different age groups.
- **Non-Governmental Organizations:** The importance of integrating gender considerations and providing equal opportunities for women and youth in the value chain.
- **Private Sector:** Supporting the development of new marketing channels and linking producers to export markets.

4.16. Final Recommendations

- Simplify licensing mechanisms and regulatory procedures to facilitate smallholders' market access.
- Develop capacity building programs including technical and marketing training that consider age and gender groups.
- Enhance infrastructure by establishing advanced storage and packaging centers.
- Strengthen partnerships among all stakeholders to coordinate efforts and exchange knowledge.

- Integrate climate change considerations into technical and agricultural support plans.

4.17. Expected Outputs

- A comprehensive assessment report on policy constraints to smallholders' market access in the governorates of Irbid, Ajloun, and Mafraq.
- A summary of stakeholders' inputs and recommendations.
- A proposed action plan based on final recommendations, reflecting identified priorities.

4.18. Conclusion

This report forms a comprehensive framework for following up on the development of policies supporting smallholders in the vegetables sector within the targeted areas by listening to stakeholders' feedback and discussing the findings objectively and effectively. It aims to enhance capacities, improve infrastructure, and provide a fair and sustainable marketing environment for smallholders.

5. CHAPTER FIVE: MARKET ACCESS POLICY REPORT

5.1. Introduction

The vegetables sector represents a vital component of Jordan's agricultural economy, especially in the northern regions of Irbid, Ajloun, and Mafrq. These areas benefit from favorable agro-climatic conditions, a strong farming tradition, and a strategic geographic location that supports both domestic production and export potential. Vegetables such as tomatoes, cucumbers, eggplants, and leafy greens contribute significantly to local livelihoods, food security, and rural employment.

Despite its strategic importance, the vegetables value chain in northern Jordan faces a range of structural and systemic challenges. These include limited market access at local and regional levels, fluctuating input costs, inadequate cold chain and transport infrastructure, regulatory hurdles, and insufficient access to finance and extension services. Market volatility and water scarcity further compound the vulnerability of smallholder farmers and agribusinesses engaged in this sector.

This report presents a comprehensive analysis of the policy and regulatory environment impacting the vegetables value chain in northern Jordan. It highlights critical constraints such as trade restrictions, quality and safety compliance issues, weak institutional support, and limited coordination among value chain actors. In parallel, the report identifies untapped opportunities to improve competitiveness and sustainability through strategic investment, innovation, and policy reform.

Particular attention is given to the role of women and youth, who are increasingly involved in vegetable production, processing, and marketing activities. Their active participation is essential to driving innovation, enhancing productivity, and promoting inclusive rural development. The analysis is framed within the broader Sustainable Development Goals (SDGs), especially those focused on zero hunger, decent work and economic growth, gender equality, and responsible consumption and production.

By offering targeted, evidence-based recommendations, this report aims to guide policymakers, producers, cooperatives, and development stakeholders in strengthening the vegetables value chain. The goal is to foster a more resilient, inclusive, and market-oriented sector that contributes meaningfully to sustainable economic development in northern Jordan.

5.2. Gap and Constraint Analysis in the Vegetables Value Chain

5.2.1. Gaps and Weaknesses

- Weak technical extension and limited financial services for smallholder vegetable farmers.
- Inadequate infrastructure for cold storage, transport, and post-harvest packaging.
- Low participation of women and youth in vegetable production and value-added activities.
- Production vulnerability to climate change, including water scarcity and temperature extremes.

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5.2.2. Policy and Regulatory Constraints

The vegetable value chain (VC) in northern Jordan faces numerous policy and regulatory constraints that hinder the competitiveness and inclusion of smallholder farmers. These challenges span agriculture, trade, and water management, and often result from fragmented institutions, restrictive laws, and insufficient support mechanisms. Despite recent strategic frameworks like the Economic Modernization Vision 2033 and the National Plan for Sustainable Agriculture (2022–2025), critical implementation gaps persist.

Key Regulatory Bottlenecks and Impacts

1. **Overlapping Regulations and Fragmented Governance:** Multiple government bodies regulate different stages of the value chain (e.g., MoA, JFDA, JSMO, Ministry of Trade). Lack of coordination increases the burden on smallholders seeking permits, export licenses, or technical approvals.
2. **Restrictive Input and Pesticide Policies:** Delays in registering new agrochemicals and restricted access to modern inputs under the Agricultural Materials Law limit productivity. Smallholders often use outdated or low-quality products due to regulatory bottlenecks and weak extension systems.
3. **Limited and Unequal Input Subsidies:** Input support programs (e.g., for irrigation equipment or fertilizers) are often ad hoc and poorly targeted. Larger farms typically benefit more, while smallholders lack access to timely and affordable input support.
4. **Complex Export Standards and Certifications:** Compliance with phytosanitary regulations, GLOBALG.A.P., and traceability systems is costly. Without public support or cooperative structures, smallholders are largely excluded from export markets.
5. **Water Access and Pricing Policies:** Irrigation quotas, high water prices, and poor infrastructure disproportionately affect small-scale vegetable producers. Implementation of the National Water Strategy (2023–2040) remains limited in rural areas.
6. **Lack of Smallholder-Focused Agricultural Policy:** National strategies broadly support modernization and climate resilience but lack concrete mechanisms for smallholder inclusion in high-value chains such as vegetables.

As shown in table (16) we can conclude that, addressing these constraints requires not only policy reform but also operational coordination between ministries, investment in rural infrastructure and compliance services, and more inclusive agricultural support programs. A comprehensive approach is necessary to align Jordan's national strategies with the realities of smallholder vegetable production, particularly in the northern governorates.

Commented [K33]: Policy analysis is shallow—missing impact of key agricultural, trade, or water laws on vegetable VCs.

Please expand policy section to include regulatory bottlenecks (e.g., pesticide laws, export regulations, input subsidies) and how they affect smallholders.

Table 16: Summary of Policy Constraints and Strategic Alignment

Policy Constraint	Impact on VC	Relevant Strategy	Gap/Action Needed
Fragmented regulation & oversight	Delays, inconsistent enforcement, lack of support for smallholders	EMV 2033; National Agriculture Plan	Develop a unified agricultural governance framework
Restrictive pesticide/input laws	Low productivity, high pest pressure, poor access to modern technology	National Plan for Sustainable Agriculture	Streamline registration, improve access to certified inputs
Weak input subsidy systems	High cost burden on smallholders, inequality in support access	EMV 2033; Agricultural Risk Management Strategy	Introduce targeted and transparent input support for smallholders
Complex export standards	Exclusion of smallholders from high-value/export markets	Jordan Export Strategy; Food Security Strategy	Provide compliance support, promote collective marketing
Inequitable irrigation access and water pricing	Low cropping intensity, vulnerability to climate stress	National Water Strategy (2023–2040); EMV 2033	Expand treated wastewater use, subsidize water-saving technologies
Lack of smallholder inclusion in modernization plans	Marginalization from value chain upgrading and public investments	EMV 2033; National Plan for Sustainable Agriculture	Mainstream smallholder-focused support in all agricultural development plans

5.2.3. Stakeholders' Inputs

Table 17: Stakeholders' Inputs

Stakeholder Group	Key Inputs and Recommendations
Government Entities	Simplify regulatory procedures, offer financial incentives, and invest in cold chain and transport infrastructure.
Farmers	Receive ongoing training and specialized technical support, with programs tailored for different age groups including youth.
NGOs	Integrate gender considerations and actively promote equal opportunities for women and youth in all value chain activities.
Private Sector	Develop and expand marketing channels, and strengthen links between producers and local, regional, and export markets.

5.2.4. Integration of Gender, Age, and Climate Change Considerations

Table 18: Integration of Gender, Age, and Climate Change Considerations

Governorate	Gender Considerations	Age Considerations	Climate Change Considerations
Irbid	Enhance women's roles in vegetable production and marketing.	Target youth with training on modern cultivation and digital tools.	Promote drought-resistant vegetable varieties and water-saving irrigation.
Ajloun	Support women's involvement in post-harvest handling and packaging.	Develop youth employment programs in vegetable value-added services.	Encourage sustainable farming practices to improve soil and water management.
Mafrq	Increase women's participation in vegetable cooperatives, especially in rural areas.	Engage older farmers to share traditional knowledge alongside new technologies.	Introduce climate adaptation measures to cope with drought and temperature fluctuations.

5.2.5. Recommended Interventions

Table 19: Recommended Interventions

Intervention	Priority	Ease of Implementation	Cost
Integrated training programs targeting gender and youth	High	High	Medium
Developing sustainable agricultural practices to address climate change	High	Medium	High
Improving infrastructure for storage and packaging	Medium	Medium	Medium
Strengthening partnerships among stakeholders	Medium	High	Low

5.3. Policy Alignment Report: Vegetables Value Chain Development in Irbid, Ajloun, and Mafrq (With Focus on Women and Youth)

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5.3.1. Introduction

This report aims to align recommendations for the development of the vegetables value chain in the governorates of Irbid, Ajloun, and Mafrq with relevant national policies in Jordan. It focuses on enhancing the participation of women and youth across the value chain: cultivation, processing, marketing, and entrepreneurship.

5.3.2. Key Challenges in the Vegetables Value Chain (Relevant to Women and Youth)

1. Limited access to land, finance, and productive resources.
2. Insufficient targeted technical training and extension services.
3. Low participation of women and youth in processing and marketing activities.
4. Social and cultural barriers restricting market access and leadership roles.
5. High vulnerability to climate change impacts such as drought and water scarcity.

5.3.3. Relevant National Policies

□ Agriculture and Vegetables Sector

- National Plan for Sustainable Agriculture (2022–2025)
- Economic Modernization Vision – Agriculture Sector
- Vegetables Value Chain Strategy (Ministry of Agriculture)

□ Women's Empowerment

- National Strategy for Women (2020–2025)
- Economic Modernization Vision – Empowerment Pillar

□ **Youth Empowerment**

- National Youth Strategy (2019–2025)
- National Employment Plan

□ **Entrepreneurship and Local Employment**

- National SME Development Strategy
- Governorate Development Strategy

5.3.4. Alignment of Recommendations with National Policies

Table 20: Alignment of Recommendations with National Policies

#	Recommendation	Target Group	Aligned National Policies
1	Support women-led vegetable processing and packaging initiatives	Women	– National Strategy for Women– SME Development Strategy– Economic Modernization Vision
2	Provide youth training in modern vegetable farming and digital tools	Youth	– National Youth Strategy
3	Establish cooperatives for women and youth in vegetable marketing	Women and Youth	– Governorate Development Strategy
4	Promote women-managed post-harvest handling and quality control	Women	– National Strategy for Women– Gender Mainstreaming in Agriculture Policy
5	Facilitate access to microfinance and small grants for vegetable entrepreneurs	Women and Youth	– SME Development Strategy

5.3.5. General Recommendations

- Actively engage women and youth in planning and implementing agricultural development programs.
- Direct public and donor-funded support programs to underserved areas based on value chain analysis.
- Promote public-private-civil partnerships to ensure long-term impact and sustainability.

5.3.6. Suggested Implementing Institutions

- Ministry of Agriculture
- Ministry of Social Development
- Ministry of Labor

- Ministry of Digital Economy and Entrepreneurship
- Jordan Cooperative Corporation
- Development and Employment Fund
- Microfinance institutions
- Local women and youth associations

5.3.7. Report Outputs

- Comprehensive report outlining gaps, constraints, and stakeholders' inputs.
- Prioritized list of proposed interventions based on priority and cost.
- Recommendations for capacity-building programs focusing on gender, age, and climate change.
- Proposed action plan to enhance smallholders' market access.

5.4. Policy Alignment Report: Vegetables Value Chain Development in Irbid, Ajloun, and Mafraq (With Focus on Women and Youth)

5.4.1. Introduction

- This report aims to align recommendations for the development of the vegetables value chain in the governorates of Irbid, Ajloun, and Mafraq with relevant national policies in Jordan. It focuses on enhancing the participation of women and youth across the value chain.

5.4.2. Key Challenges in the Vegetables Value Chain (Relevant to Women and Youth)

1. Limited involvement of women and youth in agricultural activities.
2. Lack of technical and vocational training in modern technologies.
3. Limited access to funding for small entrepreneurial initiatives.
4. Weak marketing capabilities and limited access to local and export markets.
5. Absence of cooperative platforms for small-scale women and youth producers.

5.4.3. Relevant National Policies

1. Agriculture and Vegetables Sector

1. National Plan for Sustainable Agriculture (2022–2025)
2. Economic Modernization Vision – Agriculture Sector
3. National Agriculture Strategy (2020–2025)

4. National Climate Change Policy (2022–2050)

5. Food Security Strategy (2021–2030)

2. Women's Empowerment

1. National Strategy for Women (2020–2025)

2. Economic Modernization Vision – Empowerment Pillar

3. National Social Protection Strategy (2019–2025)

3. Youth Empowerment

1. National Youth Strategy (2019–2025)

2. National Employment Plan

4. Entrepreneurship and Local Employment

1. National SME Development Strategy

2. Governorate Development Strategy

3. Economic Modernization Vision (2023–2033)

5.4.4. General Recommendations

- Actively engage women and youth in planning and implementing agricultural development programs.
- Direct public and donor-funded support programs to underserved areas based on value chain analysis.
- Promote public-private-civil partnerships to ensure long-term impact and sustainability.

5.4.5. Suggested Implementing Institutions

- Ministry of Agriculture
- Ministry of Social Development
- Ministry of Labor
- Ministry of Digital Economy and Entrepreneurship
- Jordan Cooperative Corporation
- Development and Employment Fund
- Microfinance institutions
- Local women and youth associations

5.4.6. Conclusion

Commented [NA35]: Kindly consider summarizing the key findings and recommended actions more explicitly

The vegetables value chain in northern Jordan's governorates of Irbid, Ajloun, and Mafraq is vital for supporting local livelihoods, food security, and rural economic growth. However, the sector faces significant challenges, including limited market access, inadequate infrastructure, complex regulatory frameworks, and insufficient financial and technical support.

Women and youth participation remain constrained by social, financial, and technical barriers, while climate change impacts such as water scarcity and temperature fluctuations further threaten productivity and sustainability. Stakeholder consultations highlight the urgent need for streamlined regulations, improved infrastructure, targeted capacity building, and inclusive empowerment programs.

Addressing these challenges through prioritized interventions aligned with national policies—focusing on regulatory simplification, infrastructure enhancement, social inclusion, and climate resilience—will contribute to a more competitive, inclusive, and sustainable vegetables value chain in northern Jordan. Coordinated multi-stakeholder efforts are essential to achieving these outcomes and advancing sustainable economic development in the region

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