Area Based Risk Assessment (ABRA): Climate Change and Agriculture in Al-Dawaya and Al-Gharraf

Key Findings Presentation

March 2025

Thi Qar, Iraq

Funded by European Union Civil Protection and Humanitarian Aid

IMPACT Shaping practices Influencing policies Impacting lives
REACH PANDA AGORA

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Content

Content

01

Overview & Methodology

Area Based Risk Assessment (ABRA)

Main characteristic:

- An approach to analyze multiple hazards, both natural and anthropogenic, that an area/settlement is prone to.
- It identifies the most at-risk areas by evaluating existing conditions of vulnerability
- Assesses potential harm to exposed people, property, services, livelihoods, and the environment on which they depend

Objectives

To inform **context-adapted** agricultural Disaster Risk Resilience programming of ACTED and policies of local stakeholders by providing **actionable evidence** on the impacts of **climate** and environmental hazards—with a special focus on **water scarcity**—on **agricultural communities** for better integration of climate mitigation and adaptation measures.

Directly inform **ACTED's** activities and other relevant stakeholders in the area to support an **evidence-based response**.

- To inform and advocate for programs and policies that aim to **mitigate** the risk of **climate related displacement**,
- Support **local response systems**, and adaptations measures to protect local livelihoods.

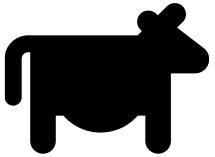
Research Questions

1. **What are the vulnerabilities** (economic, social, and environmental) **of farmers and livestock holders** in the area, particularly related to water scarcity, soil health, and fodder access?
2. What are **common agro-pastoral practices** in the area?
3. What is the **state and condition of the region's key infrastructure**, including irrigation systems, and agricultural technology, to address the challenges of farmers and livestock holders due to climate change?
4. **What drought (risk) mitigation measures and priority intervention areas can be identified** in the area?
5. In what ways can communities', NGOs and institutions **lift the barriers that prevent effective coping mechanisms** and adaptive practices?

Area and Population of Interest

- 14,052 families from the Thi Qar governorate experienced climate-induced displacement, accounting for half of Iraq's climate-displaced families[1]
- Two of Thi Qar's three subdistricts were studied
  - Al-Dawaya and Al-Gharraf were selected as a large proportion of their area is agricultural lands
- Population of interest:

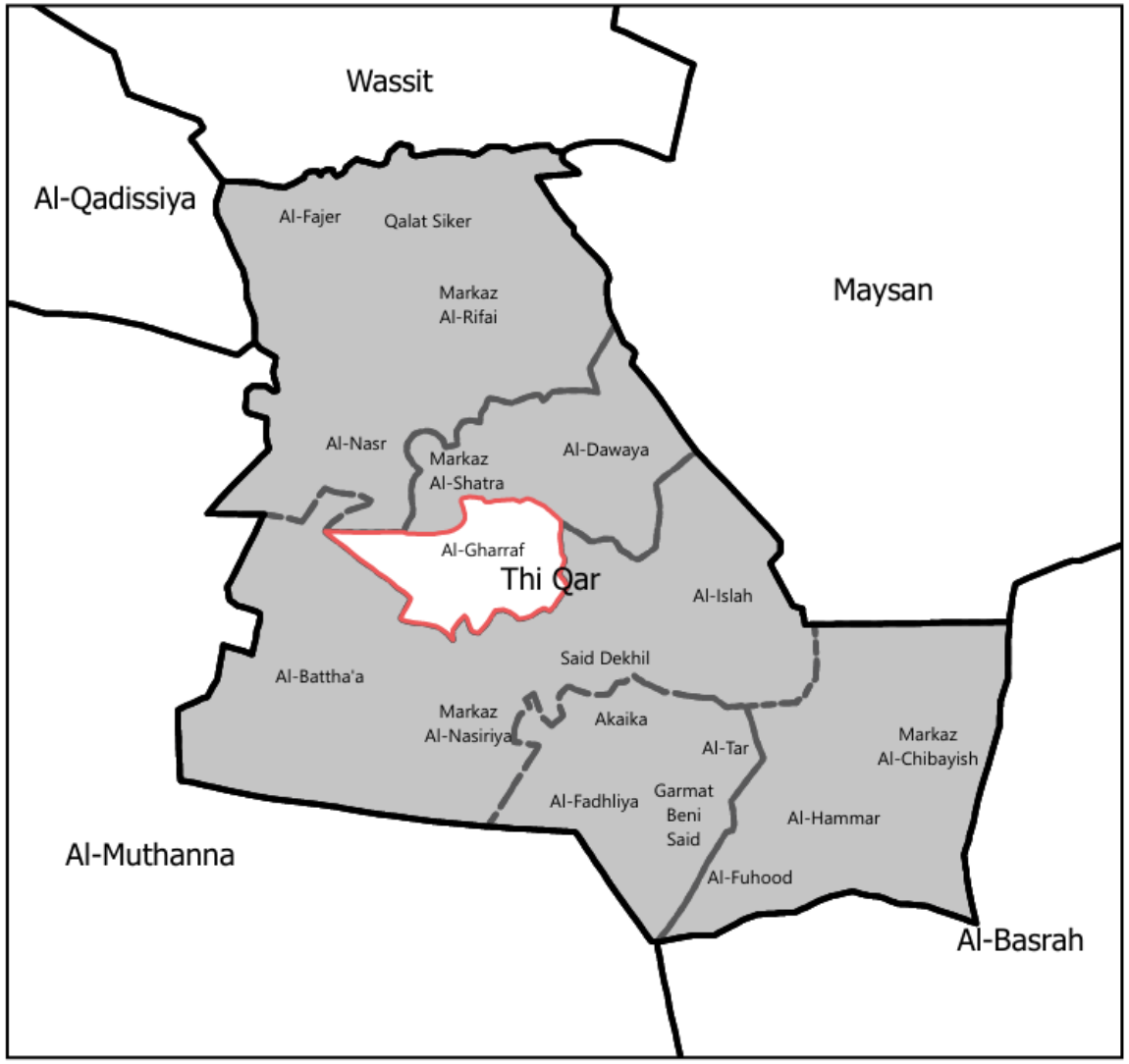
Farmers



Livestock Owners

1. IOM DTM Displacement Matrix: 2025113334336_Climate_ET_Sep_2024.pdf

Areas of Interest



Methodology

Data Collection: Dec 2024

The assessment employed a mixed-method approach, combining both qualitative and quantitative methods as well as secondary data and remote sensing tools.

Data Collection Methods	# of surveys in Al-Gharraf	# of surveys in Al-Dawaya
Individual Survey Data was collected remotely via phone-interviews, and data is indicative	213	186
Key Informant Interviews Community Leaders Water subject-matter experts (SMEs) Agricultural SMEs	10 2 2	10 2 2
Mapping focus group discussions (FGDs) Community Leaders	1	1
Key Informant Mapping Agricultural SMEs Water SMEs	1 1	1 1

Remote Sensing

Open-source geospatial data was used to answer questions regarding climate-related hazard exposure of agricultural land and infrastructure providing objective measurement of key risk factors.

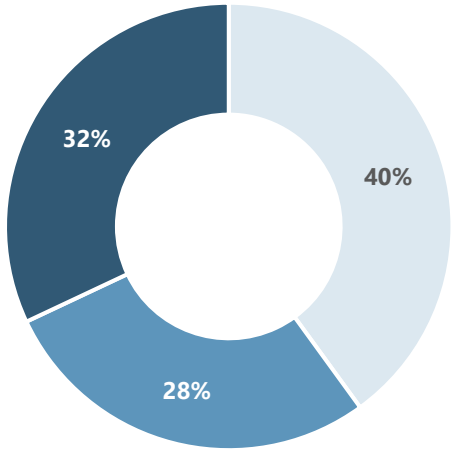
02

Demographics & Income Profile

Demographics

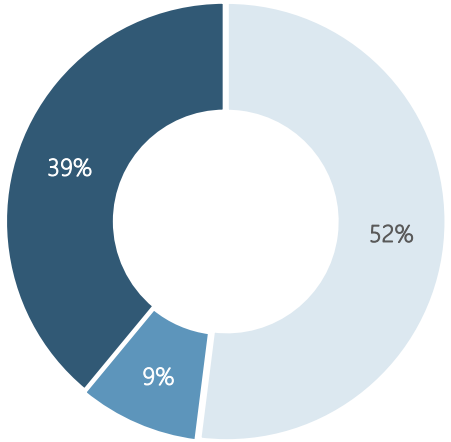
Livelihood activities by sub-district

Al-Dawaya



- Farming only
- Livestock ownership only
- Both farming and livestock ownership

Al-Gharraf



- Farming only
- Livestock ownership only
- Both farming and livestock ownership

Number of surveys by sub-district

Al-Dawaya 186 | 213 Al-Gharraf

Median household (HH) size, by sub-district

5 Al-Dawaya

6 Al-Gharraf

Percentage of HHs with at least one female HH member engaging in farming and/or livestock ownership

75% Al-Dawaya

79% Al-Gharraf

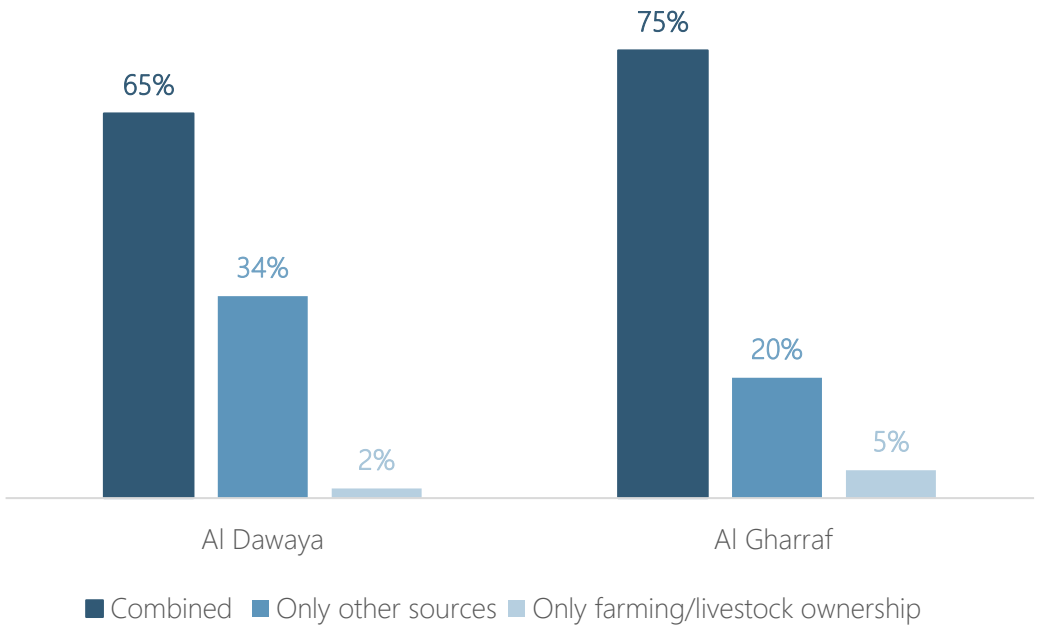
Average age of survey respondents

Al-Dawaya 42 | 45 Al-Gharraf

Income Profile

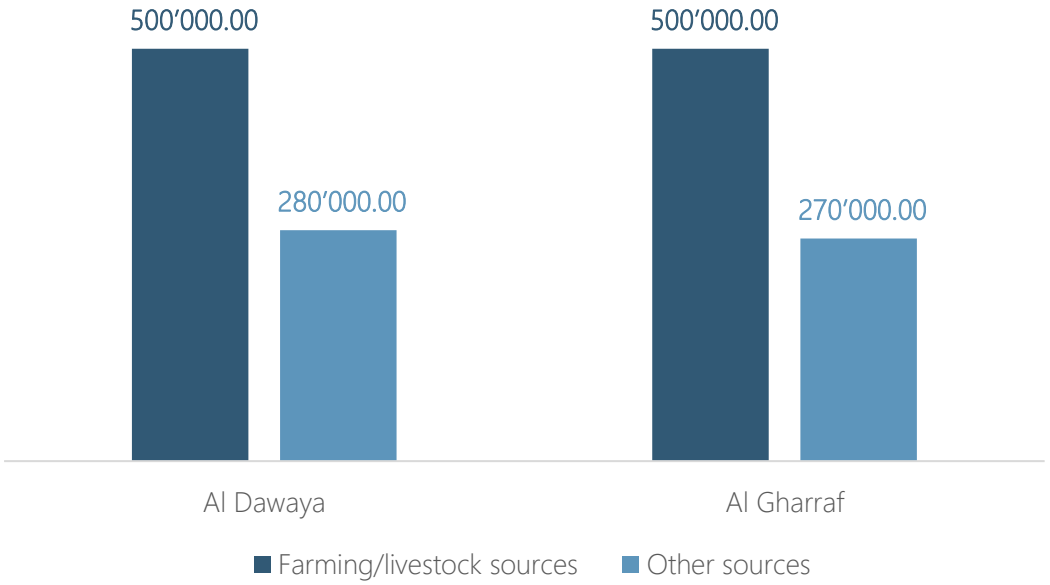
Income November 2024

% of farmers and livestock owners by income sources and sub-district



- Most respondents reported combined income (agricultural activity and other source)
- Higer proportion of respondents in Al-Dawaya reported only making income from non-agriculture related activities .

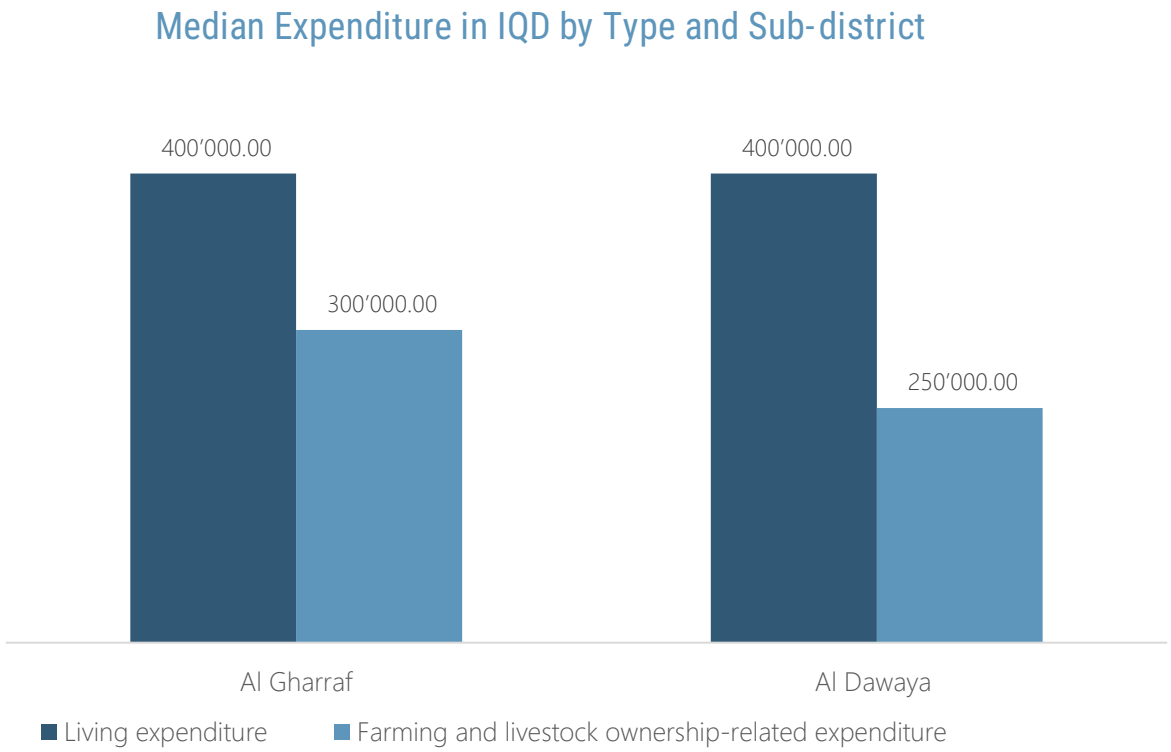
Median HH Income by source by sub-district (IQD)



- Median HH income from farming and livestock ownership in both sub-districts is 500,000 IQD
- Median HH income from other sources was lower for each sub-district than agricultural activity-related income.

Income Profile

Expenditure November 2024



In both sub-districts, farming and livestock ownership expenditure was nearly the same as the median income from these activities:

In Al-Gharraf, **median income** from agricultural activities is 500,000 IQD in the month of November while the **median expenditure** was 300,000 IQD

In Al-Dawaya, **median income** from these activities is 500,000 IQD in November 2024 while **the median expenditure** at 250,000 IQD

03

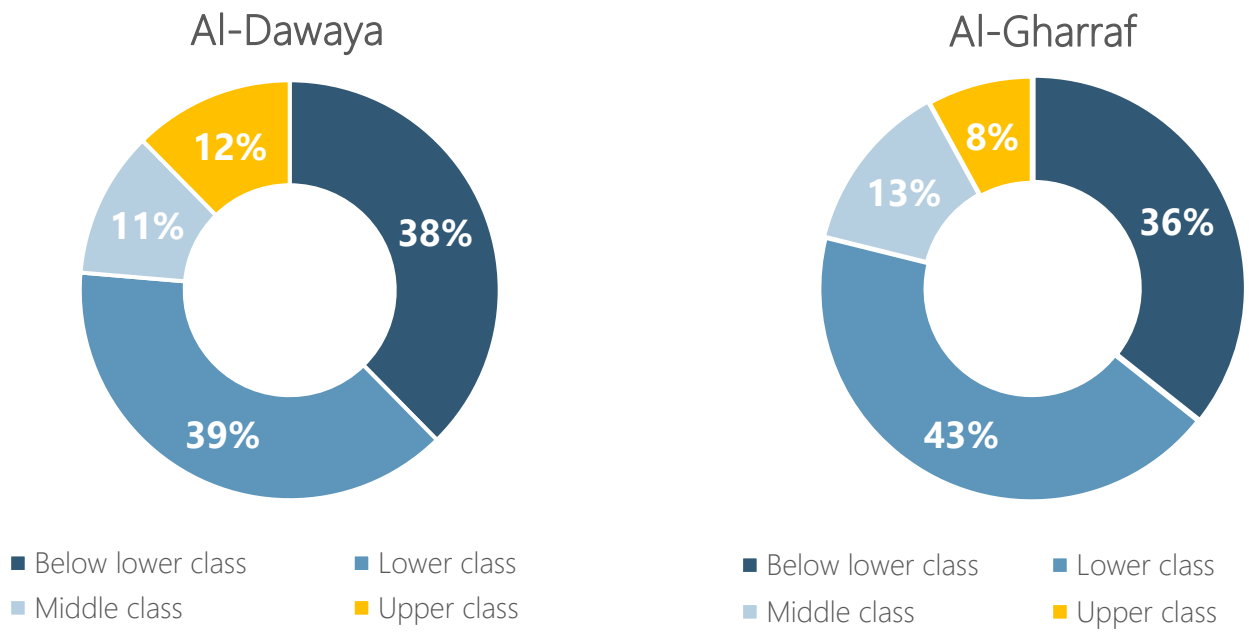
Vulnerabilities & Coping Strategies

Vulnerabilities & Coping Strategies

Vulnerabilities and Income Classification* November 2024

Most key informants (KIs) noted that **low-income** farmers and livestock owners are the most **vulnerable** population group

% of farmers and livestock owners by income classification



Lower class and **below lower-class** earners make up 77% and 79% of farmers and livestock owners surveyed in Al-Dawaya and Al-Gharraf respectively, illustrating a large degree of vulnerability across the sub-districts.

According to key informants, this vulnerability is driven by the **high cost of raw materials, expensive farming equipment, costly livestock treatment and vaccines, and the rising cost of fuel and electricity for pumps**, limiting low-income farmers' ability to sustain their agricultural activities and livelihoods.

Key vulnerable groups identified by KIs

- Low-income farmers/livestock owners
- Female farmers
- Large families

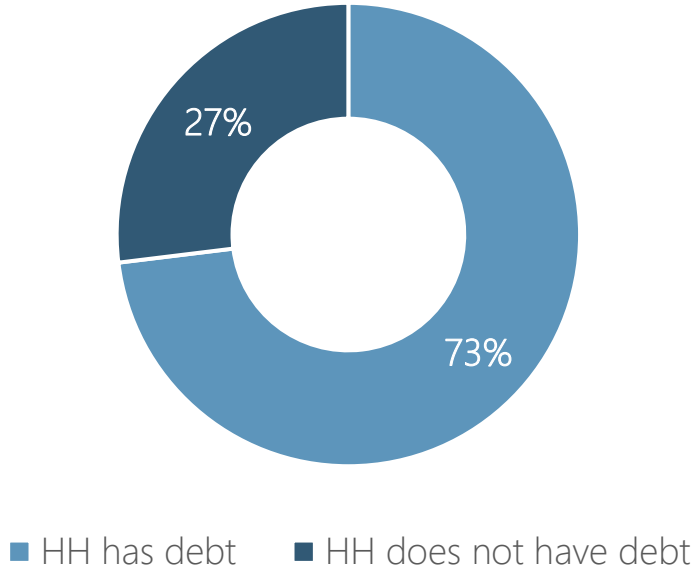
*Income classification utilizes the criteria developed by international organizations including the World Bank, UNICES, and ESCWA as sited by CSIS here. The income classification calculation does not integrate debt into the analysis.

Vulnerabilities & Coping Strategies

Debt November 2024

- 73% of individuals interviewed reported having household debt, with a similar distribution across both sub-district
- Food was the most reported reason for debt in Al-Dawaya (81%) while farming costs were the most reported reason for debt in Al-Gharraf (80%)
- Median debt is varied per income classification with individuals whose households are below the lower class having the highest median debt across all categories.

% of farmers and livestock owners reporting HH debt



Top 3 Most Commonly Reported Reasons for Debt

	Al-Dawaya	Al-Gharraf
Food	81%	73%
Farming costs	70%	80%
Healthcare	76%	65%

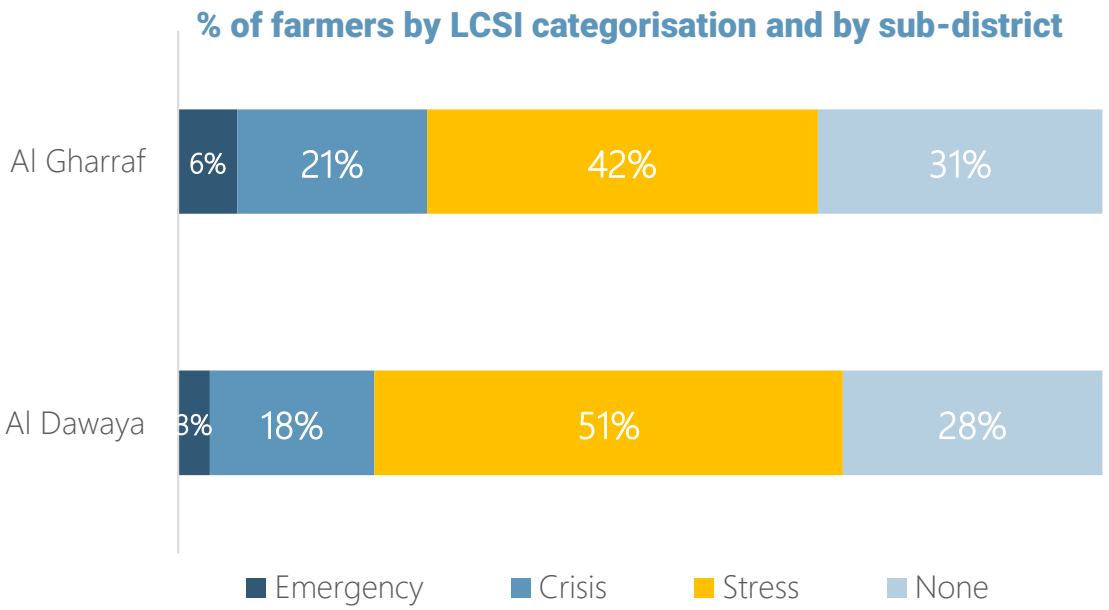
Median Debt by Income Category and Sub-district

Income Group	Al-Dawaya	Al-Gharraf
Below lower class	3,300,000 IQD	3,000,000 IQD
Lower class	1,700,000 IQD	2,000,000 IQD
Middle class	1,000,000 IQD	2,500,000 IQD
Upper class	1,000,000 IQD	550,000 IQD

Vulnerabilities & Coping Strategies

Livelihood Coping Strategies Index (LCSI), November 2024

- The Livelihood Coping Strategies Index (LCSI) measures how households manage and respond to livelihood stress and shocks
- 71% of respondents reported that their household employed at least one coping mechanism (as measured by the LCSI) in the last 30 days due to lack of food or money to buy it



Most commonly reported coping strategies by sub-district

Grading	Coping Strategy	Al-Dawaya	Al-Gharraf
Stress	Buying food on credit or through borrowed money from relatives and friends	54%	51%
Stress	Reducing expenditure on non-food items (health-related such as drugs, education-related such as books, uniforms)	6%	16%
Stress	Selling household properties (refrigerator, television, jewelry…)	9%	12%
Crisis	Children under 18 work to provide resources	5%	12%

The three most commonly reported coping strategies across both sub-districts were classified as **stress strategies** under the Livelihood Coping Strategies Index (LCSI). The most reported coping strategy employed by respondents across both districts was **buying food on credit or borrowing money from relatives and friends**.

Vulnerabilities & Coping Strategies

Other Coping Strategies by activity

KIs also shared several coping strategies utilized by farmers and livestock owners, with some notable differences per livelihood activity. **Community leaders identified the most frequently reported coping strategies for each group**, listed in order of frequency:

Farmers	Livestock Owners
Digging wells to access groundwater	Selling livestock to reduce resource strain
Shifting to drip irrigation for more efficient water use	Purchasing/trucking water from other areas to sustain animals
Changing crop types to those requiring less water	Digging wells to secure water sources

Key informants also noted several **limitations to these coping strategies**. For example, many wells dug by farmers are not deep enough, often bringing up saline water. Additionally, trucking water from other areas remains a costly and unsustainable solution.

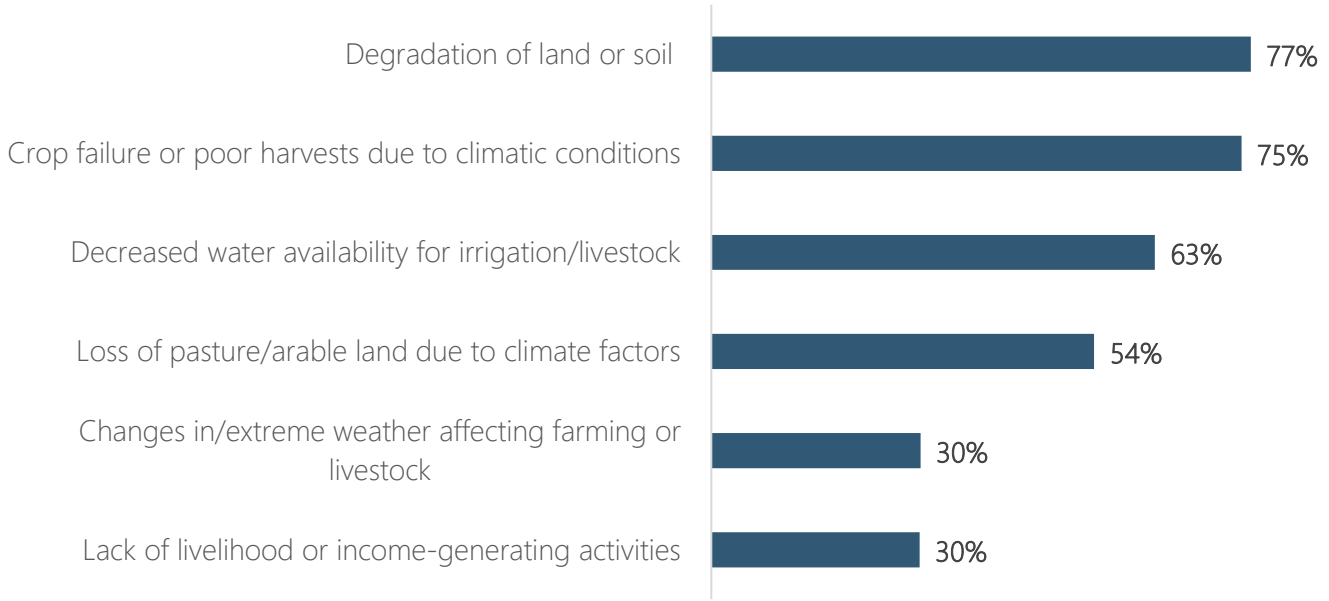
Vulnerabilities & Coping Strategies

Migration as a Coping Strategy

KIs reported that both farmers and livestock owners are migrating as a result of agricultural challenges, with more Kis highlighting this in Al-Gharraf than in Al-Dawaya.

6% of survey respondents expressed their intention to relocate within the next 12 months

% of farmers by most commonly reported reasons for intended movement



While just 6% of respondents reported plans to migrate, **many have already left.** Since our interviews were conducted with those who remain, **this likely explains why key informants highlighted migration as a major coping strategy**.

04

Farming & Livestock Activities

Farming Activities

Crops

% of farmers by most commonly reported crops

	Al-Dawaya	Al-Gharraf
Wheat	73%	34%
Barley	52%	34%
Tomato	41%	76%
Okra	35%	39%
Cucumber	32%	40%

Crop distribution varies by sub-district: **tomato and cucumber were more common in Al-Gharraf**, while **wheat and barley were more prevalent in Al-Dawaya**.

This aligns with the median **number of dunams**[1] reported, **with Al-Dawaya having a higher median (10) compared to Al-Gharraf (6),** consistent with wheat and barley production. Additionally, the median number of greenhouses in Al-Dawaya is higher at 15, compared to 6 in Al-Gharraf.

Median dunams and greenhouses by sub-district

	Al-Dawaya	Al-Gharraf
Median Dunams	10	6
Median Greenhouses	15	6

This finding is somewhat unexpected as tomatoes and cucumbers generally benefit from more greenhouse cultivation, while wheat and barley do not. However, since the survey did not specify greenhouse sizes, it is possible that the greenhouses in Al-Gharraf are larger.

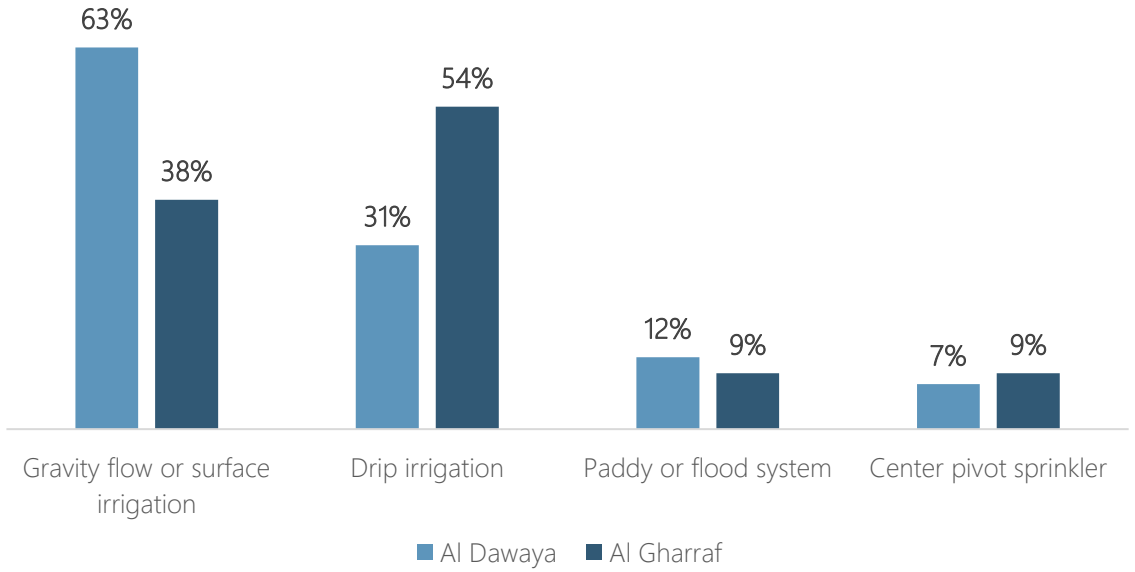
1. A dunam is a traditional unit of land measurement in Iraq equaling 4,000 square meters.

Farming Activities

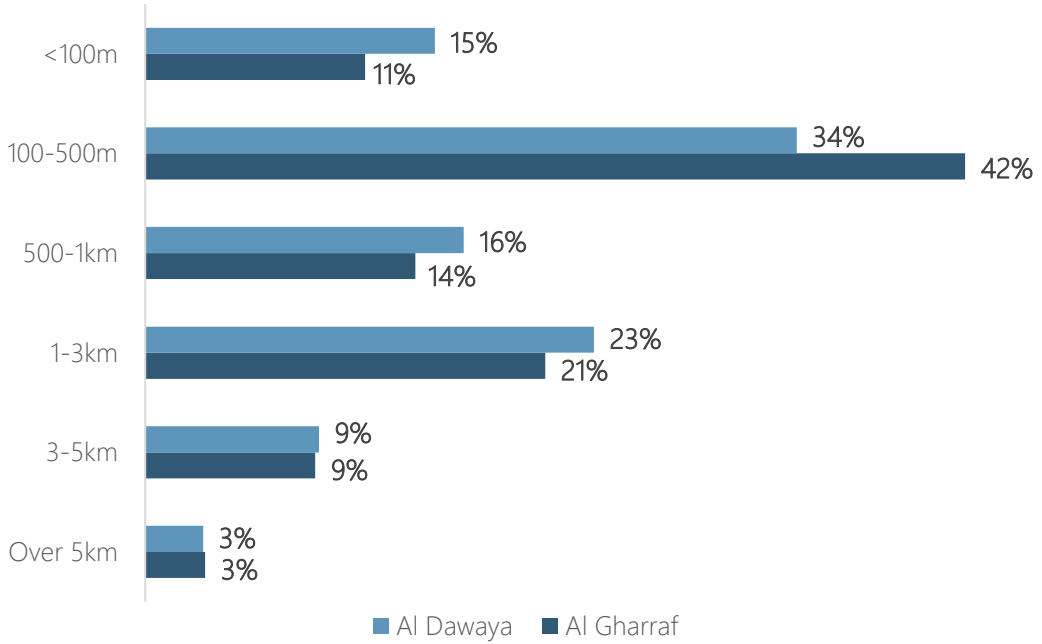
Irrigation techniques

- Some community leaders—3 from Al-Gharraf and 1 from Al-Dawaya—highlighted a **shift in their villages from traditional paddy/flood irrigation to mechanized systems**, particularly drip irrigation, as a more efficient method to conserve water and reduce usage.
- However, there is still a high use of **water inefficient irrigation methods** such as gravity flow irrigation, largely in Al-Dawaya

% of farmers by most commonly reported irrigation techniques



% of farmers by reported distance to municipal water source to irrigate farms, by sub-district



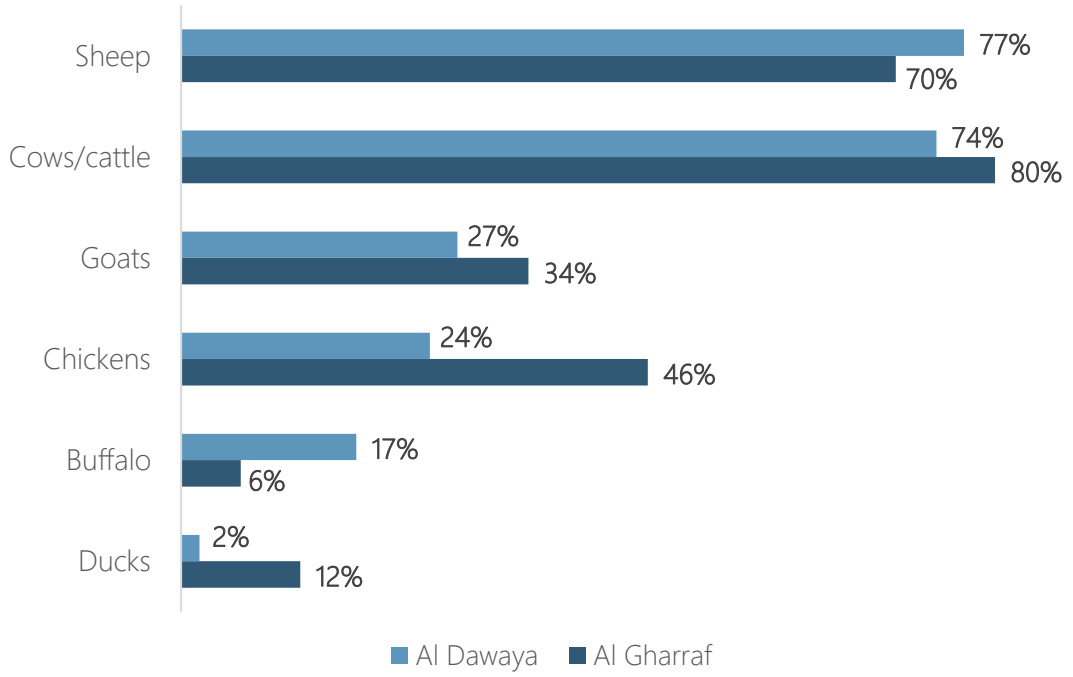
- Overall, the distance between respondents' farms and municipal water sources (such as irrigation canals) was similar in both sub-districts.
- 3% of respondents reported **distances of over 5km**. Key informants noted distance to municipal water sources as **a challenge for some farmers** as it can increases the effort, time, and cost required for water transport, impacting irrigation efficiency.

Livestock Raising Activities

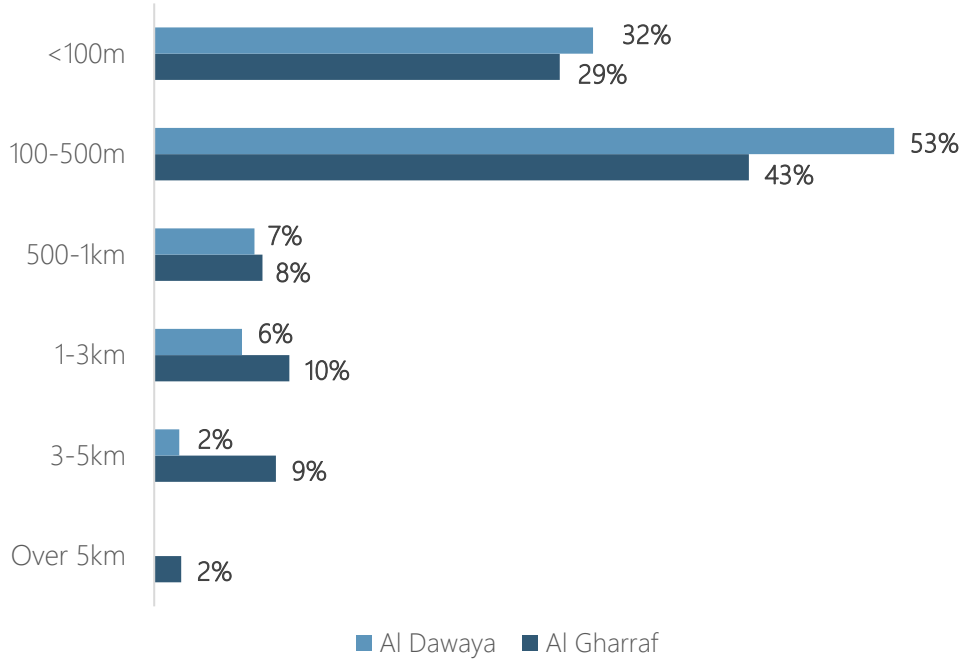
Livestock Ownership

Cow and sheep ownership was similar across the two sub-districts, but Al-Gharraf had more individuals owning chickens, goats, and ducks, while buffalo ownership was higher in Al-Dawaya.

% of livestock owners by most commonly reported livestock



% of livestock owners by distance to livestock's drinking water, by sub-district



9% of livestock owners surveyed in Al-Gharraf reported a distance of 3–5 km, and 2% reported their livestock traveling over 5 km for drinking water, compared to 2% and 0%, respectively, in Al-Dawaya.

Access and Use of Information

Sources and Uses of Agriculture and Climate-related Information

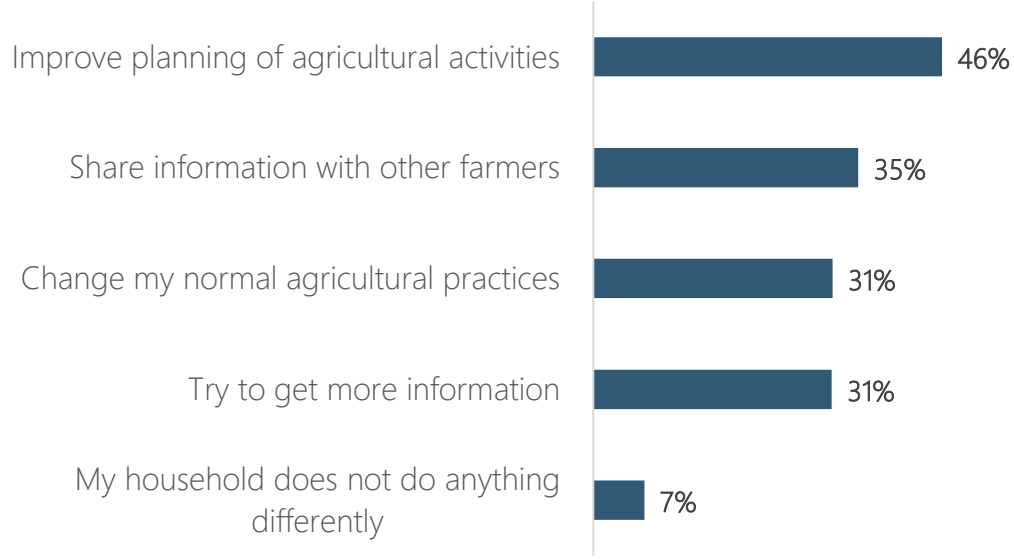
67% of respondents monitor the weather forecast to plan agricultural activities

Source	%
Radio, TV, Internet	93%
Get information from face-to-face communication	25%
Directorate of environment and climate	6%

78% of respondents use social media platform/public information exchange on agriculture practices

Platform used	%
Farmer's association (including newsletters, text messages, Whatsapp or telegram groups…)	74%
Social media (Whatsapp, Instagram…)	73%
Directorate of Water	17%
Directorate of Agriculture	14%
Directorate of Environment and Climate	9%

% of farmers and livestock owners using weather information from social media and public platforms



- A higher proportion of respondents **reported using social media and public platforms for agricultural information** exchange than relying on weather forecasts to plan activities.
- The most commonly reported use of this information was to **improve planning of agricultural activities** followed by sharing information with other farmers.

05

Challenges

Types of Challenges

Challenges faced by farmers and livestock owners can be categorized into the 6 categories:

Climate

Challenges related to climate-change and its aftereffects: weather patters, extreme temperatures, water scarcity, and more.

Raw Materials

Encompasses barriers to accessing inputs like seeds, fertilizers, feed/fodder, and tools as well as challenges related to the quality of these materials.

Water

Challenges related to limited or unreliable water source, quantity, and/or quality for irrigation and livestock and management practices that hinder agricultural activity.

Livestock Healthcare

Covers issues related to animal illness including challenges to accessing preventative healthcare and treatment options and overall limitations of veterinary infrastructure.

Social & Institutional

Refers to the social and institutional barriers faced by farmers and livestock owners including market-access issues, government support and training, community connectivity, and more.

Informational

Encompasses the challenges accessing timely and accurate agricultural knowledge and information as well as difficulties in effectively implementing it.

Challenges by Agricultural Activity

Most Reported Issues Faced by Farmers Related to Growing Crops

Issues	%
Crop failure due to drought	75%
Water shortage for irrigation	74%
Crop failure due to pests	32%
Lack of precipitation	21%
Water pollution, unsuitable for irrigation	18%
High price for materials and equipment	17%

The four main issues highlighted by farmers were **crop failure due to drought, water shortages for irrigation, crop failure caused by pests, and lack of precipitation**. Notably, three of these challenges fall under **climate-related issues**, underscoring the significant impact of environmental factors on farming in the area.

Most Reported Issues Faced by Livestock Owners Related to Livestock Raising

Issues	%
Water pollution, unsuitable for livestock	69%
Livestock diseases	41%
High veterinary costs	40%
High price for fodder/feed	34%
Lack of precipitation	24%
Protecting livestock from cold	19%
Low levels of water from bodies of water (rivers, dams, canals)	16%

The 4 main issues reported by livestock owners were **water pollution, disease, high veterinary costs, and high cost of feed**. Critically, two of the main challenges are related to livestock health management.

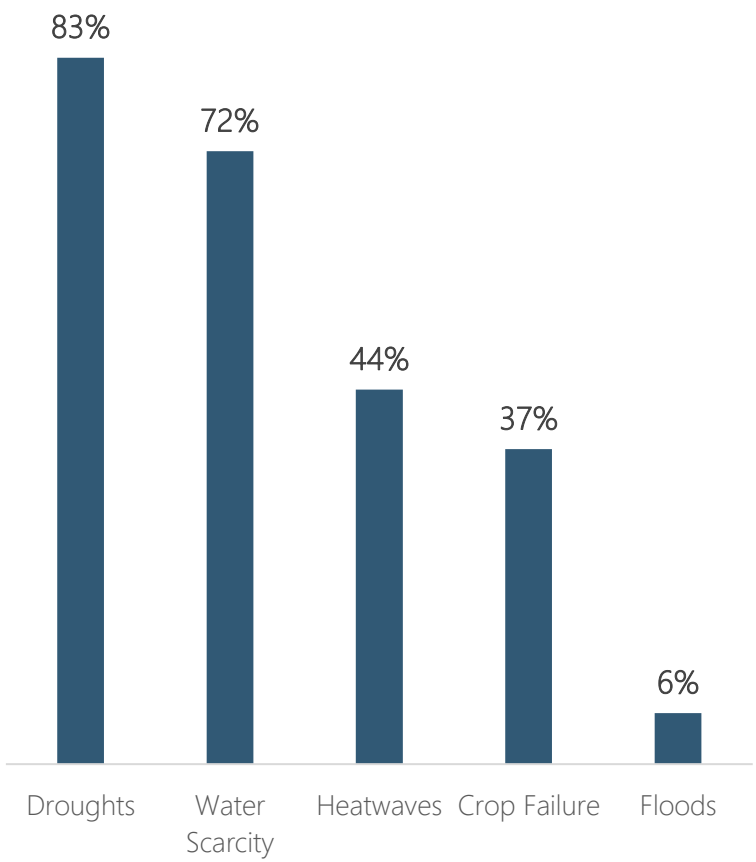
Climate-Related Challenges

Climate-Related Events (November 2023-2024)

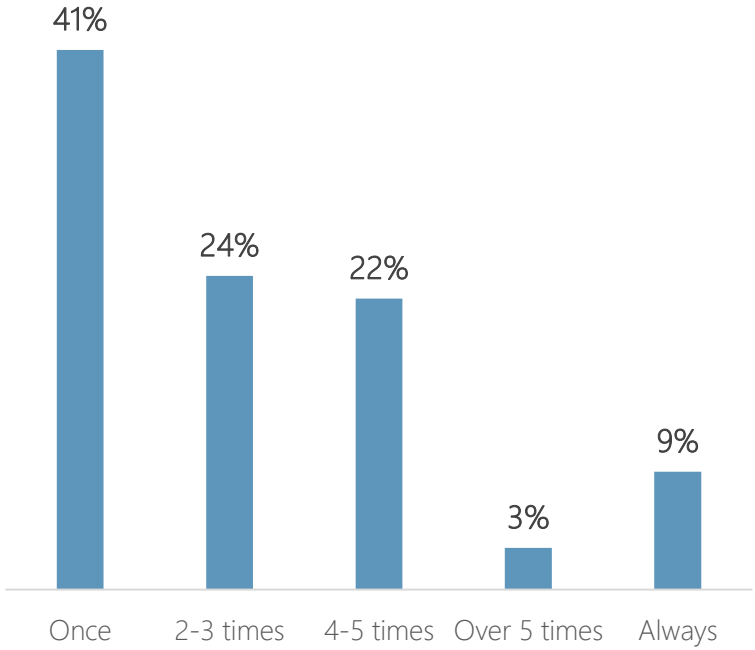
100% of respondents reported being affected by at least one climate-related event between November 2023-2024 with drought and water scarcity being the two most reported events.

Community leaders highlighted that water scarcity was the root cause of many challenges, including crop failure, low yield, barren land, livestock illness, fodder shortages, increased prices of all raw materials, shifts away from traditional farming and livestock ownership practices.

Most Reported Climate-related events impacting agricultural activities



Most Reported frequency of these climate-related events (November 2023-2024)



While 41% of respondents who have experienced climate-related events reported encountering them once over the last year, key informants indicated that the duration of these events is prolonged and cause for concern.

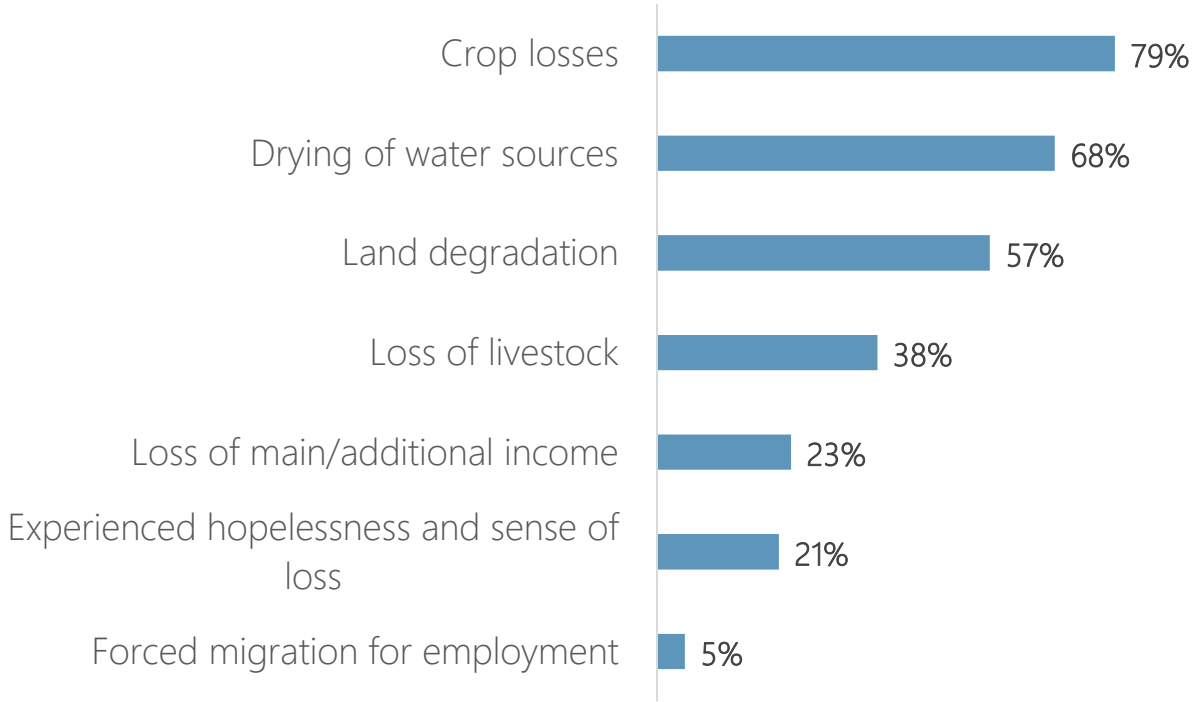
Climate-Related Challenges

Impact of Droughts

85% of respondents reported experiencing drought at least once in the last 5 years

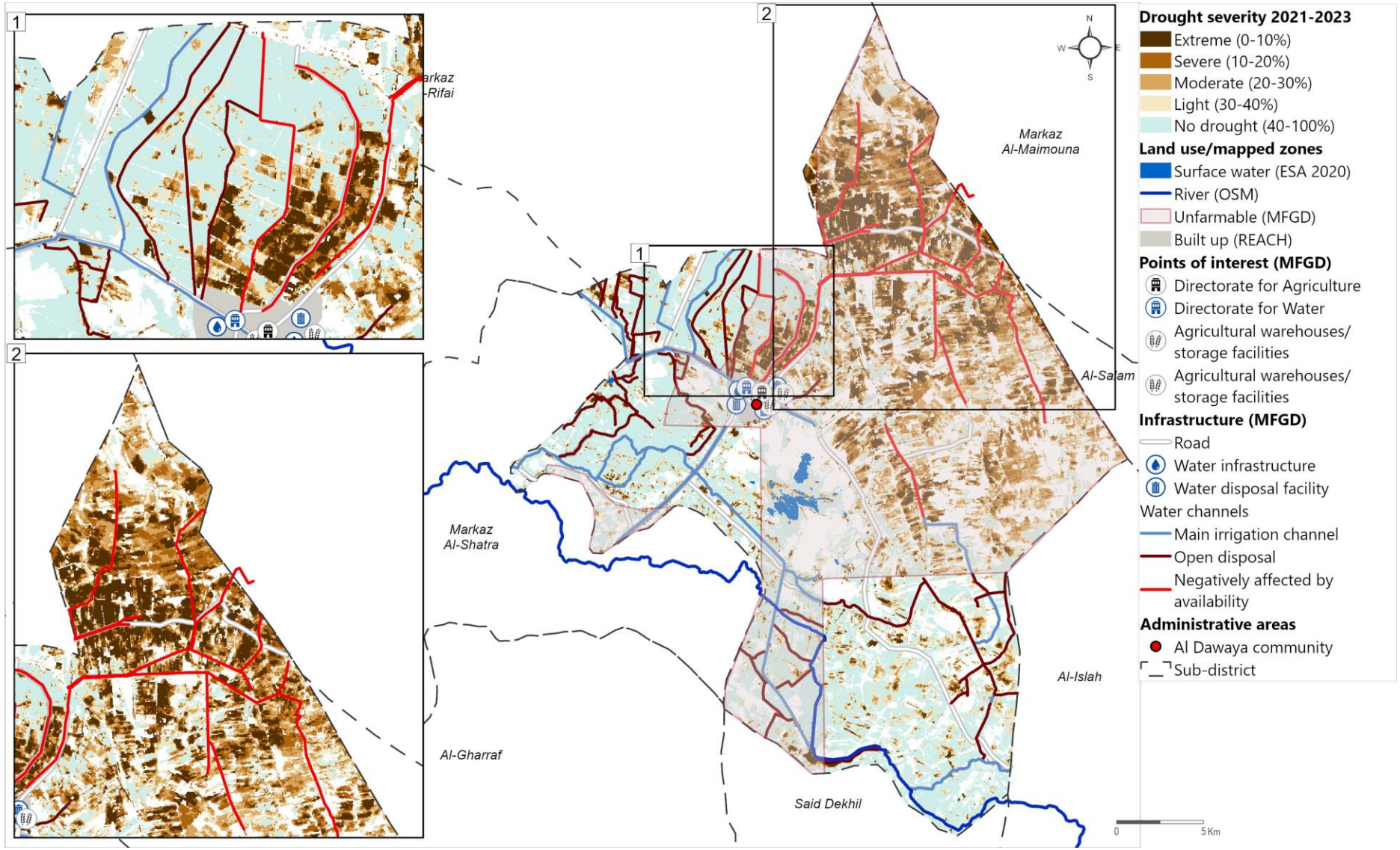
- Community leaders indicated that **the leading causes of water shortages are an overall decline in water levels and extreme climate-related events** like drought.
- Out of 20 interviews, 5 community leaders noted that the **water shortages are persistent**, 7 indicated that it **lasts for entire seasons,** and 2 reported durations of 3-4 months.
- The **impacts of these climate-related events** (namely droughts) **are broad,** including crop losses, land degradation, loss of income, feelings of hopelessness, further declines in water levels, loss of livestock, and more.

Reported impacts of droughts, according to farmers and livestock owners



Climate-Related Challenges

Drought

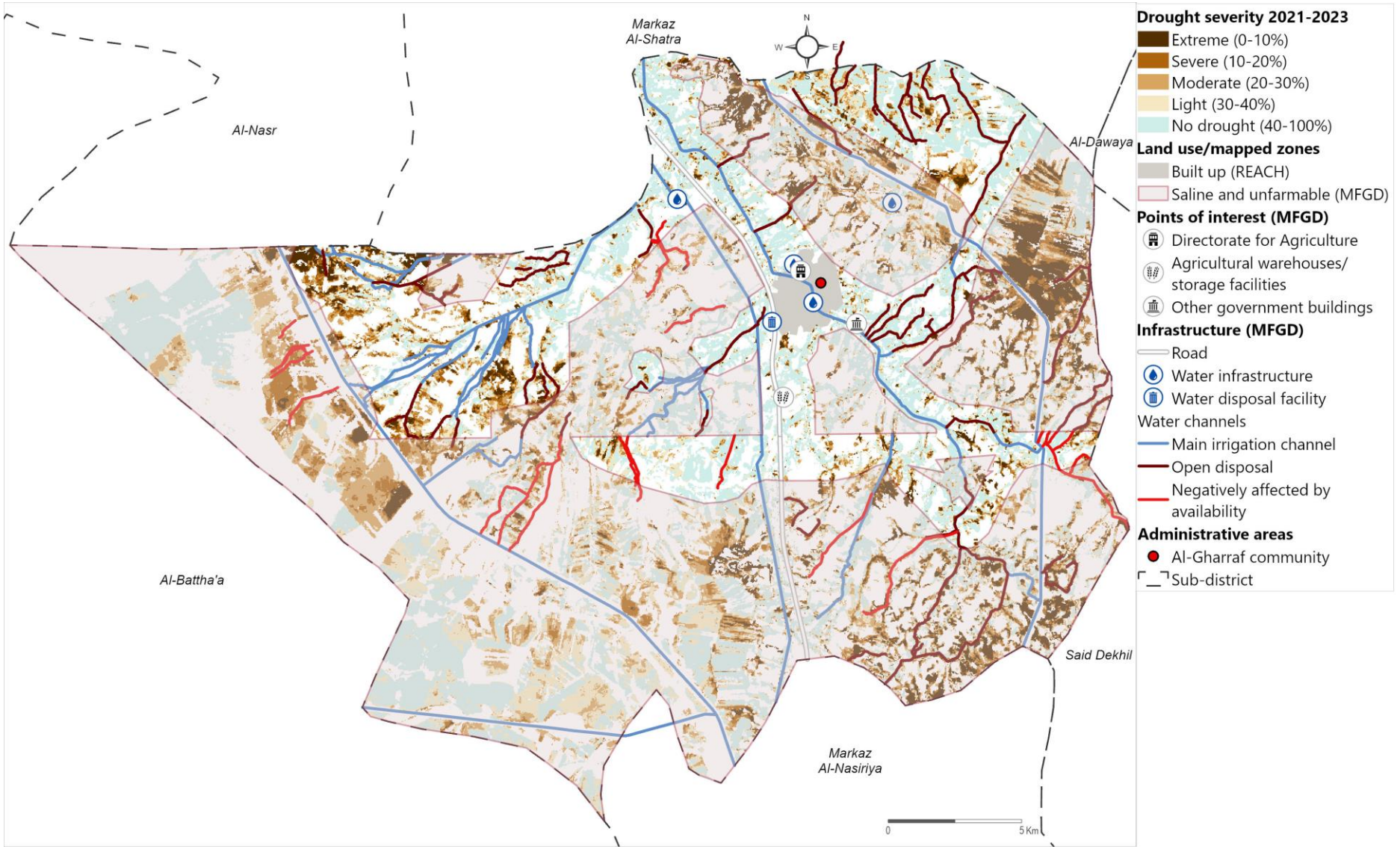


High concentrations of extreme drought are evident in the northern and eastern areas, including northeast of Al-Dawaya.

Local informants and community leaders report that these areas have been unfarmable for at least the past two seasons due to persistent water shortages lasting from three months to entire seasons.

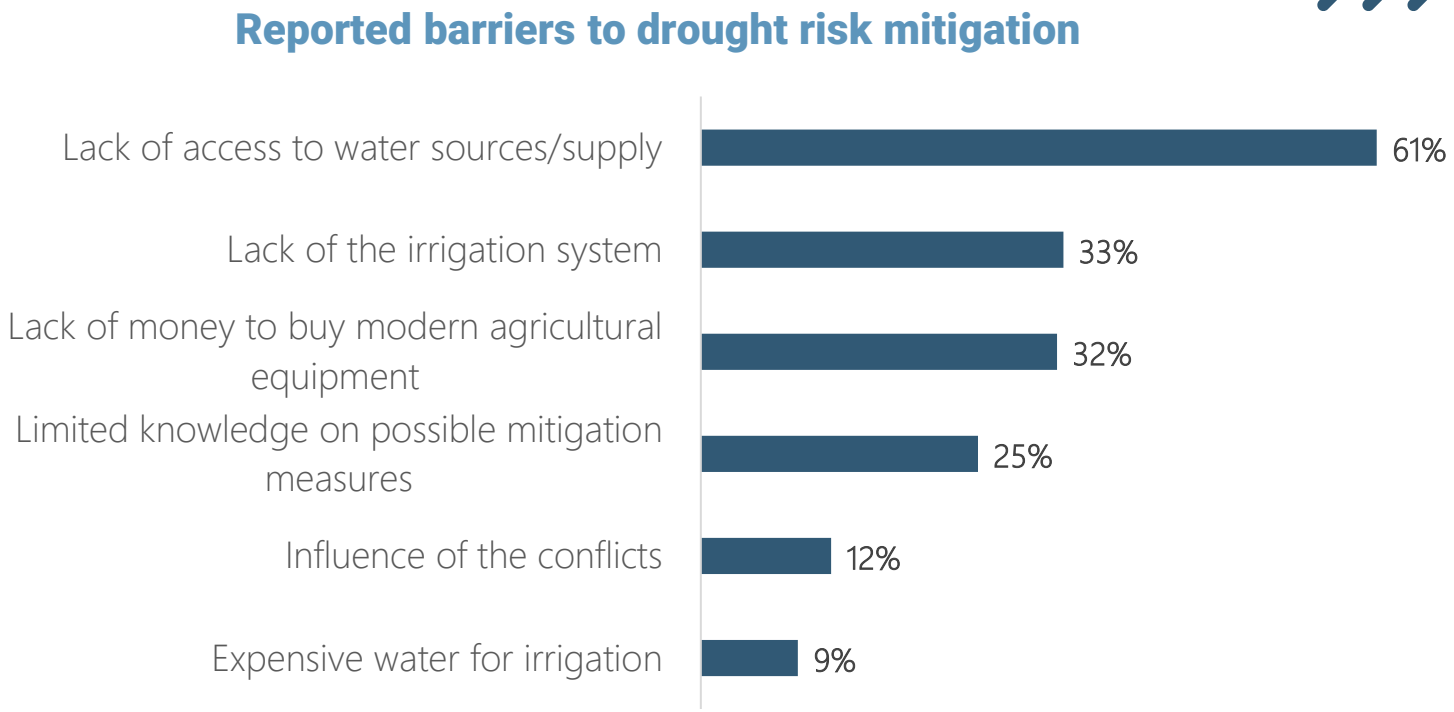
Climate-Related Challenges

Drought



Al-Gharraf has dispersed extreme drought conditions across the sub-district, unlike Al-Dawaya. Most drought-affected areas in Al-Gharraf are considered unfarmable due to water scarcity and soil salinity, except for one northwest area along the southern borders of Al-Nasr and Markaz Al-Shatra, where farming persists thanks to major irrigation channels and a shift to drip irrigation.

Climate-Related Challenges

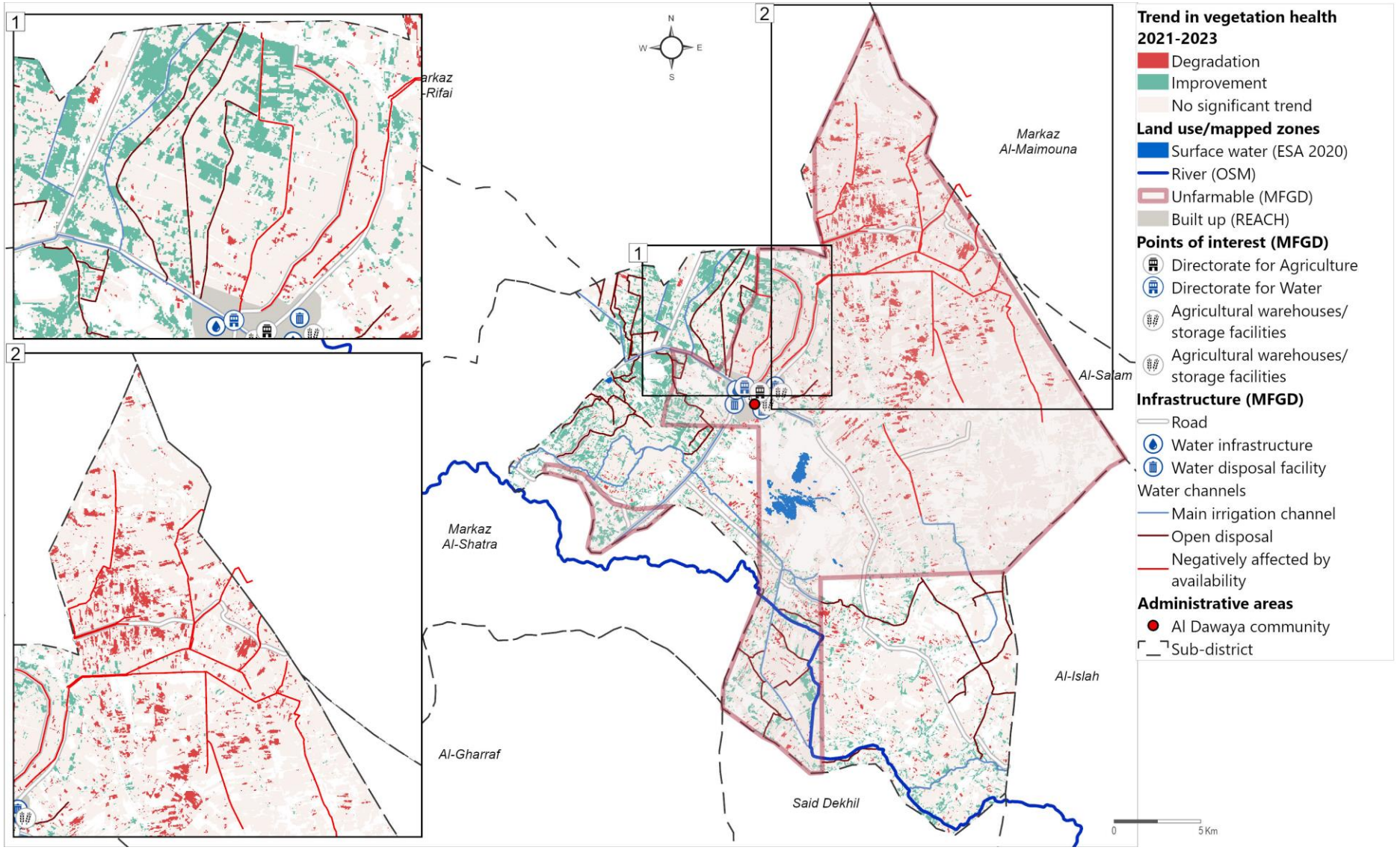


Barriers to drought risk mitigation include **limited water access (61%), lack of irrigation systems (33%), and insufficient funds for agricultural equipment (32%).** These challenges amplify the effects of prolonged droughts and water shortages, highlighting the need for stronger support and resources.

Water subject matter experts reported that water filtration and water evaporation was worsening the water scarcity situation.

Climate-Related Challenges

Vegetation Health

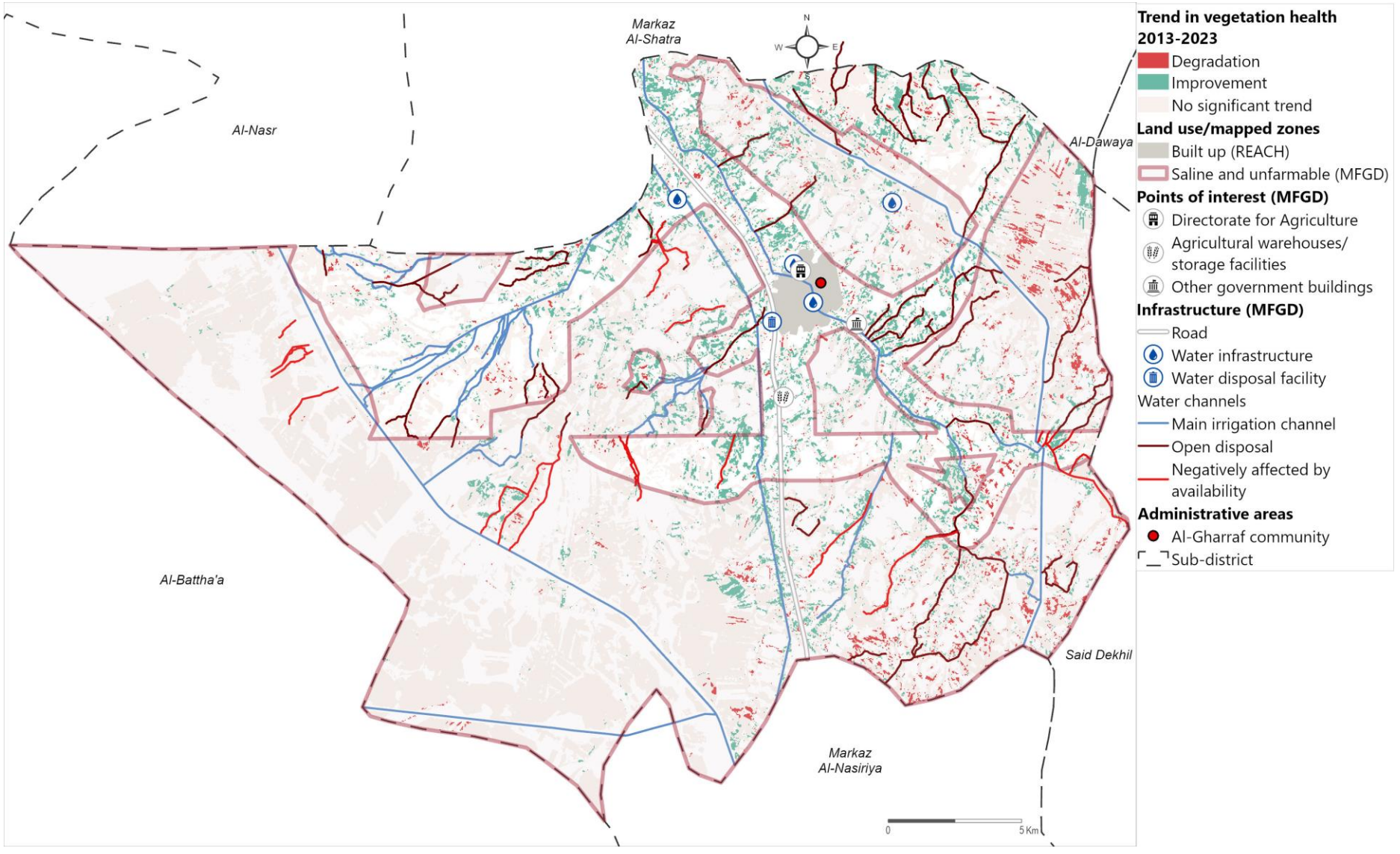


Northeast Al-Dawaya: Large pockets of land degradation have halted farming, resulting in barren conditions.

Northwest Al-Dawaya: Active farming continues with improved vegetation health, supported by mechanized irrigation, minimal soil salinity, and low drought risk despite reduced water availability.

Climate-Related Challenges

Vegetation Health



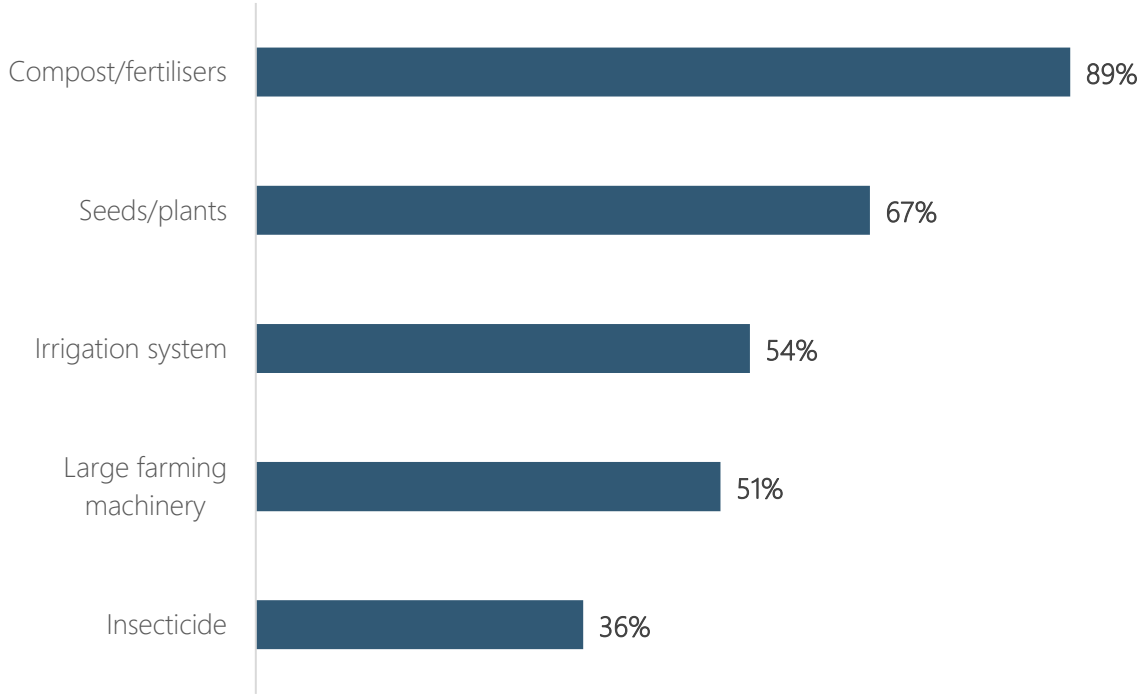
Al-Gharraf presents a complex pattern where many areas are no longer farmed and show no clear trend, except for the eastern corridor. The actively farmed zones largely account for the observed improvements in vegetation, despite a few small degraded patches within these areas. Some parts of the south-central sub-district, although marked as unfarmed by FGDs, exhibit enhanced vegetation health—likely due to their proximity to main irrigation channels.

Raw Material Challenges

Raw Material Accessibility and Affordability Challenges Faced by Farmers

65% of respondents reported that their HH is unable to afford necessary expenses/raw materials related to farming

Most commonly reported raw materials that farmers are unable to afford



Most community leaders reported that one of the critical barriers to accessing raw materials faced by farmers is the high, unaffordable prices of these materials.

- 89% of farmers surveyed reported that they are unable to afford compost and fertilizers
- 67% reported an inability to afford seeds and plants
- 54% struggled to afford irrigation systems

A higher proportion of the farmers who reported difficulty affording small farming machinery were from Al-Gharraf.

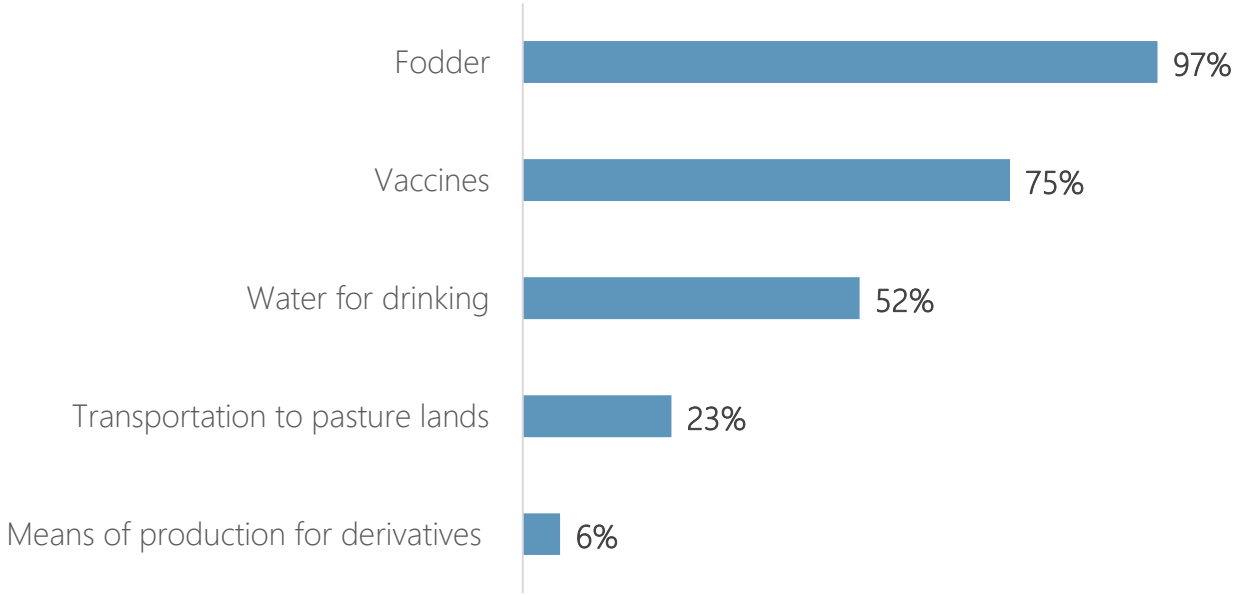
Along with affordability challenges, KIs highlighted the difficulties related to access with most reporting that there are often shortages of materials in the market.

Raw Material Challenges

Raw Material Accessibility and Affordability Challenges Faced by Livestock Owners

55% of respondents reported that their HH is unable to afford necessary expenses related to livestock ownership

Most commonly reported expenses that livestock owners are unable to afford



Unaffordable Prices: 97% of livestock owners cannot afford fodder; all community leaders cite increased fodder prices as a critical barrier.

Access Challenges: Frequent raw material shortages and reliance on imported fodder limit availability.

Environmental Constraints: Nearly half of community leaders report that a lack of grazing land and vegetation exacerbates affordability and access issues.

Transportation to Pasture Lands: There were slightly higher reports of transportation to pasture lands in Al-Dawaya than in Al-Gharraf, partly because healthy vegetation is more concentrated in certain areas of Al-Dawaya, whereas in Al-Gharraf it is more widely spread out.

Water Challenges

Water Scarcity Challenges

72% of respondents reported that **water scarcity has affected their agricultural activities in the past year**

74% of farmers reported **experiencing shortages in irrigation water**

59% of reported **livestock death was due to lack of water**

All community leaders and agricultural subject matter experts interviewed noted that **water scarcity is a major challenge.**

KIs called water scarcity the **root causes of several other challenges including desertification, lack of pasture, grazing land, and vegetation cover, low crop yield or crop failure, fodder and feed shortages**, increased prices of fodder and feed, loss of livestock, increased spread of disease, and water and land disputes.

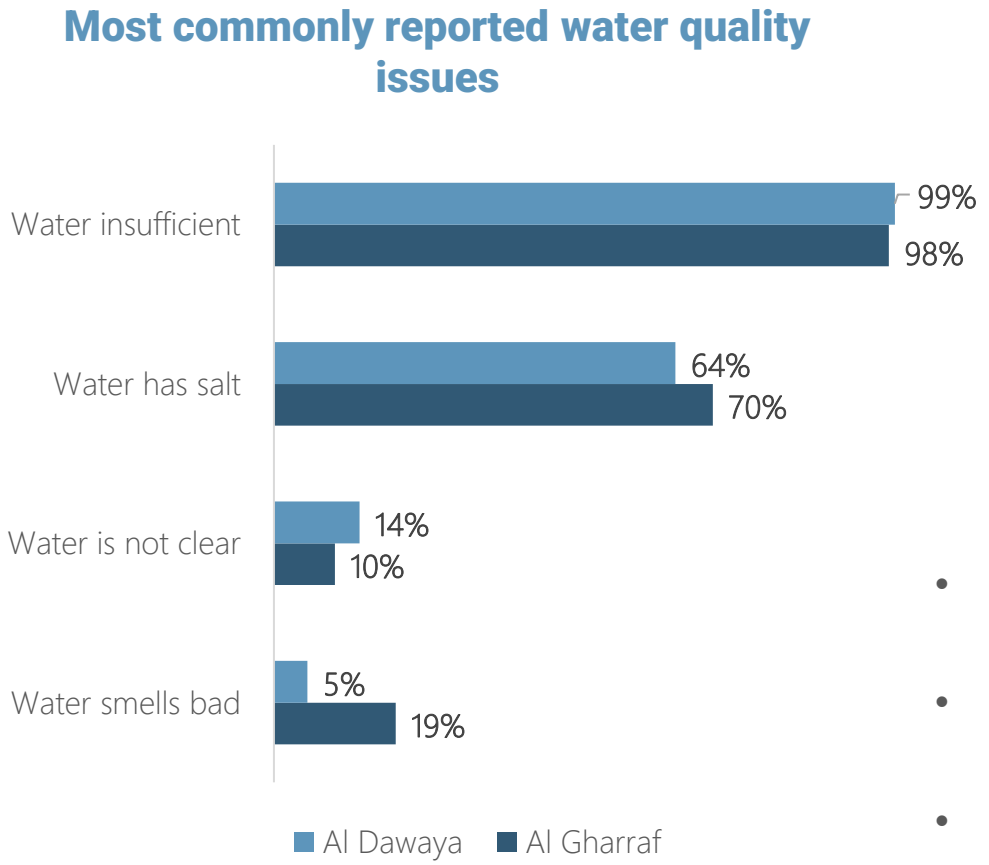
*Water scarcity is the biggest influencing factor and the **greatest challenge**.*

– Representative of Agricultural Directorate

*Most farmers **abandoned agriculture**; in the past, our land was the source of livelihood for many families… but due to the lack of water, the **land is now barren**.*

- Community Leader

Water Challenges



97% of respondents reported facing **issues related to the water quality for agricultural purposes**

69% of **livestock owners reported water pollution/unsuitable water for livestock** as a key challenge to livestock ownership

18% of farmers reported **water pollution/unsuitable water for irrigation** as a key challenge farming

- 97% of all respondents reported issues with water quality for agricultural purposes, with 99% highlighting an overall insufficiency in water quality.
- A slightly higher percentage of respondents from Al-Gharraf (70%) reported salinated water compared to those from Al-Dawaya (64%).
- There was a notable difference in reports of bad-smelling water between the two sub-districts, with respondents from Al-Gharraf reporting this issue at a significantly higher rate (19%) compared to those from Al-Dawaya (5%).

Water Challenges

Irrigation-Specific Challenges

74% of farmers reported experiencing shortages in irrigation water.

Community leaders and representatives from the Water Directorate highlighted several factors contributing to these challenges:

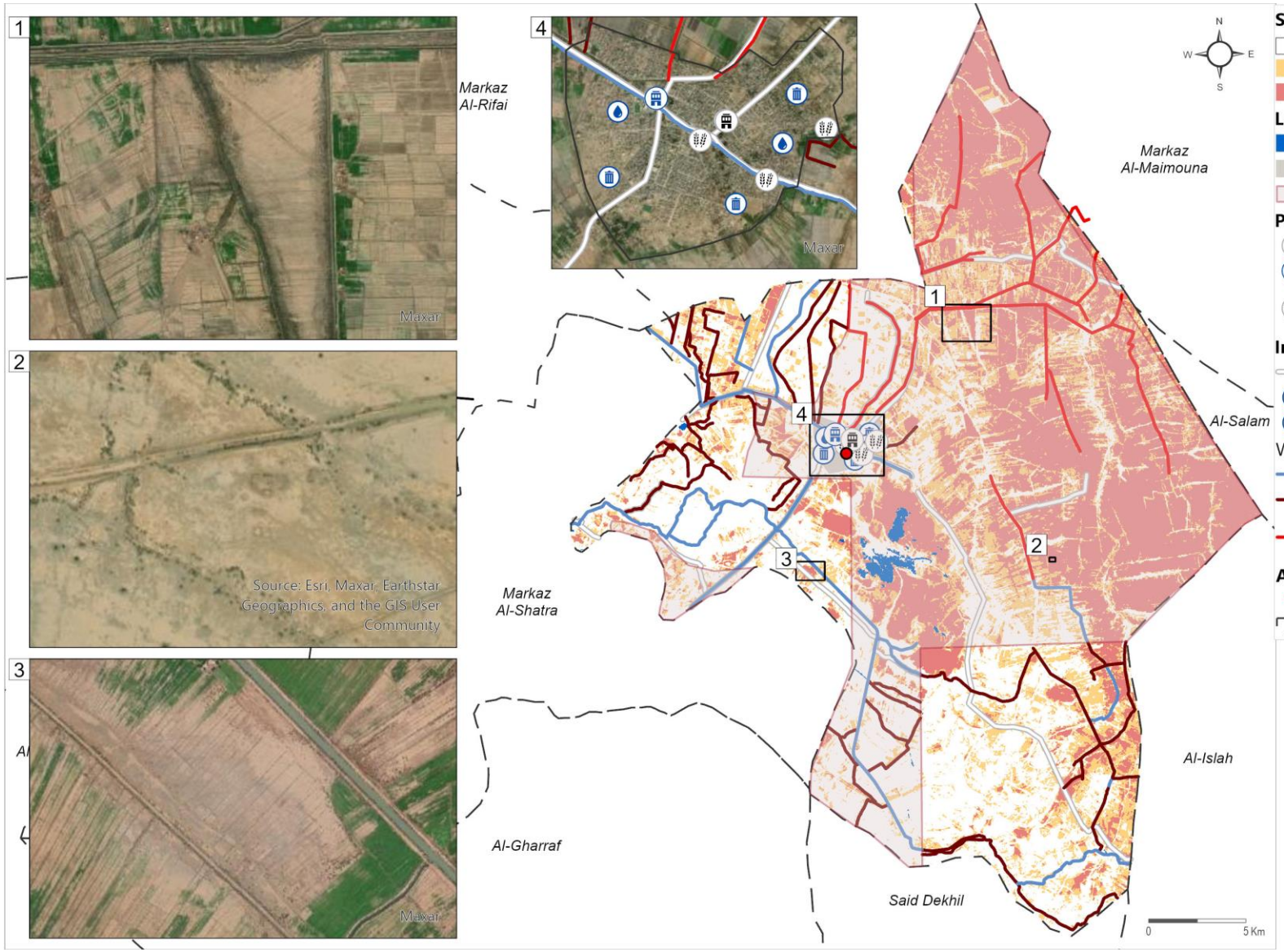
Rotational System

- Government-managed and provided rotational system for water distribution, proportionally sized by district.
- Interruptions every other week.
- Water quantity and distribution time are insufficient.
- Water does not reach all farms, and interruptions negatively affect irrigation.

Pump Issues

- Pumps require continuous electricity and fuel, both of which are expensive.
- Canal growth makes it difficult to transport water effectively.

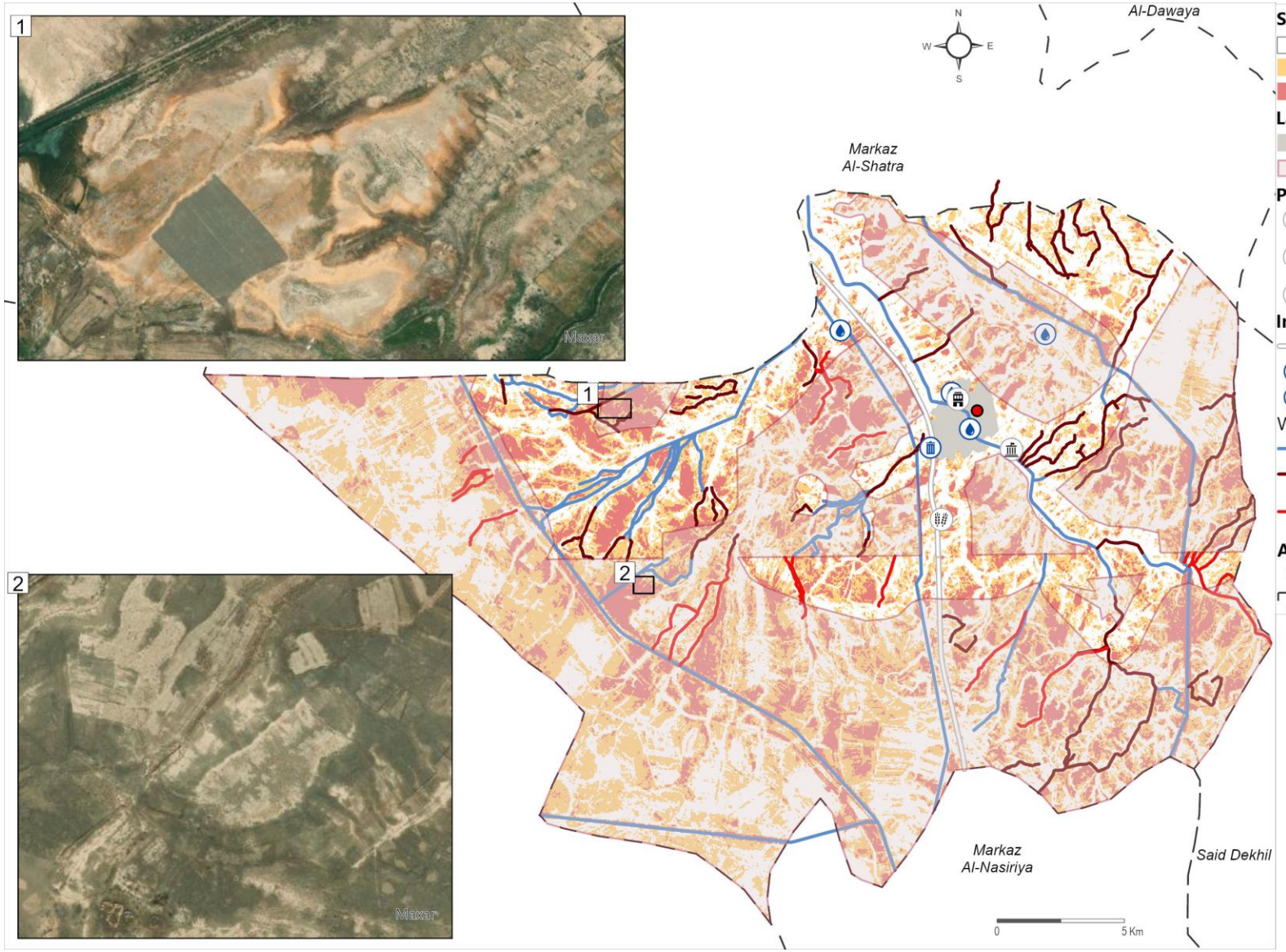
Water Challenges



Findings indicate that soil salinity poses a major challenge for farmers and livestock owners. MFGDs revealed that large areas in both sub-districts have been unfarmable for the past two seasons, primarily due to high salinity.

In Al-Dawaya, high salinity is widespread in the northern and central parts, while lower levels occur in the west and moderate effects appear in the southwest.

Water Challenges



Al-Gharraf shows widespread high soil salinity, unlike the concentrated areas in Al-Dawaya. In the northwest, despite high salinity along irrigation channels, the land is farmed, whereas the low salinity in the western corridor remains unfarmed—likely due to adaptive coping strategies (drip irrigation, switching crop type, etc).

Livestock Healthcare Challenges

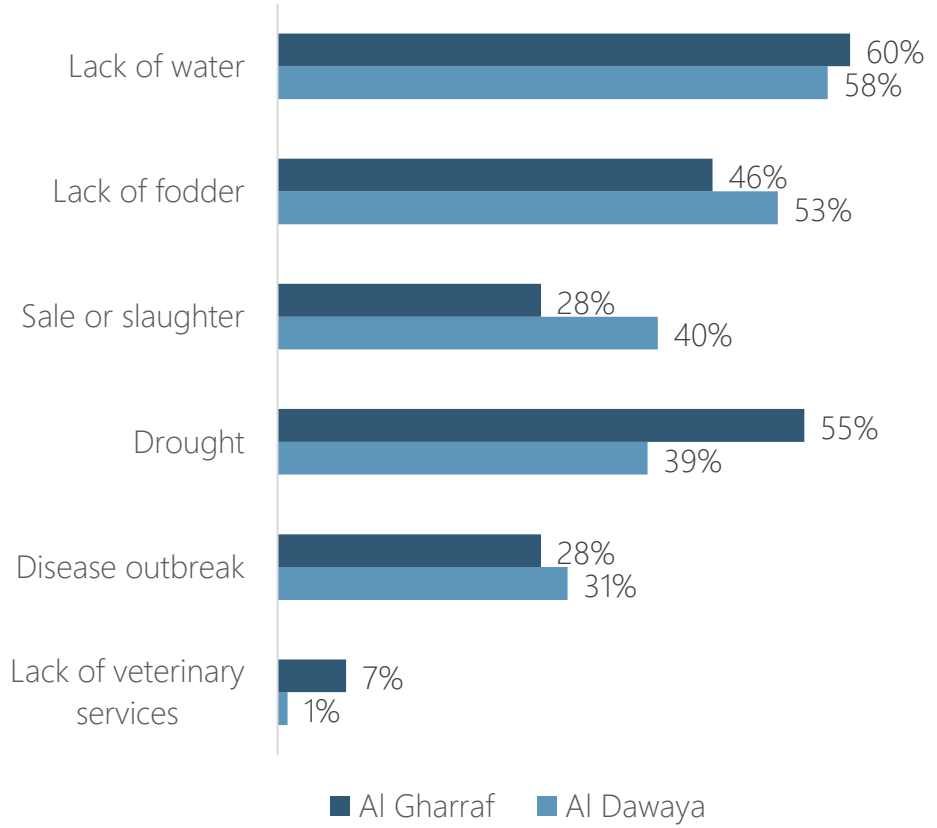
Livestock Death and Healthcare Challenges

84% of livestock owners reported having livestock death between November 2023-2024

64% of the reported livestock death was due to reasons **other than** sale for slaughter

- **Livestock health management** was highlighted as a major challenge for many livestock owners.
- Livestock owners also struggle with **limited access to treatment and vaccines due to unavailability and high costs**.
- Additional challenges include a **lack of pesticides, difficulty obtaining fodder and feed,** and inadequate government-provided veterinary services.
- Key informants also emphasized **long distances, poor infrastructure, and lack of awareness** in exacerbating these issues.
- Survey respondents further identified livestock disease (41%) and high veterinary costs (40%) as significant concerns.

Most commonly reported causes of livestock death between Nov. 2023-2024, by sub-district



Social & Institutional Challenges

Financial Support for Agricultural Activities

3% of farmers reported **receiving financial support for farming**

1% of livestock owners reported **receiving financial support for raising livestock**

Land and Water Disputes

64% of respondents reported having **experienced water disputes**

22% of respondents reported having **experienced land disputes**

Key informants also highlighted the **need for greater cooperation between farmers, livestock owners, and the government**, as well as increased **mutual support** within farming and livestock-owning communities.

Challenges Accessing Information

Knowledge gaps

Both community leaders and key informants from the Water Directorate highlighted that **limited knowledge or information is a challenge for both farmers and livestock owners**.

The areas highlighted by the key informants were:

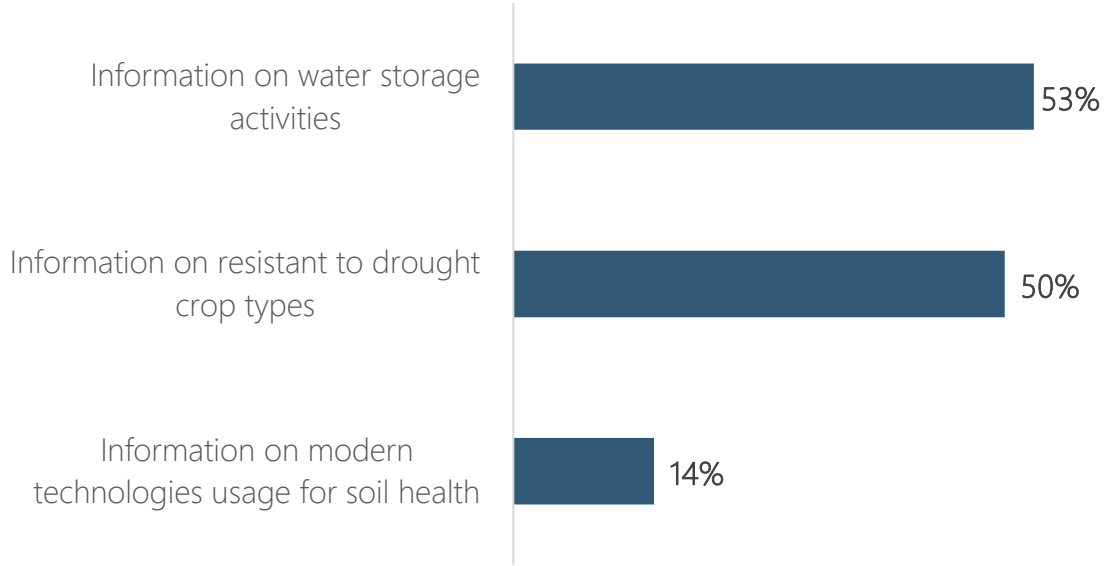
- Knowledge on **drought risk mitigation** measures
- Knowledge on **efficient irrigation** methods
- Knowledge on **irrigation needs by crop**
- Knowledge on **livestock healthcare management**

Among these, **drought risk mitigation** was a primary concern.

Addressing these knowledge gaps is crucial for improving resilience, ensuring more sustainable resource management.

25% of respondents reported that **limited knowledge on possible mitigation measures is a barrier** to drought risk mitigation

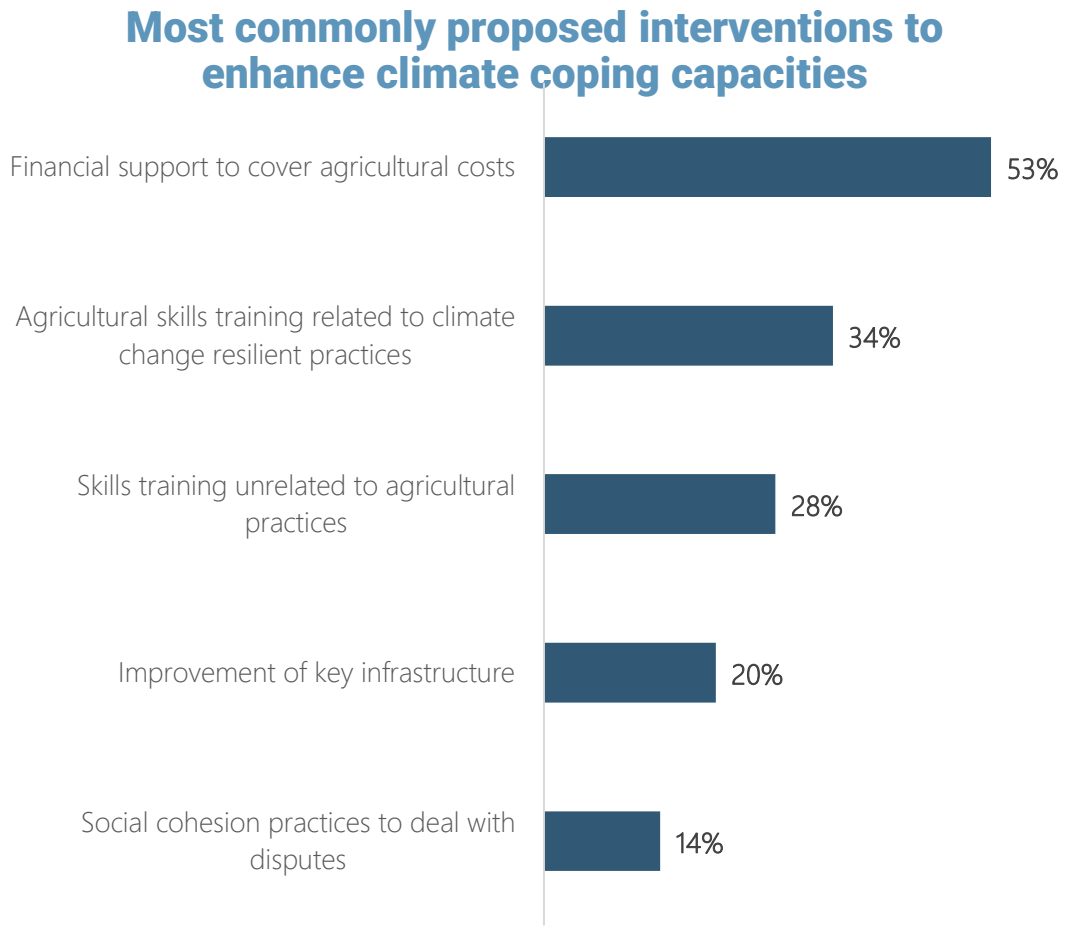
Most commonly knowledge needs for mitigation of drought risks



06

Intervention Areas & Opportunities

Intervention Areas & Opportunities



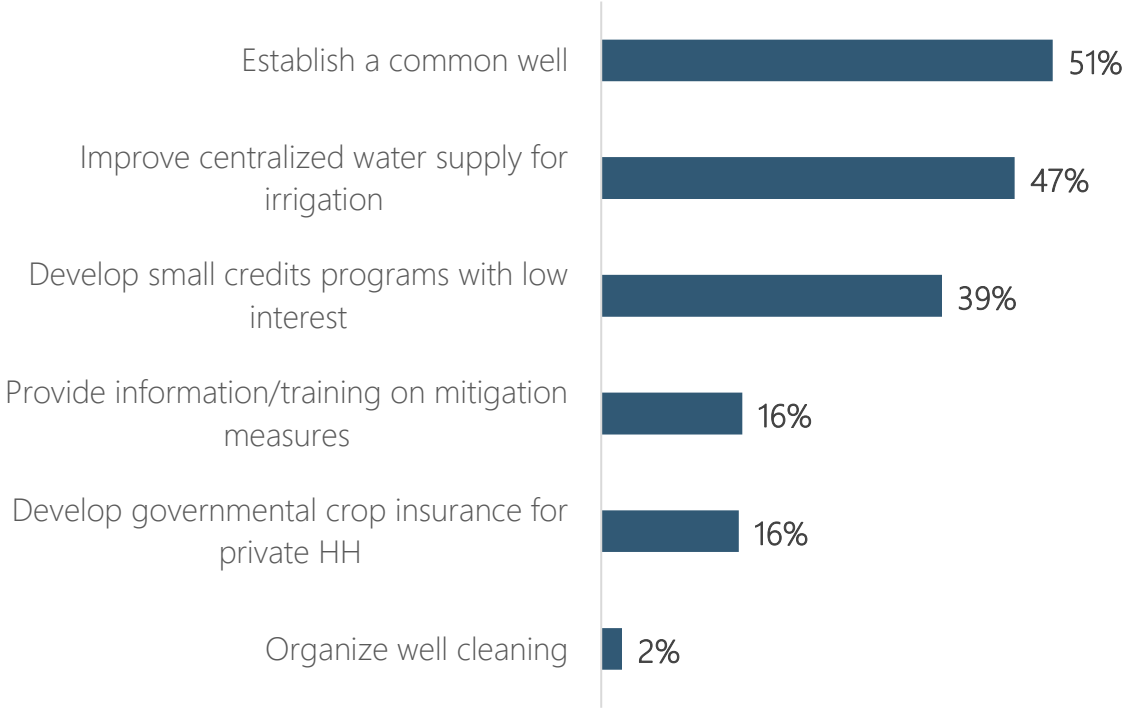
Enhancing Climate Coping Strategies

96% of respondents reported feeling affected by climate change. Among them, 53% indicated that financial support would help enhance their capacity to cope with its negative effects. The second most reported potential intervention was agricultural skills training on climate-resilient practices (34%).

Overall, these findings highlight a clear preference for financial and skills-based interventions, with a focus on community-driven solutions and resource management.

Intervention Areas & Opportunities

Most commonly proposed interventions to reduce drought impacts on farmers and livestock owners



Enhancing Drought Risk Mitigation Strategies

51% of respondents reported that establishing a **common well could potentially reduce household drought impacts**. Additionally, 47% suggested that an **improved centralized water supply for irrigation** would help, while 39% supported the development of **small credit programs with low interest**.

This reflects a tendency toward solutions that foster community collaboration, with a focus on shared resources like a common well and collective efforts to improve water access.

Intervention Areas & Opportunities

Key informants and survey respondents shared multiple potential intervention areas and opportunities. Of the many recommendations , the six to the right were the most commonly proposed.

Wells

Community leaders proposed **government-led initiatives to drill deep wells to draw up fresh water**, rather than the shallow wells dug by farmers/livestock owners that typically bring up salinated water.

Drip Irrigation

Along with community leaders, key informants from the water sector emphasized the need to move towards mechanized, modern irrigation techniques with a focus on drip irrigation.

Feed Provision

Community leaders proposed various government-provided goods for farmers and livestock owners, with a primary focus on subsidized feed, reflecting its critical role in supporting the agricultural sector.

Irrigation Rotation

Improved management of the water rotational system was highlighted as a key opportunity to enhance resource distribution, ensuring more efficient and equitable access for all farmers and livestock owners.

Improving Water Infrastructure

Key informants noted a need to **implement measures to reduce evaporation and filtration of water** by:

- **Closing up irrigation canals**
- **Lining** canals
- Improve **maintenance** of canals, cleaning plants from canals
- Improve **maintenance of pumps**
- **Capacity building for staff on canal encasing/management**

Capacity-Building & Skills Trainings

Capacity-building and skills training programs to support farmers in adopting more efficient irrigation practices. These programs should focus on:

Techniques to reduce wastewater and improve conservation; transitioning to modern irrigation methods; implementing cost-efficient irrigation systems; ensuring sufficient irrigation based on crop needs; methods for controlling the water column; Training in automated and new irrigation systems

Intervention Areas & Opportunities

Financial Support for Agricultural Activities Highlighted by KIs

Although farmers and livestock owners face frequent and significant challenges, only 3% and 1%, respectively, reported receiving any financial support for their agricultural activities. Community leaders emphasized the need for greater cooperation between farmers, livestock owners, and the government. The three key areas where financial support could have the greatest impact and provide meaningful opportunities for intervention are listed below:

01

Feed & Fodder

This was the most commonly reported area where government support is needed according to community leaders. Among livestock owners who said they cannot afford all necessary expenses, 97% reported being unable to afford fodder and feed, making this a key opportunity for intervention.

02

Water for Agricultural Use

This was the second most reported priority by key informants. 83% of respondents said drought had affected their agricultural activities in the past year, and 74% reported that water scarcity had impacted their agricultural activities, highlighting this as a critical intervention area.

03

Seeds & Fertilizers

This was the third most commonly reported area. Among farmers who struggle to cover all necessary farming expenses, 89% reported difficulties affording compost or fertilizer, and 67% struggled to afford seeds, emphasizing this as an important area for support and intervention.

07

Key Takeaways

Key Takeaways

Main Issues

01

Climate Events & Water Scarcity

Climate related events reportedly negatively affected all farmers and livestock owners in both districts, and water scarcity affected the vast majority of them.

02

Water Infrastructure

The poor irrigation infrastructure resulted in further water scarcity, limiting the capacity of network providers and compounding the effects of climate change.

03

Salinity

Water and soil salinity was very extensive in both districts and have been affecting the area for the past decades but has been worsening in the last 10 years.

Key Takeaways

Consequences of Main Issues

01

Many farmers reported loss of crops and livestock owners reported livestock death as a consequence of water scarcity and other climate-related events.

02

Water was only distributed in rotation which was insufficient for summer farming activities.

03

For livestock owners, the lack of water seemed to result in higher livestock disease and vaccines were unaffordable.

04

The decrease in water from main water bodies affected the quality of water for agricultural purposes.

05

Water scarcity has resulted in water and land disputes, eroding community bonds.

06

According to community leaders, many farmers and livestock owners had already migrated and abandoned their lands

Key Takeaways

Coping Strategies

01 Farmers switched to more **drought and salt-resilient crops**, and many switched to **drip irrigation** and **covered agriculture**. Livestock owners switched to **livestock** types needing **less water.**

02 Farmers and livestock breeders **dug wells** and used **water trucking** to cover their water needs. However, these coping mechanisms had **limited results** as both were expensive and shallow wells brought salty water.

03 Many livestock owners **sold a portion of their livestock** due to water scarcity, lack of grazing lands, and inability to access fodder due to high costs and frequent shortages.

04 Due to the loss of livelihoods form agricultural activities, farmers and livestock owners often used **debt to cover food, agricultural costs and healthcare**.

05 Livestock owners and farmers are **migrating** due to water scarcity.

Thank you for your attention

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