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RISE SYRIA

Need Assessment Report

WORLD VESION INTERNATIONAL SYRIA RESPONSE

PREPARED BY: WVI- Syria Response- MEAL team

April 2026

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Table of Contents

TABLE OF ABBREVIATIONS

EWB	Engineers Without Borders
FSL	Food Security and Livelihoods
HH	Household
HHH	Head of Household
M&E	Monitoring and Evaluation
MEAL	Monitoring, Evaluation, Accountability, Learning
NGO	Non-Governmental Organizations
PWD	Person With Disability
RIL	Response Innovation Lab
WVI	World Vision International
WVSR	World Vision Syria Response

BACKGROUND AND GOALS

Engineers Without Borders Norway (EWB-Norway), together with its partners, aims to address the growing challenge of water scarcity and its direct impact on food security—particularly for wheat and barley farmers in Northwest Syria. Projections from the World Resources Institute estimate that by 2050, over 30% of the global population will live in countries facing high to extremely high-water stress, with Syria among the most at risk.

In Northwest Syria, this crisis is already unfolding. According to the Food Security Challenge Mapping Workshops reports, the Response Innovation Lab (RIL), in partnership with Field Ready MENA, key stakeholders identified water insecurity and low rainfall as major threats to agriculture and livelihoods. Wheat and barley farmers remain dependent on traditional irrigation, which is unsustainable under worsening drought conditions.

This urgency was further emphasized in the April 2025 Call for Action by the Food Security and Livelihoods (FSL) Cluster, highlighting the critical need for immediate support to drought-affected winter crop farmers, particularly those growing wheat and barley.

The project goals:

- Support wheat and barley farmers, locals and returnees in cultivating, irrigating, and restoring their agricultural lands, enabling them to resume productive livelihoods.

- Reach female-headed households, women, and persons with disabilities (PWDs), ensuring their inclusion in agricultural recovery efforts.
- Scale impact nationally by promoting sustainable irrigation practices and water management, climate-smart farming, and empowering local institutions.
- Re-establish wheat and barley as reliable sources of food and income and strengthen agricultural value chains. Ultimately, the project strives to foster resilience and self-reliance in food security across Northwest Syria.

For this purpose, we intend to establish market dialogues with partners interested in establishing a partnership to:

- Exploring and designing sustainable, climate-resilient and locally adapted irrigation systems by leveraging data-driven solutions and strong private sector partnerships
- Testing the systems in context-specific locations
- Implement our solution(s)

PROPOSED OBJECTIVE, OUTCOMES AND OUTPUTS OF THE PROJECT

Project goal: To improve food security and climate resilience among smallholder wheat and barley farmers in Northwest Syria

Project Outcome 1: Improved access to practical irrigation solutions

Project Outcome 2: Better water use practices among farmers

Project Output 1.1: Launch Market Dialogue Process for private actors

Project Output 1.2: Develop and install practical irrigation prototypes

Project Output 2.1: Organize training and co-creation workshops

Project Output 2.2: Document lessons and prepare for scale-up

NEED ASSESSMENT METHODOLOGY AND PURPOSE

PURPOSE

- Assess the readiness of selected locations in Northwest Syria for project implementation, including water sources, irrigation infrastructure, local coordination mechanisms, and technical ecosystem capacity.
- Identify suitable pilot locations and establish a validated, transparent farmer-selection framework to ensure that chosen participants are smallholder wheat and barley producers
- Analyze current irrigation practices and water-use patterns to ensure that proposed solutions enhance, rather than replace, existing farmer practices.
- Assess farmers' willingness and capacity to participate in piloting activities in the 2027 cultivation season.
- Identify barriers and specific needs affecting women-led households and persons with disabilities to ensure inclusive participation.
- Provide recommendations for site prioritization and a shortlist of at least 50 eligible beneficiary households for pilot implementation.

METHODOLOGY

226 HH surveys were conducted with all the selected NGOs. Table 1 below illustrates the surveys conducted.

Table 1: Actual sampling in the HH Survey

#	Governorate	District	Sub-district	village	Samples
1	Aleppo	Jebel Saman	Zarbah	Sheikh Ahmed	54
2	Aleppo	Jebel Saman	Zarbah	Zmar	62
3	Aleppo	Jebel Saman	Zarbah	Tal Bajer	55
4	Aleppo	Jebel Saman	Zarbah	Banes	55
Total	1	1	1	4	226

Also, the WVI MEAL team conducted four FGDs, four KIIs and four on-site observation checklists.

The WV Syria MEAL team led the data collection process, engaging a team of experienced data collectors for the task.

The survey was developed on Kobo in both Arabic and English, and data was collected through the Kobo mobile app.

The WVI MEAL Officer trained and supervised the data collectors. The tools were tested during the training and adjusted based on the field test results.

The collection of data for the HH survey was conducted in April 2026 by five enumerators (three female and two male).

Two MEAL Officers (one male and one female) with two enumerators conducted the FGDs and the KIIs.

The data collection lasted 4 days.

The WVI Senior MEAL officer conducted the data analysis and report writing.

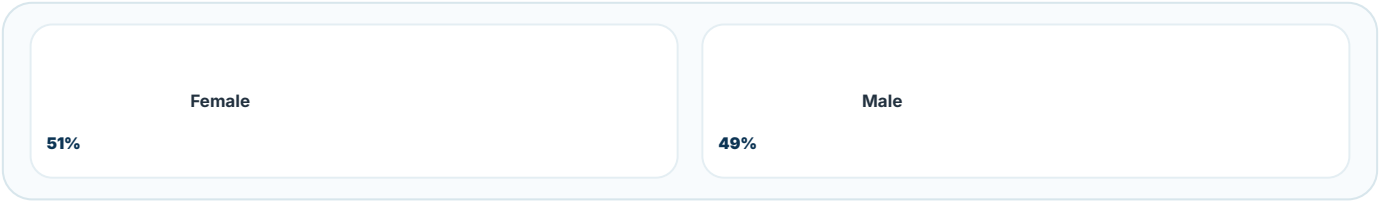
NEED ASSESSMENT RESULTS

DEMOGRAPHICS

HH SURVEY DEMOGRAPHICS

51% of the respondents were female, whereas 49% of them were male.

Figure 1: Gender of Respondents in HH Survey



62% of the respondents were the HHHs. 38% of them were not the HHH, and 95% of the respondents, who were not the HHHs were wives of the HHH.

48% of the respondents were living in damaged/ unfinished buildings. 32% of the respondents were living in apartments/ houses with single-family (undamaged). 10% of the respondents were living in apartments/ houses shared with 2 or more families (undamaged). 8% of the respondents were living in tents with a single family. 2% of the respondents were living in collective shelters. 40%of the respondents were from the host communities, and 60% were returnees.

The average of the HHH members was 6.

The majority of respondents (85%) had lived in that region for more than one year. 14% of the respondents had lived in that region between six and twelve months. 1% of the respondents had lived in that region between three and six months.

FGDs DEMOGRAPHICS

28 participants (12 males and 16 females) participated in the FGDs. There were four FGDs in four villages (Sheikh Ahmed, Zmar, Tal Bajer and Banes).

KIIs DEMOGRAPHICS

Four participants participated in the KIIs. They were one agricultural cooperative representative, two community leaders, and one local technical service provider.

SITE OBSERVATION CHECKLIST DEMOGRAPHICS

Four site observation checklists were conducted in four villages (Sheikh Ahmed, Zmar, Tal Bajer and Banes).

KEY FINDINGS

In the HH survey, 57% of the respondents said that they grew wheat, 21% of the respondents said that they grew barley, and 20% of the respondents said that they grew wheat and barley.

61% of the respondents reported that they had between five and ten dunams. 29% of them reported that they had more than 10 dunams. 10% of them reported that they had less than 5 dunams.

Based on the site observation checklist, most lands were clearly cultivated and had been recently ploughed. There were no visible signs of land boundary or tenure disputes. The main cultivated crops were wheat and barley.

Findings from the FGDs showed that wheat and barley were the main crops cultivated by farmers across the target communities, with participants reporting long-standing agricultural experience ranging from several years to decades. The selection of these crops was primarily driven by their low water requirements, suitability to local soil conditions, and lower production costs, making them more viable under conditions of water scarcity and limited financial resources. Farmers also highlighted that wheat and barley were considered low-risk crops that provide relatively stable returns and are aligned with market demand and household food security needs. Due to inadequate and unreliable irrigation systems, including non-functional wells, farmers generally avoided water-intensive crops such as cotton and instead prioritized crops that could be sustained with minimal irrigation or rainfall.

Based on the findings of KIIs, most residents of the village were small-scale farmers whose agricultural income was insufficient, leading them to depend on additional sources of income and took on debt to cover farming expenses, which they later repaid after the harvest. Many farmers could not afford essential agricultural inputs, forcing a significant number to hire their land annually at a low rate. The financial situation had further deteriorated due to prolonged displacement, during which farmers lost much of their agricultural equipment—either stolen during military operations or sold to meet basic household needs. As a result, many had had to borrow money to continue cultivating their land.

> *Most of the village's inhabitants are small farmers. Because the income from the land is not enough, they rely on other work for their income and are forced to borrow to cover the costs of farming, and when they harvest, they pay off their debts. KII, Agricultural Cooperative Representative, Banes*

Regarding the basis of cultivating that land, the majority of respondents (92%) mentioned that they owned the land (title deed or document), 4% mentioned that they had a long-term lease — written contract, 3% mentioned that they had verbal or informal lease agreement with the owner and 1% mentioned that they had community verification (e.g., confirmed by a community leader).

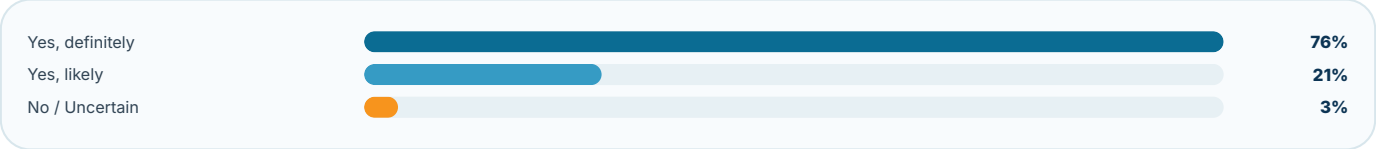
95% of the respondents said that they planted their land with wheat or barley in the 2026 season, whereas 5% of them said that they did not plant their land with wheat or barley in the 2026 season.

In response to the question about the situation of agriculture two to three years ago, the participants in the KII said that a year and a half ago, access to agricultural land was not possible due to the previous regime, and around 90% of people were IDPs, resulting in most farmland remaining uncultivated. In contrast, this year almost all lands had been cultivated following people's return, indicating a generally improved situation.

However, despite relatively good rainfall, farmers reported worsening conditions due to the spread of agricultural pests and weeds, which had not been effectively controlled even with pesticide use. While some farmers expressed optimism about the upcoming harvest after resuming cultivation, others noted that a clear comparison with previous years was difficult due to displacement.

As seen in Figure 2 below, 76% of the respondents said that they were definitely planning to plant wheat in 2027, and 21% of the respondents said that they were likely planning to plant wheat in 2027. Whereas 3% said that they were not planning to plant wheat in 2027.

Figure 2: Planning to Plant Wheat in 2027

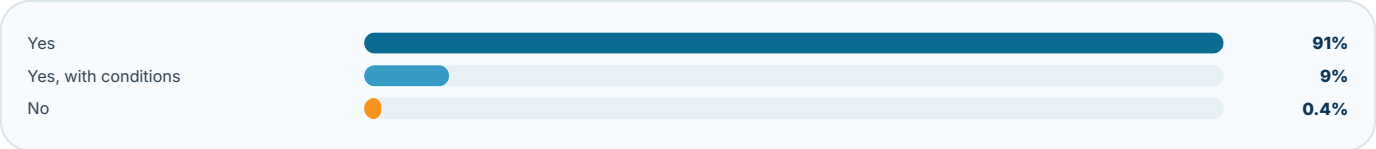


Based on the main findings of KIIs, the main challenges faced by farmers include the high cost of agricultural inputs such as seeds and fertilizers, along with insufficient water availability for irrigation throughout the growing season. Many farmers also reported the loss of essential tools and machinery, some of which were stolen or sold during periods of displacement to cover basic food needs. In addition, production costs—including seeds, fertilizers, and labor wages remained very high, while extreme climatic conditions such as droughts and occasional floods further worsened agricultural productivity.

> *"High production costs (seeds, fertilizers, farming wages) in addition to extreme climatic conditions such as severe drought or floods." KII, Community Leader, Banes*

As seen in figure 3 below, 91% of the respondents were willing to collaborate with project partners to enhance the current irrigation practices using data and technical support, and 9% of the respondents were willing, with conditions, to collaborate with project partners to enhance the current irrigation practices using data and technical support. Whereas one respondent said that he was not willing to collaborate with project partners to enhance the current irrigation practices using data and technical support.

Figure 3: Willing to Collaborate with Project to Enhance Current Irrigation Practices



Key informants reported that several villages in the southern Aleppo countryside were well-suited for agricultural support projects due to their reliance on groundwater wells, fertile land, and available water resources. Farmers in these villages had strong agricultural experience, depended heavily on farming for their livelihoods, and used various irrigation methods, but they still required further development and support.

As seen in Figure 4 below, 60% of the respondents were willing to take part in basic data collection activities (e.g., recording water use), and 25% of the respondents were willing to take part with support from enumerators in basic data collection activities (e.g., recording water use). Whereas 15% of the respondents said that they were not willing to take part in basic data collection activities (e.g., recording water use).

Figure 4: Willing to Take Part in Basic Data Collection Activities (e.g., Recording Water Use)

In response to the question in the FGDs, what would make it easier for you to participate in project activities such as training or field demonstrations? The participants emphasized that effective agricultural training should be high-quality, practical, and tailored to the crops they grow, delivered by knowledgeable trainers with strong technical expertise. They highlighted the importance of conducting training within the village, providing financial compensation to offset lost work time, and offering agricultural inputs such as seeds and fertilizers. Most participants expressed willingness to attend training if the training timing was suitable and did not conflict with urgent responsibilities. They also noted that participation would be easier if activities were practical, responsive to their local conditions, and designed to fit their availability, and many recognized that such programs could improve their skills and make their agricultural work more efficient.

Participants in the FGDs emphasized that improving agricultural production required access to modern irrigation systems—such as hoses, sprinklers, and drip networks—along with financial support to rehabilitate non-functioning wells. They highlighted the importance of ensuring reliable water and energy sources, particularly through solar-powered systems to operate water pumps and reduce costs associated with unstable electricity. Many stressed the need to repair existing equipment, reactivate wells, and provide necessary machinery to sustain irrigation. Additionally, participants noted that projects should be inclusive of all farmers, implemented by experienced technical staff, and supported through long-term monitoring to ensure effectiveness.

> *Providing farmers with modern irrigation equipment (hoses, sprinklers, drip irrigation networks) and supporting them financially to equip wells that have stopped working. FGD, male Participant, Zamar*

Participants in the FGDs described a range of coping strategies driven by financial constraints and lack of resources, including relying solely on rainfall for irrigation, borrowing, and selling crops in advance at significantly reduced prices to meet urgent needs. Some farmers also rented out or sold portions of their land to cover cultivation costs. These challenges were compounded by limited support, poor access to water, and unsuitable farming conditions, leading to frequent crop failures and reduced productivity. As a result, many households were forced to seek alternative sources of income, while others gradually abandoned agriculture altogether.

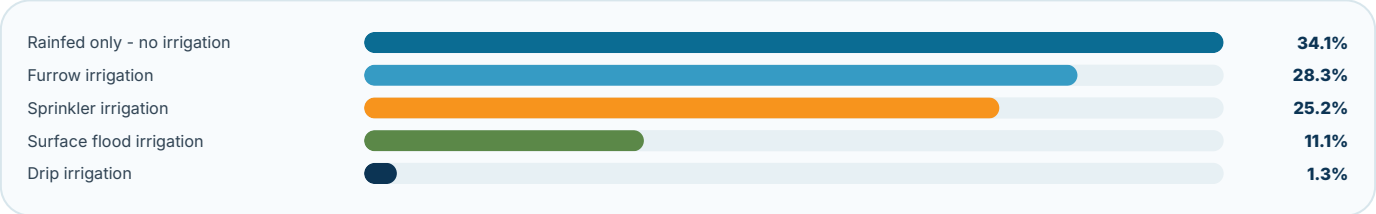
85% of respondents reported having access to a mobile phone and expressed willingness to use SMS or a simple digital tool for the project.

Based on the site observation checklist, mobile network coverage was weak/intermittent in three villages, but in Zamar, there was no coverage. However, it was noted that Wi-Fi connectivity was available within villages.

Most respondents (98%) reported having access to a mobile phone, including 84% with smartphones and 14% with basic phones, while only 2% indicated they had no access.

As seen in Figure 5 below, Rainfed agriculture without irrigation was the most common practice (34.1%), followed by furrow irrigation (28.3%) and sprinkler irrigation (25.2%). Surface flood irrigation was used by 11.1% of respondents, while drip irrigation was minimally adopted (1.3%).

Figure 5: Irrigation Methods Used

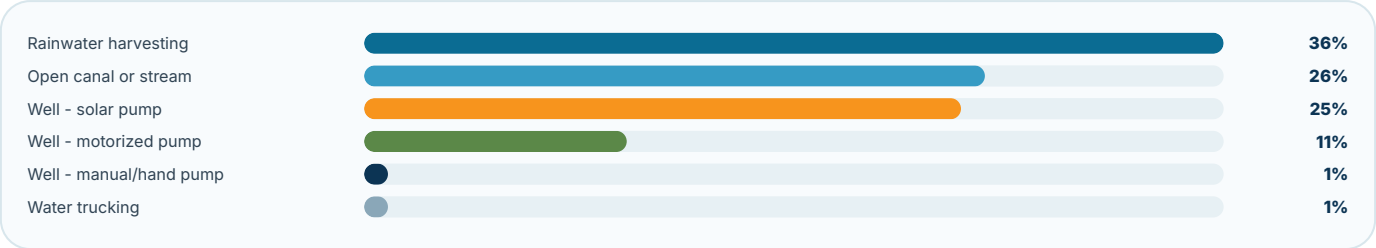


The participants in the KIIs said that surface irrigation was the common method used by farmers because it was the least expensive and required minimal equipment, despite being inefficient and wasting water. Sprinkler irrigation was more efficient but not widely used due to its high cost, while some farmers relied solely on rainfed agriculture. Although surface irrigation was not the most efficient method, it was widely used because it was the least expensive, and farmers were accustomed to it compared to drip or sprinkler irrigation. The surface irrigation was inefficient and had several drawbacks, including over-irrigation, crop damage, and increased weed growth. However, farmers continued to use it because it is affordable, easy to apply, and the only option they could realistically access despite knowing that more efficient methods exist.

> *"Surface irrigation because this method is used because it is the least expensive of all others." KII, local technical service provider*

As seen in Figure 6 below, Rainwater harvesting was the most common primary water source of irrigation (36%), followed by open canal or stream (26%), well — solar pump (25%) and well — motorized pump (11%). Well — manual/hand pump and Water trucking were the common primary water sources of irrigation used by 1% of respondents for each. Participants in the KIIs said that the farmers relied on canals and wells, but only a small share of wells operated on solar power. High costs, lack of electricity, and expensive diesel limited the wider use, leaving many wells non-functional.

Figure 6: The Primary Water Source for Irrigation



Based on the site observation checklist, across the four villages, the observed water sources infrastructure included wells equipped with solar pumps and open canals, and it was available all year. The observed condition of the primary water sources was functional, but not currently in use in three villages, but in Banes, it was fair — functional but showing wear. There were no visible signs of groundwater stress or over-extraction. It was noted in Alshekh Ahmad and Tal Pajer that there were solar-powered pumps, whereas in Banes and Zamar, there were no pumps.

The participants in the FGDs mentioned that farmers relied on a mix of irrigation water sources, which varied significantly depending on infrastructure availability and seasonal conditions. Many participants reported that rainwater was the most common and accessible source, while others depended on river water, despite its unreliability during the summer. Some farmers had access to solar-powered wells and sprinkler irrigation systems, while a few relied on rented water from neighbors with functional wells due to the lack of their own operational water sources. However, a considerable number of farmers indicated that their wells were out of service and they depended entirely on rainfall, while others did not irrigate their crops at all. Consequently, access to irrigation water remains uneven and unstable, with reliance on rainfed agriculture and seasonal river flow highlighting the vulnerability of current farming practices and the limited availability of reliable irrigation infrastructure.

> *"I mainly depend on rainwater for irrigation, adding that this is the most accessible option to me". FGD, Female Participant, Banes*

53% of the respondents said that these sources were available year-round, 35% of them said those sources were available seasonally only, 10% of them said those sources were available irregularly, and 2% of them said those sources were currently not functional.

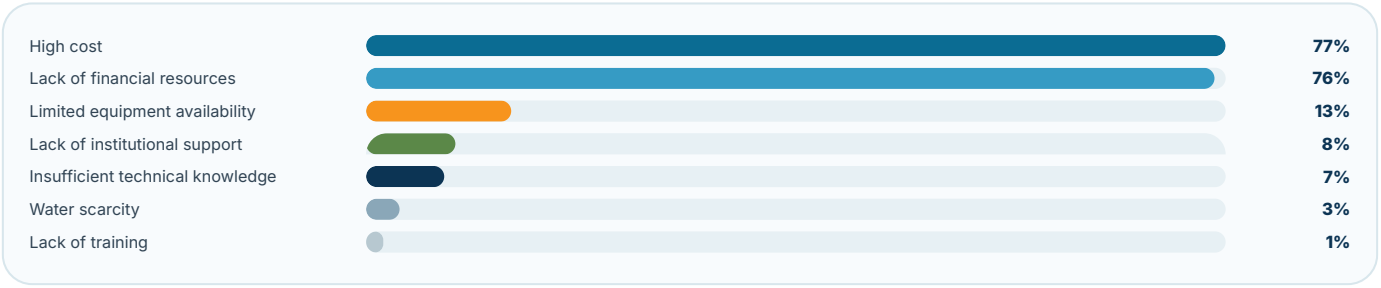
When the respondents were asked why they used these water sources, the answers were due to the absence of alternatives (41.6%), followed by their effectiveness (35.8%) and affordability (22.6%).

All respondents in the HH survey mentioned that crop production could improve if the irrigation methods were changed or improved.

All participants across FGDs consistently reported that irrigation practices significantly influence agricultural productivity, with most currently relying on traditional methods such as flood or sprinkler irrigation due to limited resources and infrastructure. While farmers recognized that improved systems—particularly drip irrigation would enhance production efficiency, reduce water consumption, and minimize weeds and crop diseases, they also highlighted that the high cost of modern irrigation equipment, including solar-powered systems and pumps, was the main barrier to adoption. Participants emphasized that flood irrigation was inefficient and sometimes harmful to crops due to uneven water distribution, especially in areas with varying terrain, yet it remained widely used as it was the only affordable option. There was strong agreement that upgrading irrigation systems would improve yields and allow crop diversification, but financial constraints and lack of access to energy and water infrastructure continued to limit any meaningful transition to improved irrigation practices.

Upgrading irrigation systems is mainly constrained by financial barriers, with most respondents citing high costs (77%) and lack of financial resources (76%), while fewer mentioned limited equipment availability (13%), lack of institutional support (8%), insufficient technical knowledge (7%), water scarcity (3%), and lack of training (1%).

Figure 7: Prevention from Changing or Upgrading the Current Irrigation System



The participants in the KIIs agreed with the respondents in the HH survey that the main reason which prevented farmers from upgrading their irrigation system was the high cost. Also, they said that farmers preferred modern irrigation methods because they improved yields, saved water, and reduced labour. However, the high cost prevented most farmers from adopting them, despite strong interest and awareness of their benefits.

In response to the question about the challenges faced by farmers regarding irrigation, Key informants reported that farmers faced a significant lack of essential irrigation equipment, such as plastic hoses and pumps. These costs were often too high relative to farmers' limited income and the low returns from their land. In addition, most farmers were unable to afford irrigation pumps or drilling and equipping underground wells due to the high financial burden. Some also struggled to access river water because of obstacles such as dense vegetation in the river channel, which had not been maintained for long periods, preventing water from reaching their fields.

The participants in the FGDs reported that farmers relied on limited and cost-constrained irrigation methods, primarily sprinkler and flood irrigation, depending on available resources and infrastructure. While some participants acknowledged that sprinkler irrigation provided more even water distribution and that drip irrigation was more efficient in terms of water use and crop performance, they emphasized that the high cost of equipment and the need for additional investments, such as solar-powered systems, prevented its adoption. As a result, many farmers continued to use flood irrigation despite recognizing its inefficiency, as it remained the most affordable and accessible option under current conditions.

> *We use the flood irrigation method because the alternatives are limited and we know that this method is inefficient and has disadvantages, but the other alternatives are very expensive, such as sprinkler irrigation and drip irrigation, which also require equipping the wells with solar energy. This old method that we use is the least expensive. FGD, male Participant, Zamar*

Findings from FGDs consistently indicated that farmers faced multiple interrelated challenges that significantly affect agricultural production, primarily including the high cost and limited availability of agricultural inputs such as seeds, fertilizers, and pesticides, which many farmers were not able to afford due to weak purchasing power and limited financial resources. As a result, farmers were often forced to reduce input use or rely on credit, increasing their financial burden and dependence on suppliers. In addition, climatic variability was a major constraint, with irregular rainfall, recurring droughts, and occasional floods damaging crops and reducing yields, while water scarcity and the lack of functional or solar-powered irrigation systems further limited production. Participants also highlighted shortages of fuel for water pumps and difficulties in accessing irrigation water as additional constraints.

> *"The high cost of agricultural inputs such as fertilizers, pesticides, and seeds leads to increased production costs, which farmers often cannot afford." FGD, male Participant, Shekh Ahmad*

The participants in the KIIs explained that before displacement, the situation of the groundwater levels was declining due to drought, low rainfall, and excessive water use, when many farmers over-irrigated using solar-powered systems. However, after years of non-use during displacement and improved rainfall this year, some respondents observed a stabilization or even partial recovery of groundwater levels. At the same time, others noted that the situation remains mixed, with no significant increase or decrease in some areas. In addition, several wells were severely damaged by the earthquake that occurred about three years ago, with some now completely out of service, which continues to affect water access regardless of groundwater conditions.

The participants in the KIIs mentioned that water for irrigation was generally available, but access was limited by unreliable river supply and high costs. River water decreased in summer, forcing farmers to rely on distant or alternative sources. Although groundwater existed, the high cost of well rehabilitation and irrigation equipment (including solar systems, pumps, and fuel) made it difficult for farmers to utilize it effectively.

Key informants reported that although water access was theoretically equal for all farmers, in practice, it was unequal. Farmers located near the river source had better access, while those downstream might receive little or no water. Additionally, poorer farmers were disadvantaged due to the high cost of pumps and irrigation equipment.

When we asked the participants in the FGDs about the main barriers that they faced in accessing reliable irrigation water or improving the irrigation system, they said that groundwater wells were the primary and most reliable source of irrigation; however, access to that resource was severely constrained by high financial and technical barriers. They emphasized that equipping a single well with solar-powered systems and pumps was unaffordable for most due to their weak financial capacity. In addition, restrictions imposed by local authorities on drilling new wells or rehabilitating existing wells further limit access to water. While groundwater was generally preferred over river water, often described as polluted or unreliable, many farmers were unable to utilize available wells due to the lack of equipment, energy sources, and infrastructure, such as pumps and pipe networks. Participants consistently highlighted that improving irrigation required substantial investment in solar energy systems, well rehabilitation, and water distribution infrastructure, which remained beyond their means without external support.

Findings from FGDs indicated generally improved groundwater and surface water availability compared to previous years, largely attributed to increased rainfall and reduced agricultural activity during displacement periods. Several participants reported that there were higher groundwater levels and increased river flow this year, including occasional flooding and improved well recharge. However, that improvement was not uniform, as many farmers emphasized that despite the presence of water in wells, its usability remained limited due to the lack of energy sources, equipment, and irrigation infrastructure, particularly solar-powered systems and pumps. Participants also highlighted that before displacement, water availability was more stable and accessible due to functioning infrastructure and equipment, whereas current conditions were constrained by damage, theft, and lack of resources. Additionally, some respondents pointed out that solar-powered wells had contributed to over-extraction in certain cases, potentially affecting groundwater sustainability. Overall, while water availability has shown some recovery in quantity, access and usability remain major constraints due to financial, technical, and infrastructural limitations.

As seen in Figure 8 below, the majority of respondents (89%) relied on their personal experience when deciding when to irrigate, while about half also considered soil moisture levels (52%) and weather conditions (51%). A smaller proportion based their decisions on the type of crop and its growth stage (12%). In contrast, only a few followed a fixed irrigation schedule (7%), sought advice from other farmers (4%), or depended on water availability (3%).

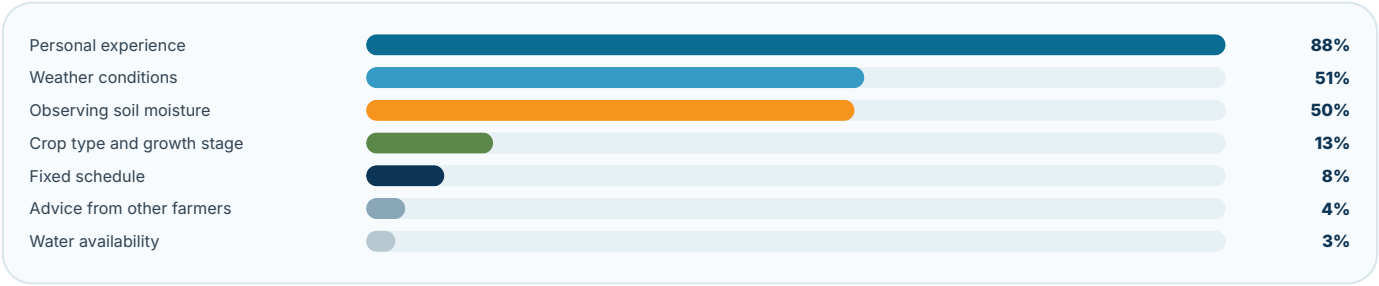
Figure 8: The Basis of the Decision on the Time to Irrigate the Land

When participants in the FGDs were asked about using a fixed schedule, visual judgement, soil condition, crop condition, or water availability, they said that they primarily relied on experiential and environmental indicators to determine irrigation timing, rather than fixed schedules or formal guidance. The most commonly used signals included plant condition (such as wilting, discoloration, and overall appearance), soil moisture indicators (including dryness and cracking), crop growth stages, and seasonal or climatic conditions such as rainfall and temperature. They mentioned that irrigation decisions were strongly influenced by water availability, meaning that even when crops required water, irrigation was not possible without access to a sufficient water source. In addition, they noted that practices varied depending on crop type and available irrigation systems, with those having access to solar-powered wells adjusting irrigation based on crop needs.

> *"Our agricultural experience is primarily based on extensive and accumulated experience. We rely on soil conditions; cracking is a strong indicator that the crop needs irrigation. However, water availability is a key factor in irrigation."FGD, male Participant, Zamar*

As shown in Figure 9, the majority of respondents (88%) relied on their personal experience when deciding how much to irrigate their land. Around half also considered weather conditions (51%) and soil moisture levels (50%). A smaller proportion based their decisions on the type of crop and its growth stage (13%). In contrast, only a few followed a fixed irrigation schedule (8%), sought advice from other farmers (4%), or depended on water availability (3%).

Figure 9: The Basis of the Decision Regarding the Amount of Land Irrigation



The majority of Respondents (95%) were not members of any agricultural cooperative or farmer group. Only a small proportion were involved, with 2% reporting that they were active members and 3% indicating that they were registered but not actively participating. Also, the participants in the KIIs supported the point mentioned about the agricultural cooperative in the HH surveys, and they said there was a clear absence of functional community associations, with any remaining structures described as nominal and non-operational.

> *"There is one association, but it is only in name and has no activity." KII, Agricultural Cooperative Representative, Banes*

Based on the site observation checklist, there was no visible cooperative or farmer group facilities near the site (e.g., storage, office, meeting space). There were no visible agricultural input supply points in the area (e.g., seed or fertilizer shops). There was no visible market or trading points for wheat / barley in the area.

All participants in the FGDs reported that they were not members of any cooperatives, primarily due to the absence of active cooperatives in their village. They indicated that no cooperatives were currently operating in the area, which limited their ability to participate. Despite this, many expressed a willingness to join if opportunities became available, highlighting an interest in engagement should such groups be established in the future.

The agricultural cooperative representative in his KII mentioned that there were about 450 members in the agricultural cooperative. The proportion of wheat or barley producer members in the agricultural cooperative was about 75% of the members in the agricultural cooperative. The agricultural cooperative included very few women members. The agricultural Cooperative was not providing anything at the moment because it had not been given any powers. There was no material or support for the agricultural cooperative. The agricultural cooperative was willing to support or participate in a pilot project on irrigation improvement. Also, he said that the agricultural cooperative could play a role in farmer mobilization, coordination, data sharing.

Based on the two KIIs with community leaders, small farmers constituted the majority of farmers in the village, more than 75%. The majority of small farmers grew wheat and barley. Developing irrigation infrastructure and equipping farmers with modern irrigation systems, rehabilitating river channels and supporting farmers in restoring their wells using solar energy were the most important needs for farmers based on the answers of the community leaders in the KIIs. Land rights were generally clear. There were no disputes or problems; there was a clear demarcation of all agricultural or real estate ownership in the village. There were no security or access constraints that could affect project activities. The community would be strongly supportive of a pilot project bringing technical support for irrigation to local farmers.

Based on the KII with the local technical service provider, his business provided farmers with agronomic advisory, extension services and input supply (seeds, fertilizer). He served about 100 farmers. Now, he does not have irrigation equipment or technologies to supply or service for farmers. Farmers often cannot adopt new agricultural practices, face low purchasing power, and frequently request inputs on credit, posing repayment risks if harvests are poor.

According to the KIIs, the technical agricultural and irrigation services were not present in the community itself, but farmers relied on external markets in nearby areas, which required travel and financial capacity to access.

Regarding the availability of market linkages for wheat and barley in the area, Key informants reported that the markets existed, but they were limited and concentrated around the harvest season, only for one month. During this period, most farmers sold their wheat harvest, while some stored it in anticipation of better prices later in the season. Some participants described the market as reliable during harvest time, but that reliability was still restricted to a short time rather than year-round access.

KIIs' findings indicated that women's involvement in agricultural decision-making and related engagement was very limited in the area, as men usually took responsibility. Cultural norms and traditions still restricted women's active involvement.

Based on the site observation checklist, there were no physical accessibility barriers at the site that could limit the participation of PWDs.

Based on the site observation checklist, women were observed participating in farming activities in all villages except Zamar but this did not mean that women in Zamar do not participate in farming activities.

Participants in the FGDs said that PWDs faced significant challenges in agricultural work, primarily due to physical limitations that prevented them from independently operating machinery, managing irrigation systems, or performing labour-intensive tasks. As a result, they often relied on hired labour, which increased their financial burden, with some paying high daily wages or being forced to rent out their land. In addition, poor agricultural road conditions restricted movement and transportation for PWDs. Many also noted difficulties in handling essential tasks such as operating water pumps, extending irrigation networks, and ensuring adequate water supply, making them highly dependent on external support to sustain their farming activities. Participants in the FGDs emphasized the need for targeted financial support to ease the additional costs faced by PWDs, along with the provision of accessible agricultural tools and machinery adapted to their needs. They also highlighted the importance of moral support, encouraging participation in farming activities even if limited to supervision roles. Overall, participants noted that, in many cases, relying on hired labor or renting out land remained the most practical solution, alongside introducing simplified, user-friendly irrigation systems to better accommodate their capacities.

> *"PWDs are often unable to operate agricultural machinery, manage irrigation water, or handle basic farming equipment on their own." FGD, Female Participant, Tal Pajer*

Across participants' answers in the FGDs, agricultural decision-making was largely male-dominated, with men typically making final decisions based on their accumulated experience, while women were often responsible for implementation. Several participants noted that decisions were discussed within the household, reflecting some level of consultation and joint input; however, even in these cases, men usually retained the final authority. A few respondents described more collaborative dynamics, where husbands and wives made decisions together, and in rare cases, such as female-headed households, women took full responsibility for decision-making.

> *"Decisions are made after consultation, but the final decision is taken by the man." FGD, Female Participant, Banes*

In response to the most needed improvements for irrigation, as mentioned by the participants in the KIIs, were rehabilitation of water infrastructure and access to modern irrigation equipment, including solar-powered solutions, along with support for agricultural inputs to ensure practical implementation of guidance.

Participants in FGDs highlighted that trust and engagement in the project depended largely on having experienced and technically qualified staff managing activities. They emphasized the importance of transparency, particularly regarding ownership of assets provided through the project. A dominant theme across responses was the need for tangible, on-the-ground implementation, with participants stressing that delivering materials, ensuring their proper use, and conducting regular field follow-up are far more convincing than plans on paper. Continuous monitoring, field visits, and direct interaction with beneficiaries were also seen as critical for building confidence. Additionally, participants expressed greater willingness to engage when their opinions are heard, their needs are addressed, and they are actively involved in different stages of the project, reinforcing the importance of participatory and responsive programming.

Participants in the FGDs expressed several concerns related to the project's implementation and targeting process, particularly the possibility of registering recipients without actual delivery of support or removing names after registration. They emphasized that support should target vulnerable agricultural workers rather than landowners. Some participants, however, reported having no concerns about the project. Others highlighted issues such as insufficient or unclear support, weak monitoring and follow-up, and the risk of unfulfilled promises or partial implementation.

> *"Registration should be based on the actual worker rather than the landowner. I work with her husband on her uncle's land, and if support is given to her husband's father, they would not benefit directly from it." FGD, Female Participant, Banes*

Based on the site observation checklist, across the four villages, road access was good, and the sites were accessible by standard vehicles. There were no security or safety concerns observed at or near the villages.

Based on the site observation checklist, project activities (field visits, equipment installation, training) realistically can be carried out at these sites.

Based on the site observation checklist, the villages were suitable for inclusion in the pilot project.

Based on the site observation checklist, across the four villages, there is currently no irrigation due to heavy seasonal rainfall. The local communities are cooperative and welcoming toward the project.

All participants across FGDs consistently reported that irrigation practices significantly influence agricultural productivity, with most currently relying on traditional methods such as flood or sprinkler irrigation due to limited resources and infrastructure. While farmers recognized that improved systems—particularly drip irrigation—would enhance production efficiency, reduce water consumption, and minimize weeds and crop diseases, they also highlighted that the high cost of modern irrigation equipment, including solar-powered systems and pumps, was the main barrier to adoption. Participants emphasized that flood irrigation was inefficient and sometimes harmful to crops due to uneven water distribution, especially in areas with varying terrain, yet it remained widely used as it is the only affordable option. There was strong agreement that upgrading irrigation systems would improve yields and allow crop diversification, but financial constraints and lack of access to energy and water infrastructure continued to limit any meaningful transition to improved irrigation practices.

CONCLUSIONS

- In this need assessment, there were 226 HH surveys, four FGDs, four KIIs and four site observation checklists.
- Most residents of the village are small-scale farmers whose agricultural income is insufficient.
- Most lands were clearly cultivated. The main cultivated crops in these villages were wheat and barley because they were considered low-risk crops that provide relatively stable returns and are aligned with market demand and household food security needs.
- The participants had long-standing agricultural experiences.
- 92% of the participants mentioned that they owned the land (title deed or document).
- 97% respondents were planning to plant wheat in 2027 definitely (76%) or likely (21%).
- The main challenges faced by farmers include the high cost of agricultural inputs and insufficient water availability for irrigation throughout the growing season.
- 91% of the respondents were willing to collaborate in the project, and 9% of the respondents were willing to collaborate with conditions.
- 60% of the respondents were willing to take part in basic data collection activities (e.g., recording water use), and 25% were willing to take part with support from enumerators.

- Participants emphasized that improving agricultural production required access to modern irrigation systems and financial support to rehabilitate non-functioning wells.
- Because of the bad situation of agriculture, farmers restored to a range of coping strategies relying solely on rainfall for irrigation, borrowing, and selling crops, renting out or selling portions of their land.
- 85% of respondents reported having access to a mobile phone and expressed willingness to use SMS or a simple digital tool for the project. Based on the site observation checklist, mobile network coverage was weak/intermittent or no network coverage. However, it was noted that Wi-Fi connectivity was available within villages.
- The common irrigation practices were rainfed irrigation (34.1%), furrow irrigation (28.3%), sprinkler irrigation (25.2%). Surface flood irrigation (11.1%) of respondents and drip irrigation (1.3%).
- The irrigation water sources were rainwater harvesting (36%), open canal or stream (26%), well-solar pump (25%) and well-motorized pump (11%). Well-manual/ hand pump and water trucking (1%).
- The main reason which prevented farmers from upgrading their irrigation system was the high cost.
- Participants indicated generally improved groundwater and surface water availability compared to previous years
- The majority of respondents (89%) relied on their personal experience when deciding when to irrigate. The majority of respondents (88%) relied on their personal experience when deciding how much to irrigate their land.
- The majority of respondents were not members of any agricultural cooperative or farmer group.
- The technical agricultural and irrigation services were not present in the community itself, but farmers relied on external markets in nearby areas.
- Women were usually participating in farming activities. Women's involvement in agricultural decision-making was very limited. PWDs were able to participate in farming, but they faced some challenges.
- The most needed improvements for irrigation were rehabilitation of water infrastructure and access to modern irrigation equipment, including solar-powered solutions, along with support for agricultural inputs to ensure practical implementation of guidance.
- Participants highlighted that trust and engagement in the project depended largely on having experienced and technically qualified staff managing. They emphasized the importance of transparency. They emphasized that support should target vulnerable agricultural workers rather than landowners. Others highlighted issues such as insufficient or unclear support, weak monitoring and follow-up, and the risk of unfulfilled promises or partial implementation.
- The sites were accessible by standard vehicles. There were no security or safety concerns observed at or near the villages. The villages were suitable for inclusion in the pilot project.
- All respondents mentioned that crop production could improve if the irrigation methods were changed or improved.
- Upgrading irrigation systems is mainly constrained by financial barriers, with most respondents citing high costs (77%).

CHALLENGES

Based on the feedback from (HH survey, FGDs, KIIs and Site Observation Checklist), here are some challenges

Farmers faced low and unstable incomes, high production costs, and heavy reliance on borrowing, which limited their ability to invest in farming.

Farmers faced challenges related to access to essential inputs (high prices or shortage of items) such as seeds, fertilizers, tools, and irrigation equipment, further worsened by past loss of assets during displacement.

Farmers suffered from unequal and unreliable water availability due to non-functional wells, seasonal river flows, and dependence on rainfall.

Farmers were obliged to use low-efficiency irrigation practices because it was affordable, despite their inefficiency, while modern systems remained unaffordable for most farmers.

Farmers suffered from weak infrastructure and energy access, for example, damaged or inactive irrigation systems, poor maintenance of water channels, and limited access to energy sources such as fuel or solar power.

Farmers faced climate-related risks such as droughts, floods, irregular rainfall, pests, and weeds, which led to reduced yields and increased production uncertainty.

There was limited farmers' access to inadequate access to training, advisory services, and modern irrigation planning tools.

There were weak institutions and services, such as a lack of active cooperatives, insufficient agricultural support services, and weak private sector engagement in providing inputs and technologies.

Farmers depended on short, seasonal markets for selling crops, restricting income stability and market access.

There were social and inclusion challenges related to male-dominated decision-making processes and limited women's participation. Also, there were some challenges for PWDs in participating in agricultural activities.

Irrigation decisions were non-technical decision-making practices. They were mostly based on experience and environmental observation rather than structured guidance or tools.

Because of high livelihood vulnerability, farmers increasingly relied on coping strategies such as debt, land rental, and distress sales, with some gradually exiting agriculture.

Communities emphasized the need for transparency, accountability, and visible, well-managed project implementation.

Some farmers had concerns about the targeting fairness and the tangible, well-monitored project implementation.