Oxford Policy Management

UK International Development
Partnership | Progress | Prosperity

END LINE STUDY REPORT

Integrated Watershed & Livelihood Improvement Project

District Rajanpur, Punjab, Pakistan

2026

Indus Consortium
Humanitarian Environment and Development Initiatives

Table of Contents

Executive Summary

The Indus Consortium's project in District Rajanpur addressed water scarcity, environmental degradation, and livelihood challenges in Rod Kohi (hill torrent) areas through community-driven, low-cost, and nature-based interventions.

Key Interventions:

- Water Storage: 10 earthen ponds capturing seasonal floodwater for irrigation and watershed management.
- Plantation: 10 small forests, 30 fodder tree plots, 1 small nursery and 5,000 household plants to restore degraded rangelands and improve food security.
- Safe Drinking Water: 2 Reverse Osmosis (RO) plants providing safe water to 1,200 people.
- Community Institutions: Formation and capacity-building of 15 CBOs to maintain project assets and sustain interventions.

Key Results:

Access to Drinking Water:

- The installation of RO plants has led to improvements in water access and quality. Before the intervention, the quality of available drinking water ranged between 1,700–2,000 TDS, which was unsafe for consumption. After installation, the water quality has improved to 200–300 TDS, making it safe for drinking. TDS meters have also been provided to communities to monitor water quality. The laboratory tests to check the water quality before and after the installation of RO Plants are attached as Annex 01.
- During focus group discussions with CBO leaders, it was shared that in terms of access, the distance to fetch water has reduced from approximately four kilometres to within the village, eliminating the need for travel. Previously, households spent around one hour travelling by motorbike or up to 4–5 hours on foot carrying water. This time has now been reduced to a few minutes, as clean water is available during the day within the community.
- The intervention has also resulted in economic savings. Households that previously used motorbikes for water collection spent approximately PKR 1,000 per month on fuel. For around 30 such households, this results in an estimated collective saving of at least PKR 30,000 per month.
- Access to safe drinking water has now reached 100% of households in villages where RO plants are installed, and approximately 50% to 80% of households in nearby settlements. In addition, reduced time spent on water collection has enabled men and women to engage more in productive and income-generating activities.

Plantation Interventions:

- Plantation activities have shown encouraging early results, with approximately 70% survival of saplings and visible initial growth observed during the field visit. While these interventions will require additional time to mature, they indicate progress towards improving vegetation cover and fodder availability.

Water Storage Interventions:

- Water storage ponds have been successfully developed; however, due to the absence of rainfall during the project period, they have not yet become operational and therefore have not contributed to water storage at this stage.

Community Ownership:

- Active participation of local communities including women in CBOs has strengthened local ownership and ensured maintenance of project assets.

Inclusivity:

- Women and vulnerable groups were meaningfully engaged in decision-making, enhancing equitable access and social empowerment.

Scalability:

- Peer learning and low-cost design have sparked interest in neighbouring communities, indicating potential for replication and integration with government programmes.

Challenges:

- Dependence on seasonal rainfall limited immediate functionality of water storage ponds.
- Short project duration (6.5 months) constrained outcome-level results.
- Remote and dispersed settlements posed logistical challenges.
- Limited financial capacity for major maintenance may affect sustainability without continued support.

Lessons Learned:

- Combine short, medium, and long-term plantation strategies to ensure early results and long-term gains.
- Integrate gender from project design to enhance participation and decision-making.
- Align interventions with seasonal cycles and build climate-adaptive flexibility.
- Simple, locally adaptable, low-cost solutions are highly effective and replicable.

Recommendations:

- Ensure safety around water storage ponds and provide advanced technical training for communities.
- Introduce water-efficient irrigation techniques and support maintenance of water channels.
- Strengthen linkages between CBOs, nurseries, and private sector actors to enhance livelihoods.
- Conduct post-project follow-up and promote women's leadership within community structures.
- Address complementary needs such as sanitation, health awareness, and kitchen gardening in future programming.

Conclusion:

The project demonstrates that small-scale, community-led interventions can deliver meaningful, sustainable, and inclusive outcomes in resource-constrained and climate-affected contexts. With continued technical support, phased implementation, and strategic scaling, this model can inform future programs across South Punjab and other Rod Kohi regions.

Summary of the Key Outputs and Outcomes of the Project

Table 1: Summary of the key outputs and outcomes of the project

SN	Project Interventions	Key Outputs	Outcomes
1.	💧 Water Storage Ponds	10 earthen Rod Kohi ponds	Irrigation potential for 40 kanal, improved watershed management, reduced soil erosion, groundwater recharge
2.	🌳 Small Forests & Fodder Plots	10 small forests; 30 household-level fodder plots	Improved fodder availability, restored vegetation, enhanced ecosystem resilience
3.	🍊 Household Fruit Trees	Distribution of 5,000 fruit plants	Enhanced food security, improved household nutrition
4.	🌱 Nursery Development	Small-scale nursery with multiple plant species	Sustainable planting material, long-term ecosystem restoration
5.	🤝 Community-based Organisations (CBOs)	Formation of 15 CBOs	Strengthened local ownership, equitable participation, sustainability of interventions
6.	🚰 RO Plants	2 solar-powered RO plants	Safe drinking water for >1,100 people, reduced waterborne diseases, improved maternal and child health
7.	📗 Awareness & Learning	Video documentary, Inception & Lessons Learned workshops	Knowledge sharing, capacity building, increased community understanding

CHAPTER-1
INTRODUCTION

1- Introduction

Water is essential for human survival, livelihoods, and economic development. In Pakistan, however, water scarcity has emerged as a critical challenge. Declining per capita water availability, limited storage capacity, and the combined pressures of population growth, climate change, and weak resource management have intensified water stress across the country. While surface water, groundwater, and rainfall remain the primary sources, they are increasingly over-extracted, unreliable, or poorly managed.

Within this broader context, the Rod Kohi (hill torrent) system presents a significant yet underutilised opportunity. Each year, large volumes of runoff are generated in hill torrent areas, but much of this water is lost, often contributing to soil erosion, land degradation, and infrastructure damage. Limited investment and weak institutional arrangements have further constrained the effective use of spate irrigation potential in these regions.

District Rajanpur in South Punjab exemplifies these challenges. The area is highly vulnerable to natural hazards, including riverine floods, flash floods, and droughts. Communities, particularly those residing in the mountains of the Koh-e-Suleman range, depend largely on rain-fed agriculture and livestock. Increasing climate variability has intensified water scarcity, reduced agricultural productivity, and weakened livelihood systems. As a result, many households are compelled to adopt seasonal or permanent migration as a coping strategy, disrupting social and economic stability.

Access to water remains a daily challenge, especially in remote and hilly settlements that are not connected to formal irrigation systems. Households often rely on unsafe or seasonal sources for drinking water, while water for livestock is also scarce. In many cases, men travel long distances—often by motorbike—to fetch water, increasing both time and financial burdens. At the same time, insufficient fodder production and underutilised rangelands reflect gaps in effective watershed and range management practices.

The absence of adequate water storage infrastructure further limits communities' ability to capture and utilise rainwater and floodwater. This not only reduces water availability during dry periods but also contributes to poor hygiene conditions and increased exposure to waterborne diseases. Women and girls are disproportionately affected, as water insecurity places additional demands on their time and restricts their participation in other social and economic activities. These challenges highlight the need for integrated and gender-responsive approaches to water and natural resource management.

In response, the Indus Consortium implemented a pilot project in two Union Councils—Wah Lashari and Lundi Saidan—of Tehsil Jampur, District Rajanpur. The project aimed to improve water availability, strengthen livelihoods, and enhance environmental sustainability through community-driven watershed and range management interventions.

The project introduced practical, low-cost solutions tailored to local conditions. Small earthen water ponds were constructed under the Rod Kohi system to capture and store floodwater during the monsoon season, supporting livestock and limited agricultural use during dry periods. Plantation activities—including the establishment of 10 small forests, demonstration plots for fodder tree species on 30 kanal land, development of a nursery, and distribution of 5,000 trees at the household level—contributed to improved fodder availability, vegetation restoration, and sustainable land use practices.

To address drinking water needs, solar-powered Reverse Osmosis (RO) plants were installed at central locations, providing safer and more reliable access to potable water. Community-based organisations were formed and strengthened to support local ownership, management, and long-term sustainability of these interventions. In parallel, awareness-raising initiatives, including social media campaigns,

were carried out to promote improved watershed and rangeland management practices and encourage behavioural change.

Knowledge generation and learning were integral to the project. A video documentary was produced to capture community experiences and project outcomes, and a stakeholder learning workshop was conducted to share insights. This endline study report builds on these efforts by documenting the project's results, lessons learned, and overall contribution.

The project directly benefited 3,762 individuals and indirectly reached 8,250 beneficiaries through improved water access, enhanced livelihoods, and strengthened community capacities. Thus, in total the beneficiaries are 12,012.

As a pilot initiative, the project demonstrates practical and replicable approaches for improving water management, rangeland productivity, and climate resilience in Rod Kohi areas. The experience offers valuable lessons for scaling up similar interventions in other parts of South Punjab and comparable contexts.

CHAPTER-2
METHODOLOGY

2- Methodology

The end-line study was conducted by a team of consultants with balanced gender representation to ensure inclusive engagement with different community groups. A mixed-method approach was adopted, combining primary and secondary data to generate a comprehensive and reliable analysis.

2.1 Primary Data Collection

Primary data was collected through field-based qualitative methods in selected villages of Union Councils Lundi Saidan and Wah Lashari, including Basti Nawab Khan, Basti Moran Khan, Basti Nizaam Shah, and Basti Sher Muhammad.

Field visits and direct observations were undertaken to assess the status and utilisation of key project interventions, including water ponds, plantation sites, and Reverse Osmosis (RO) plants. These visits also enabled interaction with community-based organisations (CBOs) and project beneficiaries, providing first-hand insights into implementation and outcomes.

Focus Group Discussions (FGDs) were conducted with men and women separately to capture community perspectives, experiences, and perceived changes resulting from the project. These discussions also explored key challenges and suggestions for improvement.

In addition, a Lessons Learned Workshop was organised to gather broader stakeholder feedback and reflections.

Consultations were also held with the project team, including senior management of the Indus Consortium, to understand the project design, implementation approach, key achievements, and operational challenges.

Key Informant Interviews (KIIs) were conducted with representatives from relevant government departments, including the Social Welfare Department and the Forest Department. These interviews provided institutional perspectives on project relevance, coordination, and technical aspects.

2.2 Secondary Data Review

A review of key project documents was undertaken to validate and triangulate field findings. These included the project proposal, baseline survey, and progress and monitoring reports. This process enabled comparison between planned targets and actual achievements and strengthened the overall analysis.

2.3 Analytical Framework

The assessment was guided by the OECD Development Assistance Committee (DAC) evaluation criteria to ensure a structured analysis. The key dimensions included:

- Relevance: Alignment of the project with community needs and priorities
- Coherence: Consistency with related policies and initiatives
- Effectiveness: Achievement of planned objectives and outputs
- Efficiency: Utilisation of financial and human resources
- Impact: Changes and benefits resulting from the interventions
- Sustainability: Likelihood of continued benefits beyond the project period

Meeting with CBO in Basti Nawab Khan

Meeting with CBO in Basti Nizaam Shah

CHAPTER-3
IMPACT ASSESSMENT

3- Impact Assessment

3.1 Relevance

The project demonstrates alignment with provincial policy and development priorities, particularly the Punjab Water Policy 2018 and the Punjab Irrigation, Drainage and Rivers Act 2023, both of which emphasise improved management and utilisation of water resources in Rod Kohi (hill torrent) areas. The initiative itself was proposed by the Forest and Rangeland Management Departments in coordination with the Irrigation Department, further reinforcing its relevance and institutional grounding.

Field findings confirm that the selected locations are prone to flash floods yet lack adequate systems for water storage and management. Consequently, significant volumes of runoff are lost, while communities continue to face water shortages during dry periods. Although some households use solar-powered tube wells, groundwater is largely brackish and unsuitable for agriculture, posing risks to soil fertility and long-term land productivity.

Baseline conditions further indicate limited vegetation cover and degraded rangelands, increasing vulnerability to climate variability. In this context, the project's interventions—particularly earthen water storage ponds, plantation activities, and fodder tree demonstration plots—are well aligned with local environmental and livelihood needs.

The plantation component was designed using a mixed-species approach to ensure ecological suitability and community acceptance. Locally familiar species such as Mesquite and Jujube were complemented with Moringa and Shisham, introduced in consultation with the Forest Department. This approach strengthened both technical relevance and sustainability.

Consultations with government stakeholders further validated the project's relevance. Mr. Qazi Faiz ul Hasan, Executive Engineer - Hill Torrent, District Irrigation Department, highlighted that such watershed and rangeland management interventions are consistent with departmental priorities but are often constrained by limited public resources. He appreciated the efforts of the Indus Consortium in implementing watershed and rangeland management interventions in the project area. Similarly, Ms. Tehmina, Deputy Director of Social Welfare and Magistrate Price Control, emphasised the importance of small-scale forestry and fodder development in improving local livelihoods.

The project is also relevant from a gender perspective. Water scarcity and natural resource management disproportionately affect women, who bear a significant share of unpaid labour related to water collection and household needs. By improving local water availability and promoting plantation and fodder activities, the project contributes to reducing this burden, enhancing women's access to productive resources, and creating opportunities for their participation in community-level decision-making.

Overall, the project is well aligned with:

- Community needs: addressing water scarcity, fodder shortages, and environmental degradation.
- Government priorities: supporting watershed and hill torrent management.
- Environmental objectives: promoting vegetation restoration and sustainable land use

- Gender inclusion: reducing unpaid labour and strengthening women's participation.

These factors confirm that the project design and interventions are contextually appropriate and responsive to the needs of the target communities.

3.2 Effectiveness

The project set out to achieve six key objectives. Overall, effectiveness is assessed as moderate, with strong performance in delivering planned outputs but limited achievement of outcome level results. This is largely due to the short implementation period (6.5 months) and external factors, particularly the absence of rainfall during implementation.

3.2.1 Water Resource Development for Range and Watershed Management

This objective was achieved at output level, with the successful construction of earthen water storage ponds under the Rod Kohi system. However, no functional performance could be observed during the assessment period due to lack of rainfall, and therefore the ponds' effectiveness in water capture remains unnoticed. The project arranged alternative water sources to sustain plantation activities. At the impact level, while communities expressed confidence in future functionality during the monsoon season, evidence of outcomes will depend on rainfall and time, as watershed interventions typically require longer periods to demonstrate results.

3.2.2 Increased Land and Agricultural Productivity

This objective was partially achieved at output level. Key enabling activities were completed; however, no measurable change in agricultural productivity was observed within the project period. This is mainly due to the short duration of the project, as productivity gains generally require at least one full cropping cycle to assess. Therefore, outcome-level results remain pending.

3.2.3 Adequate Drinking Water Availability

This objective was achieved at both output and early outcome levels. Two solar-powered RO plants were installed, providing safe drinking water to approximately 1200 individuals. Community-based management mechanisms have been established and are operational. Early evidence suggests improved access to safe drinking water, although long-term sustainability and system performance will need continued monitoring.

3.2.4 Irrigation and Water Storage Infrastructure

This objective was achieved at output level. A total of 10 earthen water ponds were constructed as planned within the project timeline. However, their functional benefits have not yet been realised, as no rainfall occurred during the assessment period. As a result, there is no evidence yet of irrigation or water storage outcomes, and effectiveness will depend on future rainfall.

3.2.5 Increased Pastures and Grazing

This objective was partially achieved at output level, with plantation activities (small forests and fodder tree plots) completed as planned. A total of 4,500 fodder plants were planted, with approximately 70 percent survival, indicating acceptable early stage performance. However, no immediate improvement in grazing or fodder availability was observed, as the plantations require time to mature. Outcome level changes are therefore not yet evident.

3.2.6 Increase in Forest Cover

This objective was achieved at output level, with plantation activities completed and an initial germination ratio of over 70%, indicating positive early-stage establishment. In total, 21,600 trees were planted, including 3,500 fruit trees. However, no measurable increase in forest cover can yet be confirmed, as this requires time for growth and canopy development. Current observations are limited to early survival and establishment, while long term outcomes remain to be seen.

Summary of Effectiveness

- Visible performance in delivery of planned outputs, including infrastructure and plantation activities.
- Limited achievement of outcome-level results due to short implementation duration
- External factors, particularly lack of rainfall, constrained immediate functionality of water-related interventions.
- Several interventions, especially in watershed and forestry management, require longer time horizons to demonstrate full effectiveness.

Overall, this pilot project has established a solid foundation for achieving its intended outcomes, but full effectiveness will only be realised over time as environmental conditions stabilize and interventions mature.

3.3 Efficiency

The project demonstrates good overall efficiency, reflected in the strategic use of available resources to deliver multiple, complementary interventions.0000

A significant share of effort was directed toward nature-based infrastructure. The construction of 10 small-scale Rod Kohi earthen water ponds represents a practical and context-appropriate solution in a terrain where conventional irrigation systems are not feasible. Each pond has the capacity to store around 2.3 million litres of water and irrigate approximately 4 kanal of land, indicating an efficient approach to enhancing water availability and agricultural potential in challenging conditions.

Similarly, the development of small forests linked to these ponds and the establishment of fodder tree demonstration plots reflect an integrated strategy that maximises overall impact by combining water management with rangeland restoration. The distribution of 5,000 fruit plants at the household level further extends benefits directly to communities, contributing to improved food security and livelihood support.

The installation of two solar-powered RO plants serving approximately 1,200 people demonstrates an effective approach to improving access to safe drinking water in remote areas, particularly when considering the long-term health and time-saving benefits for local communities.

Efficiency was further enhanced by locally available materials and community labour, which helped reduce implementation costs while strengthening local ownership. The formation of 15 community-

based organisations (CBOs) at relatively low resource requirements is also notable, as these institutions play a critical role in sustaining project outcomes over time.

In addition, investments in knowledge sharing and project management—including workshops, documentation, and operational costs—supported coordination, learning, and implementation quality. While "management and other costs" account for a substantial portion of the budget, these are justified given the geographic spread, technical nature of interventions, and the need for community mobilisation and oversight in remote areas.

The project design also enhances efficiency through multi-purpose and climate-resilient interventions. Water ponds, for example, are intended not only for irrigation but also for livestock use and potential groundwater recharge, increasing the return on investment. Plantation activities similarly generate multiple benefits, including fodder, environmental restoration, and long-term livelihood support.

Overall, the project demonstrates efficient utilisation of resources by prioritising low-cost, high-impact, and locally adapted solutions, complemented by community contributions and institutional coordination. However, the full realisation of efficiency gains—particularly from water storage and plantation interventions—remains dependent on rainfall patterns and the long-term sustainability of community management systems.

3.4 Impact

The project has generated clear and immediate impacts in improving access to safe drinking water, particularly through the installation of Reverse Osmosis (RO) plants in Basti Nawab Khan and Basti Nizaam Shah. These facilities are currently serving approximately 1,171 individuals (618 males & 553 females) across multiple settlements, including Basti Dur Muhammad, Basti Pher Dad, and nearby areas.

The installation of RO plants has led to visible improvements in water access and quality. Before the intervention, the quality of available drinking water ranged between 1,700–2,000 TDS, which was unsafe for consumption. After installation, the water quality has improved to 200–300 TDS, making it safe for drinking. TDS meters have also been provided to communities to monitor water quality. The pre and post lab results as attached as Annex 01.

Prior to the intervention, communities travelled up to 4 kilometres to access safe drinking water, often along unpaved and difficult routes that became inaccessible during the rainy season. As a result, many households relied on untreated and unsafe groundwater, with limited awareness of safe water practices.

The provision of safe drinking water within the community has led to multiple positive outcomes. It has significantly reduced the time and physical burden of water collection, particularly for women and children, while also lowering transportation costs.

Importantly, the intervention has contributed to improved health outcomes by reducing reliance on contaminated groundwater, which was a major source of waterborne diseases. The impact is particularly significant for women's health. In the absence of safe water, women—including pregnant women—were exposed to serious health risks associated with poor water quality, including infections, dehydration, and complications during pregnancy. Limited access to clean drinking water also affected maternal nutrition and overall well-being. Improved access to safe water has therefore reduced these risks and contributed to better maternal health conditions.

Field interactions further indicated a high prevalence of water-related health issues, including kidney problems, underscoring the severity of pre-existing conditions. The reported death of Fida Hussain from Basti Nizaam Shah due to kidney failure highlights the critical importance of safe drinking water in the area.

Overall, the intervention has enhanced community well-being by improving health conditions, reducing vulnerability, and easing daily burdens. It also demonstrates how targeted, community-level infrastructure can generate immediate, high-impact benefits, particularly for vulnerable groups such as women and children in underserved areas.

Community feedback reinforces the health benefits of the intervention. A resident of Basti Nawab Khan reported that he had previously suffered from hepatitis due to contaminated water and had to travel to Karachi for treatment and noted that the installation of the RO plant has significantly improved the quality of life for many households in the village.

3.5 Sustainability

The project demonstrates good prospects for sustainability, supported by community ownership, local capacity development, and the use of simple, low-cost interventions.

Community-based organisations (CBOs) in both Union Councils have expressed strong commitment to continue managing and maintaining project interventions. The Indus Consortium established clear arrangements with beneficiaries and CBOs to ensure local responsibility for operation and upkeep.

For the RO plants in Basti Nawab Khan and Basti Nizaam Shah, CBO members have assumed responsibility for routine operation and maintenance. They have acquired basic technical skills, including filter replacement, and retain contact with vendors for technical support. In village Nizam

Shah, the CBO has an existing community contribution system that supports shared activities, including the management of the local mosque. This system provides a good foundation that can be extended to cover the operation and maintenance of the RO plant. However, it will require facilitation and guidance from Indus Consortium to formally include and manage the O&M costs within this mechanism.

Similarly, community members committed to maintaining the earthen water storage ponds, including routine desilting and structural upkeep. These interventions are inherently sustainable due to their low-cost design and reliance on local materials and labour. In addition, they contribute to environmental sustainability by improving water retention, reducing soil erosion, and supporting groundwater recharge.

The plantation component also shows positive sustainability outcomes. Household-level distribution of fruit trees—primarily managed by women—has strengthened ownership and care practices, contributing to higher survival rates. Women's active involvement in protecting and maintaining plants enhances both environmental outcomes and long-term livelihood benefits.

Institutionally, CBOs have demonstrated growing capacity and ambition. Many expressed interests in formal registration to improve engagement with government departments, donors, and development programmes. Strengthening linkages with relevant public sector institutions—such as irrigation, forestry, and public health engineering—will be critical to sustaining technical support and resource mobilisation beyond the project period.

However, some risks remain, including dependence on rainfall for water-related interventions, limited financial capacity for major repairs, and the need for continued technical guidance. Addressing these through follow-up support and capacity strengthening will be important to ensure long-term sustainability.

Overall, the project has laid a strong foundation for sustainability by embedding ownership within communities and promoting practical, maintainable, and context-appropriate solutions.

Two fruit plants are protected using cotton sticks tied together with old cloth (Location: Basti Nawab Khan – left; Basti Nizaam Shah– right).

"We have prioritised our long-term future over short-term benefits such as growing fodder or vegetables on this land. We believe that forest trees will benefit our households, our village, and the environment in the future."— Meer Muhammad, President, CBO Moran Khan

3.6 Equity & Inclusion

The project prioritized inclusive participation, particularly of women and vulnerable households, in planning and decision-making processes. In a context where women are often excluded, the project actively facilitated their engagement in community-based organisations (CBOs) and key decisions, such as site selection for interventions, which enhanced their confidence and role in local development.

A total of 15 community-based organisations (CBOs) were formed under the project with the significant representation of women. In addition, 3,781 women (excluding 30 women in executive bodies of CBOs) are active members of these CBOs, contributing to planning and decision-making processes. The project also conducted 53 awareness-raising sessions on topics such as forest development, plantation techniques, site selection criteria, and the complaint response mechanism. A total of 1,051 participants attended these sessions, including 734 women. These efforts helped ensure women's participation in both institutional structures and knowledge-sharing activities. A table of the number of beneficiaries is attached as Annex 2.

A clear example of meaningful women's participation was observed in Basti Nizaam Shah during the selection of the RO plant site. While male members initially preferred a location behind the shrine, women advocated for a site in front of the shrine, closer to their homes for easier access. Their preference was adopted, reflecting a shift from token participation to genuine influence. As Maryam Bibi, a CBO member, shared: "We spoke up for what was easier for us, and because women voters were more in number, our voices were heard and the decision reflected our needs."

The project also improved access to essential services for households facing greater hardship, particularly those distant from water sources. Reduced time and effort in water collection directly benefited women and girls. Special attention was given to households with limited mobility, low income, or high dependence on natural resources, ensuring that interventions were responsive to their specific constraints.

By adopting a community-based approach, the project engaged diverse socio-economic groups, including small landholders and livestock-dependent households. This inclusive model strengthened local ownership and promoted equitable sharing of project benefits, helping reduce disparities in access to resources and services.

Sustaining these practices within community institutions will be critical to maintaining equity gains and ensuring that women and vulnerable groups continue to benefit from, and influence, local development beyond the project lifecycle.

3.7 Scalability and Replicability

The project demonstrates strong potential for replication and scale-up due to its low-cost, community-driven design and visible results. Community members in Basti Nawab Khan and Basti Moran Khan reported frequent visits from neighbouring villages to learn about interventions such as small forests and fodder tree plots. This peer learning has emerged as an effective, low-cost mechanism for knowledge transfer, enabling other communities to adopt similar practices with minimal external support.

Exposure to practical interventions has highlighted the benefits of improved watershed and rangeland management. Surrounding communities are expressing willingness to replicate these models using their own resources or by seeking support from relevant organisations. There is also scoped to scale interventions through integration with government programmes, particularly within irrigation, forestry,

and public health engineering departments, which prioritize similar initiatives but face resource constraints.

Successful replication will depend on enabling factors such as initial investment, continued technical guidance, and adaptation to local hydrological conditions. Rainfall variability and differences in community capacity may influence outcomes. Ensuring sustained women's participation and leadership in replication efforts will also be critical to maintain inclusivity and effectiveness at scale.

Indus Consortium worked closely with four government departments during the project implementation. These included the Forest Department Pakistan, Public Health Engineering Department Pakistan, Social Welfare Department Pakistan, and Irrigation Department Pakistan (Hill Torrent areas). Representatives from the Forest Department and the Irrigation Department (Hill Torrent section) visited the project sites to observe the activities on the ground. Representatives from the Public Health Engineering Department and the Social Welfare Department interacted with project beneficiaries during different activities, including seminars such as forest day events organised during the project.

International Forest Day

Indus Consortium has developed a plan to scale up the project interventions in collaboration with relevant government departments. As part of this effort, with the facilitation of Indus Consortium, the District Forest Department has prepared and submitted a PC-1 proposal to the Planning and Development Department for the construction of 25 additional water storage ponds. This initiative indicates government interest in expanding the approach and provides an opportunity to replicate successful interventions in other areas.

3.8 Coherence

The project demonstrates strong coherence, both with external policies and internal programmatic design. The project is aligned with ongoing government initiatives in the water sector. The Government of Punjab, through the Punjab Saaf Pani Company, is installing RO plants to improve

access to safe drinking water. Similarly, under the Recharge Pakistan programme, the government is planning to construct water storage structures to enhance water conservation and climate resilience. The project's interventions, including installation of RO plants and construction of water storage ponds, are therefore consistent with these priorities and support the broader development agenda of the government.

Internally, the project components—earthen water storage ponds, plantation activities, and RO plants—are mutually reinforcing, collectively addressing water scarcity, livelihoods, and environmental restoration. Interventions were selected based on identified gaps, ensuring they did not duplicate existing services and effectively complemented ongoing initiatives.

The project also integrates multiple sectors, including water, environment, health, and livelihoods, offering a holistic response to community needs. This multi-sectoral approach strengthens resilience and climate adaptation in vulnerable hill torrent areas, where water variability and resource degradation pose significant challenges.

Inclusion of women in decision-making and resource management further enhances coherence by aligning implementation with broader gender equity and social inclusion commitments.

Overall, the project exhibits coherence by aligning with policy frameworks, complementing existing efforts, avoiding duplication, coordinating with stakeholders, and delivering contextually appropriate, low-cost, community-based interventions that collectively enhance local development outcomes.

CHAPTER-4
BEST PRACTICES

4- Best Practices

4.1 Skilled and Technical Project Team

The project was implemented by a multidisciplinary team comprising community mobilisers, an agriculturist, and an engineer, ensuring a strong balance between technical expertise and participatory engagement. Two field coordinators were recruited directly from the local communities where the project was implemented who were familiar with the local languages and culture, which strengthened community ownership and enabled timelier and context-responsive decision-making during implementation.

In addition, two experienced female social mobilisers from the Rajanpur area were engaged, bringing valuable knowledge and expertise in mobilising Balochi women and facilitating their meaningful participation in project decision-making processes. Communities actively sought advice on agriculture and natural resource management, reflecting the team's credibility, accessibility, and overall effectiveness.

4.2 Strategic Site Selection

Interventions were sited in consultation with local communities, and relevant departments from Public Health Engineering, Forest and Range management, balancing technical feasibility and social acceptance. For example, the water storage pond in Basti Nawab Khan was placed to naturally capture Rod Kohi floodwater while minimizing risk, demonstrating context-sensitive planning.

4.3 Integration of Local Knowledge

Indigenous knowledge of Rod Kohi flows and local environmental conditions was integrated with technical expertise, enhancing relevance, acceptance, and effectiveness of interventions. For example, local communities shared their knowledge of traditional Rod Kohi water flow routes, which helped in identifying suitable locations for constructing storage ponds.

4.4 Community Cost-Sharing and Ownership

Communities contributed land, labour, and irrigation water, while the Indus Consortium provided funding, technical support, and training. This shared responsibility strengthened ownership and sustainability. For example, local communities provided land for installing RO plants and for constructing water storage ponds.

4.5 Effective Community Mobilisation

Women and vulnerable households were actively engaged, with CBOs strengthened even in low-literacy areas. Peer learning emerged organically, with neighbouring villages visiting project sites to observe and replicate successful practices. In rural and remote project areas, it is usually difficult for local NGOs to mobilise communities due to tribal culture and local conflicts. However, the project team was able to mobilise communities effectively to make collective decisions.

4.6 Women's Empowerment

Women's meaningful participation in decision-making, including RO plant siting and household-level plantation management, strengthened equitable governance. The shift from token participation to influencing decisions is a notable achievement. For example, women hold equal positions in the executive bodies of CBOs and are actively influencing decision-making, including the selection of sites for installing RO plants.

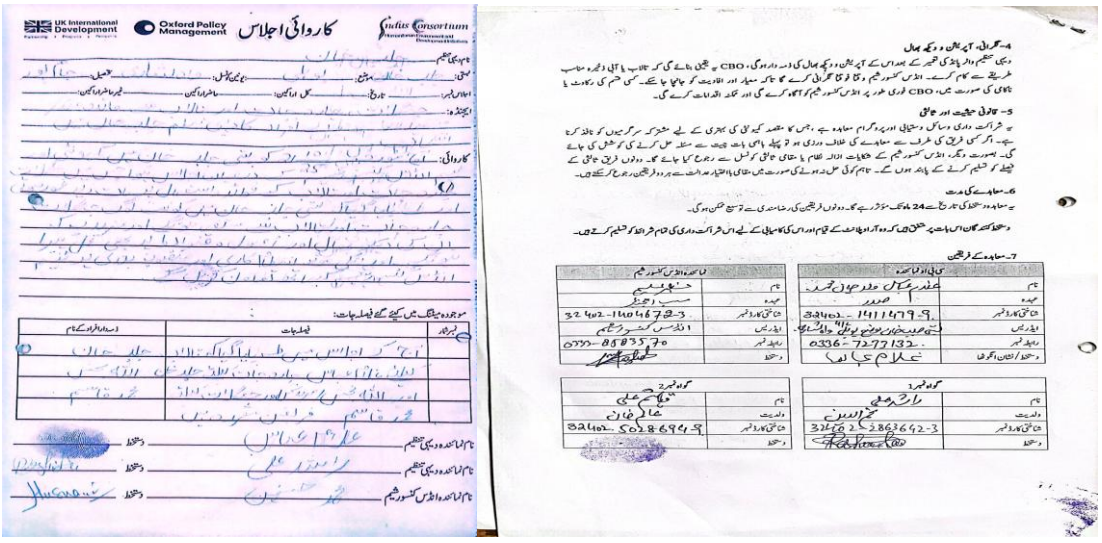
4.7 Transfer of Skills and Knowledge

The project adopted hands-on, learning-by-doing approaches to equip communities with practical skills. Participants were trained in plantation techniques—including spacing, irrigation, and plant care—as well as the operation and maintenance of RO plants and solar systems, strengthening their capacity to manage these interventions independently over the long term. In addition, communities developed village development plans to support the sustained management and long-term sustainability of project interventions.

Picture of the Lessons Learnt Workshop

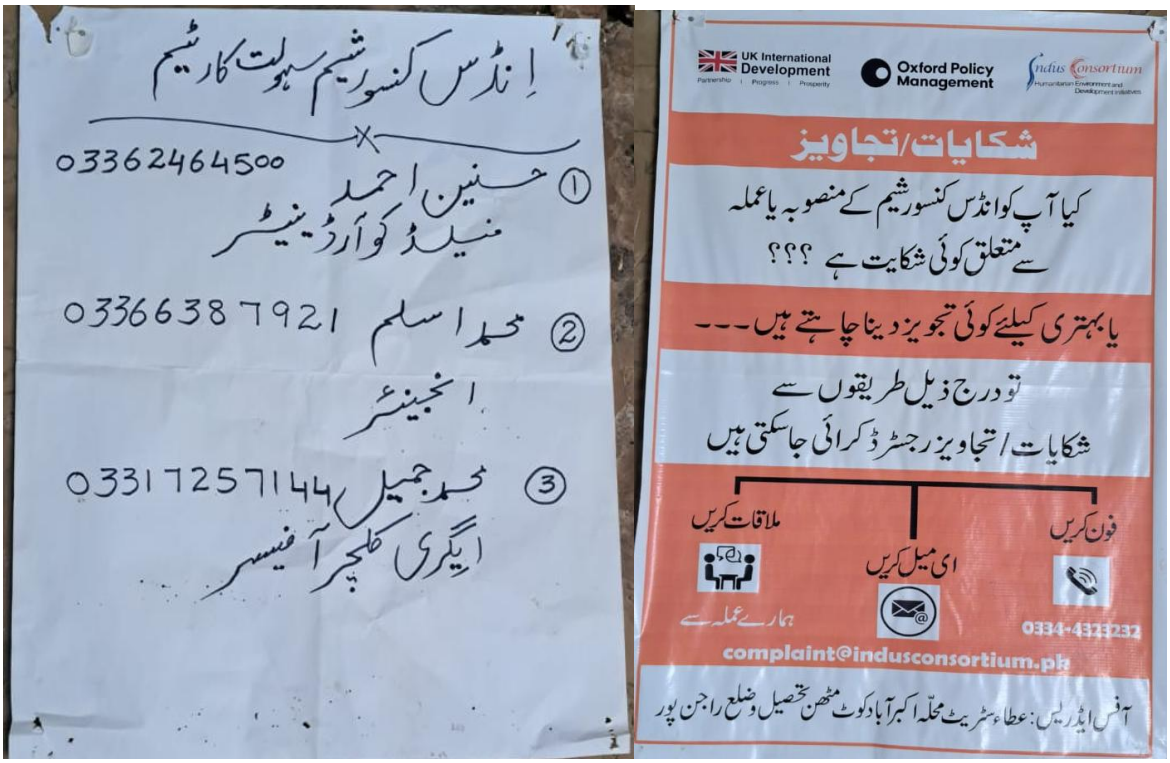
4.8 Efficient Record-Keeping and Documentation

Roles and responsibilities were clearly defined and documented before implementation. This structured approach ensured transparency, accountability, and improved community understanding of formal processes, strengthening local organisational practices. Indus Consortium has made efforts to document the processes of all activities, including the terms of partnership with local communities for installing RO plants and constructing water storage ponds.



4.9 Complaint Response Mechanism (CRM)

A Complaint Response Mechanism (CRM) was established to ensure accountability, transparency, and timely resolution of community concerns. Contact details of project staff were publicly displayed, enabling easy reporting and reinforcing trust and downward accountability. For example, the consultants' team observed these posters displayed at meeting places with the communities.



Posters displaying the contact details of the project staff and complaint response mechanism displayed at the meeting place (Location: Basti Nawab Khan)

4.10 Collaboration with Academic Institutions

Indus Consortium' partnership with Ghazi University facilitated peer learning and technical support, including research-based models of Rod Kohi systems. This strengthened the project's technical foundation and promoted evidence-based field interventions.

4.11 Linkages with the Private Sector for Livelihood Support

Communities were linked with Indus Growers (Pvt.) Ltd., enabling access to improved agricultural practices, technical guidance, and potential financing. This approach supports local livelihoods, enhances productivity, and strengthens financial inclusion for smallholder farmers.

4.12 Institutional Presence and Community Trust

The long-standing presence of Indus Consortium built credibility and trust, facilitating smooth implementation and effective community engagement. For example, it helped Indus Consortium arrange the visit of the XEN Hill Torrents, Rajanpur, to the project areas. Similarly, the XEN Public Health Engineering was also engaged during project implementation.

CHAPTER-5
CHALLENGES

5- Challenges

5.1 Dependence on Seasonal and Climatic Conditions

Key interventions, including plantation of small forests, fodder tree plots, and Rod Kohi water storage ponds, are strongly dependent on seasonal conditions. Suitable planting windows in the project area are August and February; delays in initiation meant plantations occurred in February, affecting growth cycles and expected outcomes. Additionally, the absence of rainfall during the project period limited the functionality of water storage ponds, underscoring the vulnerability of nature-based interventions to climate variability. Continued technical guidance may be required to ensure optimal use and maintenance of these infrastructures.

5.2 Short Project Duration

With a 6.5-month timeframe, the project faced constraints in achieving outcome-level results. Initial efforts to build community trust and address cultural and gender barriers, particularly around women's participation, further reduced time for activity implementation. Activities like forest and fodder tree development require multiple years to produce tangible benefits, while water storage structures depend on seasonal rainfall to deliver full impact. The short duration therefore limited the observable effectiveness of several interventions.

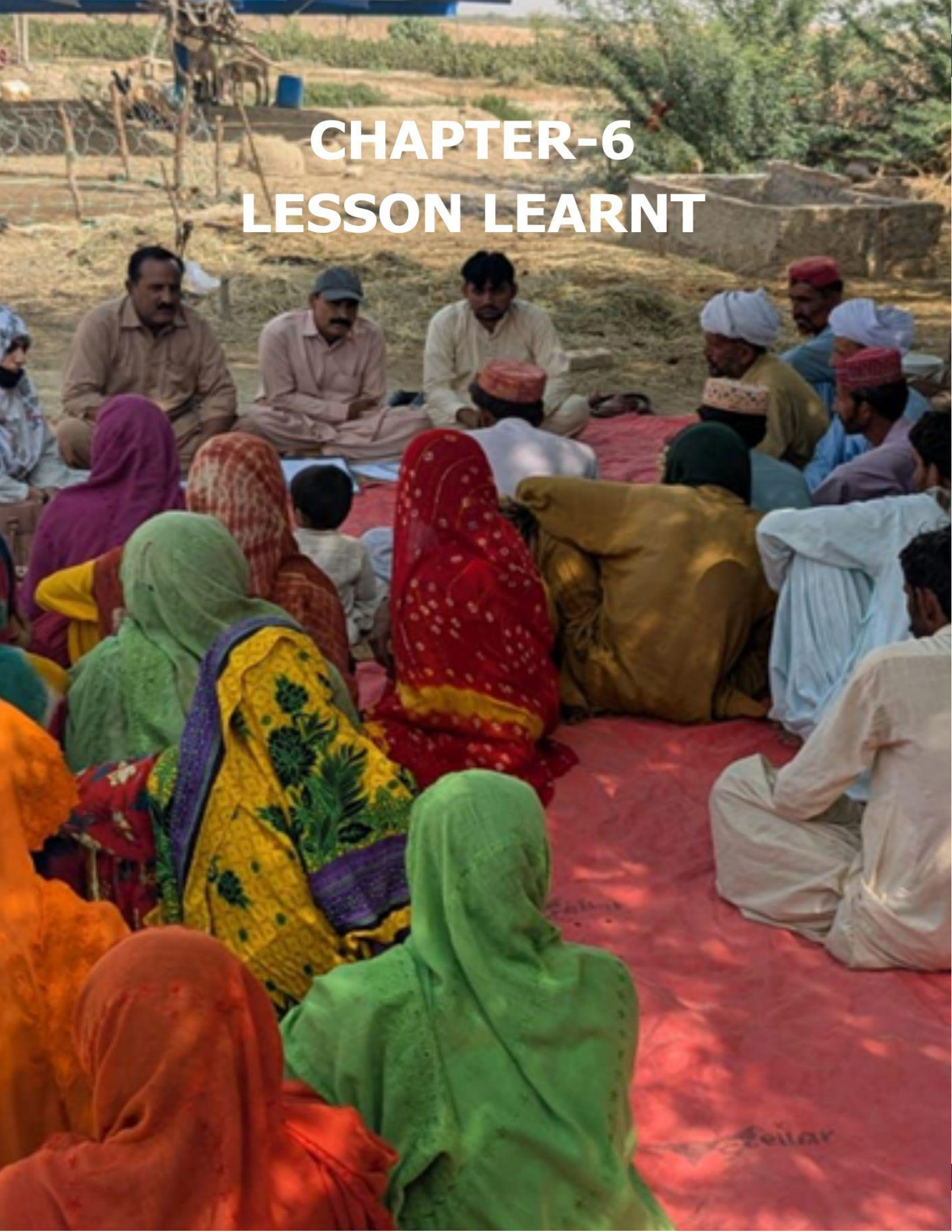
5.3 Remote and Dispersed Settlements

The hilly and geographically dispersed nature of target communities posed logistical challenges for implementation, monitoring, and ongoing community engagement, increasing the complexity of project coordination.

5.4 Limited Financial Capacity for Maintenance

Although communities have shown a strong willingness to maintain project interventions, limited financial resources may constrain their ability to manage major repairs or replacements, particularly for RO plants and other technical infrastructure. However, sustainability and maintenance were proactively addressed by the Indus Consortium through the signing of Terms of Partnership (ToPs) with communities, formal MOUs with the Public Health Department, and the development of linkages with the Forest and Irrigation Departments for ongoing technical support. These coordinated efforts have strengthened institutional backing and established durable relationships among stakeholders and communities to support the long-term continuity of project outcomes.

Overall, these challenges highlight the need for longer project timelines, adaptive planning, and post-project support to ensure the sustainability and full realisation of benefits from water, plantation, and livelihood interventions.



CHAPTER-6
LESSON LEARNT

6- Lesson Learnt

6.1 Phased and Diversified Plantation Approaches

Plantation activities focused on tree species requiring 2–4 years to mature, which demands sustained care. Future projects should introduce a mix of short-, medium-, and long-term species, providing early benefits within 3–12 months while supporting long-term environmental outcomes. This approach can motivate communities and maintain engagement over time.

6.2 Importance of Teamwork and Community Engagement

Despite a short 6.5-month timeline, the project achieved planned outputs through effective team coordination, technical expertise, and strong support from local government departments and the partner organisation Indus Consortium. Early and continuous community engagement proved critical for building ownership, directly influencing the sustainability and effectiveness of interventions.

6.3 Climate-Adaptive Planning

Project implementation underscored the need to align activities with seasonal cycles and incorporate flexibility to address variable rainfall and climate-related risks. Contingency measures are essential for water harvesting, plantation, and other nature-based interventions.

6.4 Advocacy and Knowledge Dissemination

Community-level successes need wider visibility to promote replication. Enhanced use of social media, stakeholder platforms, and community networks, along with case studies and technical guidelines, can facilitate knowledge transfer and engagement with government and development partners.

6.5 Integrating Gender from the Outset

Proactive inclusion of women in decision-making strengthened practical and equitable outcomes. Institutionalising gender-responsive approaches from the design stage is essential for sustainable community governance.

6.6 Comprehensive Safe Water Interventions

While RO plants improved access to clean water, some households used non-food-grade containers, limiting health benefits. Future interventions should incorporate awareness campaigns on safe water handling and hygiene in line with standard WASH principles.

6.7 Value of Simple, Context-Appropriate Solutions

Low-cost, locally adaptable interventions proved effective, highlighting the importance of designing solutions that communities can easily adopt, manage, and replicate without heavy external support.

Overall, the project demonstrates that combining technical solutions with community engagement, adaptive planning, gender inclusion, and long-term support is essential for achieving sustainable development outcomes.

CHAPTER-7
RECOMMENDATIONS

7- Recommendations

7.1 Recommendations which are Immediately Feasible at Community or Partner Level

7.1.1 Enhance Safety of Water Storage Ponds

To improve safety, simple fencing such as wooden or wire barriers can be installed around all water storage ponds, particularly those located near settlements. Warning signboards in the local language can also be placed at visible points to inform community members of potential risks. Basic safety guidelines can be shared with communities, including the need to keep children away from ponds without adult supervision. Community-based organisations can take responsibility to regularly check and repair the fencing.

7.1.2 Strengthen Linkage between CBOs and Nursery

Regular coordination between community-based organisations and nursery staff can improve communication and planning. A simple system can ensure timely replacement of dead or weak plants. Exposure visits to the nursery can help community members gain practical knowledge.

7.1.3 Post-Project Follow-Up and Technical Support

Periodic visits can continue after project completion to provide technical support to communities, however, subject to the availability of funds. These visits can help communities maintain infrastructure and ensure continued functioning of project interventions. Technical staff can also guide community-based organisations in resolving operational issues. The consultants' team proposed the following action plan after the project closure. This plan is prepared based on the consultations with the team of the Indus Consortium.

Table: 2 Post-Project Follow-Up Plan

Who is expected to provide follow-up once the project ends	What follow-up would actually include in practice	How often and for how long such follow-up is realistically envisaged	How the follow-up would be anchored in existing routines and mandates
CBOs (primary responsibility)	CBOs will manage routine operation and maintenance of RO plants and related infrastructure. This includes regular checking of system functioning, minor repairs, and water distribution management. They will also organise meetings to review issues and take decisions. For major technical issues, they will contact vendors	Activities will be carried out on a continuous basis. Maintenance committees will meet at least once a month to review performance and address issues.	This will be anchored in community-based management systems established during the project, including maintenance committees and agreed roles and responsibilities.

	or the project's technical staff.		
Indus Consortium (time-bound transition support)	Indus Consortium will provide technical guidance through field visits. This includes technical checks of RO plants and ponds, refresher sessions for CBO members, support on record-keeping, and troubleshooting of governance and operational issues. Technical staff will also guide plantation management and use of water storage ponds.	Monthly follow-up visits will take place for six months after project closure. After this period, support will be limited to on-demand technical guidance where feasible.	This support will be anchored in Indus Consortium's existing field presence and staff in District Rajanpur, without requiring additional project funding.
District Government (long-term support)	Relevant departments will provide technical advice on watershed management, plantation, and water systems. This may include field visits, advisory support, and integration of project sites into ongoing government programmes. They may also support larger technical issues beyond community capacity.	Follow-up will take place as part of routine departmental outreach and extension services, without a fixed schedule.	This will be anchored in existing mandates of departments such as Forest and Public Health Engineering, and through potential approval and implementation of the PC-1 proposal already submitted.
Vendors and technical service providers (on-demand support)	Vendors will provide specialised technical support for major repairs and maintenance of RO plants when required. CBOs will contact vendors directly in case of system faults beyond their capacity.	Support will be provided on an as-needed basis, depending on system performance and technical issues.	This will be anchored in existing service arrangements and relationships established during installation of RO plants, without requiring additional structures.

7.2 Recommendations which Require Departmental Engagement, Additional Resourcing, or Future Programming

7.2.1 Advanced Technical Training for Communities

There is a need to organise advanced training sessions for communities on forest management, nursery techniques, and the operation and maintenance of RO Plants. These trainings can use simple

materials in the local language and focus on practical demonstrations to improve understanding. Selected community members or lead farmers can be trained as resource persons or master trainers who provide ongoing support at the local level.

7.2.2 Silt Removal and Watercourse Maintenance

A seasonal plan for desilting before the monsoon period to ensure proper water flow will be helpful. Communities can take part in regular cleaning of Rod Kohi channels and other watercourses. Clear roles and responsibilities for community-based organisations can improve accountability for maintenance activities. Basic tools can be provided where needed to support this work.

7.2.3 Introduce Water-Efficient Irrigation Techniques

Water-efficient irrigation methods such as drip irrigation can be introduced on a pilot basis in selected plantation areas. Farmers can receive training on installation, use, and maintenance of these systems. Demonstration plots can show the benefits of efficient water use in a practical way. Where possible, farmers can also be linked with government schemes or suppliers to expand use of these technologies.

7.2.4 Diversify Nursery Plant Varieties

Nursery activities can expand to include a wider range of plant species, such as ornamental and drought-resistant plants. Small-scale production of related items like pots and compost can create additional opportunities. Interested community members can receive basic business guidance, and local market demand can be explored.

7.2.5 Improve Utilisation of Water Storage Ponds

To improve the use of stored water, simple extraction technologies such as low-cost motor pumps or solar pumps can be introduced where feasible. In suitable locations, gravity-based water distribution systems can also help reduce effort and cost. Communities can receive training on efficient water use and planning to maximise benefits for agriculture and plantation activities.

7.2.6 Strengthen Women's Continued Participation

Women's roles within CBOs and community decision-making structures can be strengthened by arranging targeted training sessions on leadership, communication, and basic management to enhance women's confidence and participation. Separate consultation meetings with women can also help capture their priorities and ensure these are reflected in community plans. Exposure visits to Government offices, other CBOs, women groups, and NGOs can enhance the exposure of women about the work being done by others and can enhance their access to Government development schemes.

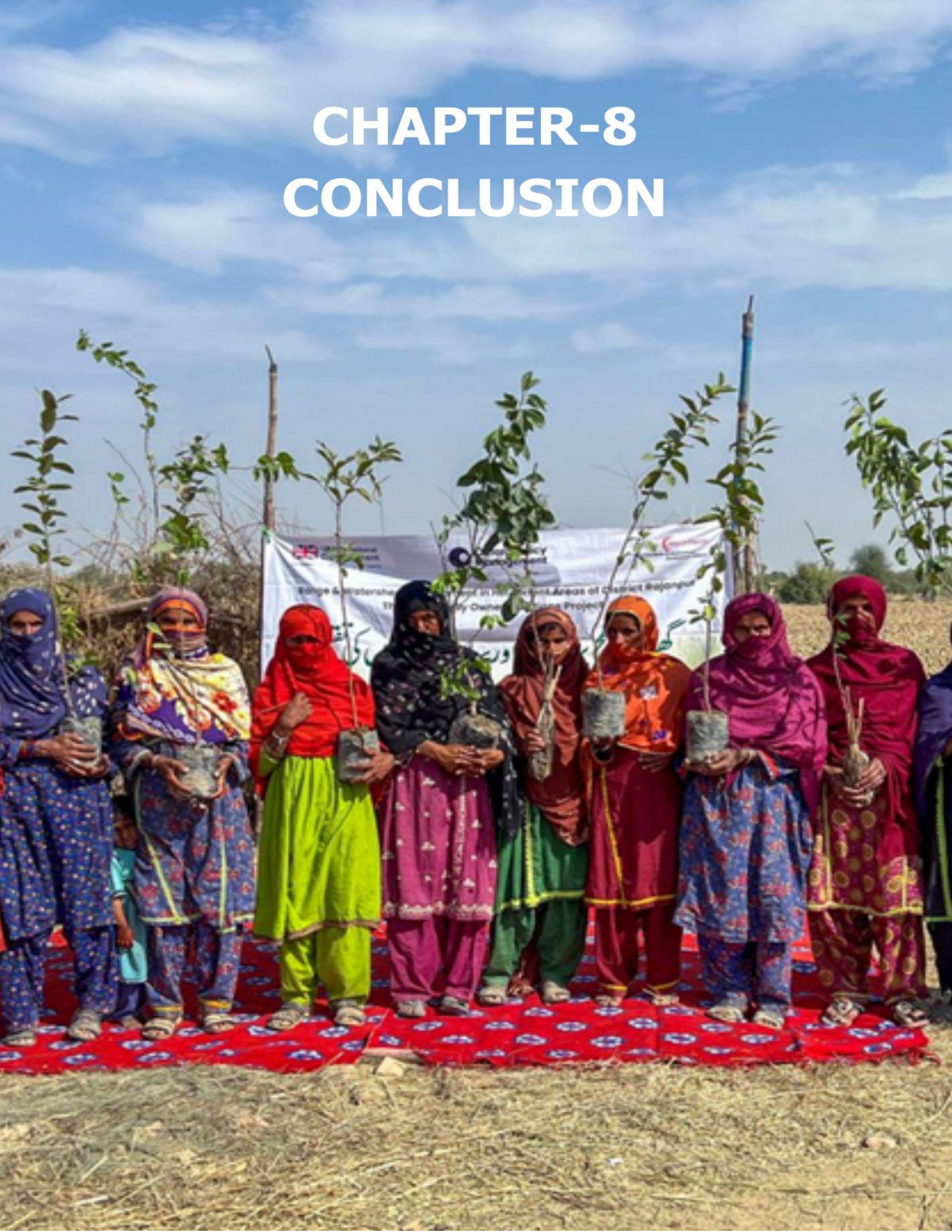
7.2.7 Strengthen and Sustain Community-Based Organisations (CBOs)

Community mobilization is a long terms process and requires patience, consistent efforts, and engagement with the communities. Linkages can be established with relevant government departments to support technical guidance and access to services. Periodic refresher sessions can strengthen skills in governance, conflict resolution, and financial management. CBOs can be facilitated to register with relevant government department to access additional financial resources to resolve their issues concerning livelihoods, health, and education.

7.2.8 Address Complementary Community Needs

Future programmes can include small-scale activities that respond to additional needs identified by communities. For sanitation, support can be mobilized through awareness sessions on hygiene and low-cost toilet construction models, along with demonstrations in selected households. Kitchen gardening can be promoted by distributing seeds, providing basic tools, and offering training on water-efficient practices using available resources such as pond water. Health awareness sessions can be organised in collaboration with local health departments, focusing on safe water use, hygiene practices, and nutrition. Community volunteers can be identified and trained to continue these activities at the local level. Coordination with existing government programmes can help in scaling these efforts and avoiding duplication. Regular follow-up can assess adoption and benefits at the household level.

CHAPTER-8
CONCLUSION



8- Conclusion

The end-line study demonstrates that the project made significant contributions to addressing water scarcity, environmental degradation, and limited livelihood opportunities in District Rajanpur. Interventions were well-aligned with community needs and government priorities on watershed and Rod Kohi management, ensuring relevance and local acceptance.

The project enhanced climate resilience by promoting adaptive water management and restoring natural resources in a context of increasing climatic variability. Key outputs—such as earthen water storage ponds, RO plants, and plantation activities—were successfully delivered. Among these, the RO plants provided immediate and tangible benefits, reducing health risks, time, and costs associated with unsafe water, while fostering improved awareness and practices related to water, health, and natural resource management.

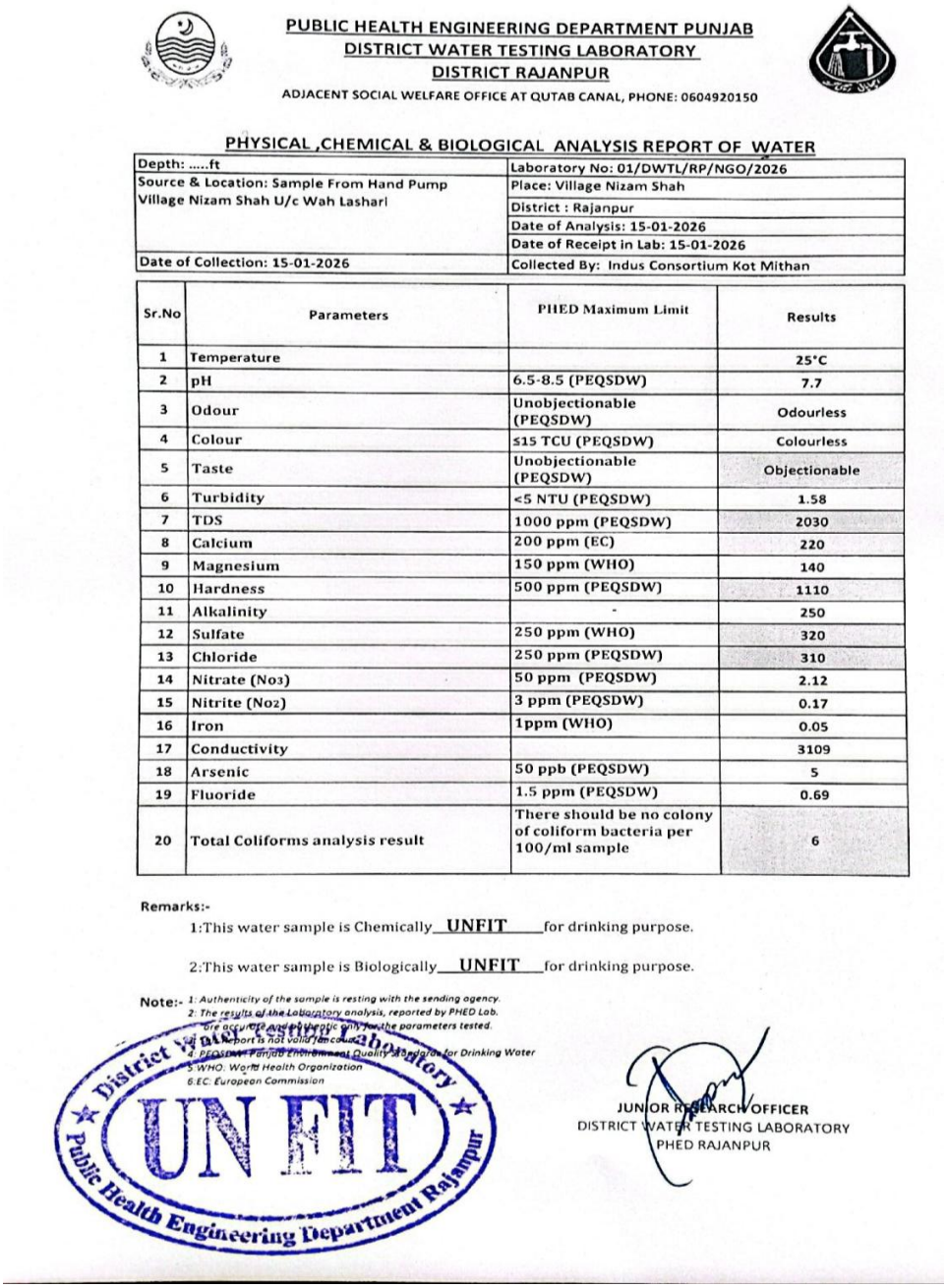
Certain outcomes, however, could not be fully realised within the short 6.5-month implementation period. Limited rainfall constrained the functionality of water storage ponds, and plantation interventions require additional time to mature and deliver full benefits. These findings underscore the importance of adopting a medium- to long-term perspective when evaluating nature-based and infrastructure interventions.

The project strengthened local institutions and ownership, with community-based organisations actively maintaining project assets and women increasingly participating in decision-making. This capacity-building fosters sustainability and positions CBOs as a lasting social asset capable of driving collective action, local development, and engagement with external stakeholders.

Overall, the project provides a practical, low-cost, community-driven model for addressing water and livelihood challenges in resource-constrained, climate-affected areas. Lessons from this initiative offer valuable guidance for future programming. With adequate time, continued technical and institutional support, and strategic scaling, such approaches have strong potential to deliver sustainable, inclusive, and replicable development outcomes across other Rod Kohi regions in South Punjab and similar contexts.

Annex 1: Water Quality Test Report - Pre and Post Installation of RO Plants

Pre-Installation Water Quality Tests



PUBLIC HEALTH ENGINEERING DEPARTMENT PUNJAB
DISTRICT WATER TESTING LABORATORY
DISTRICT RAJANPUR
ADJACENT SOCIAL WELFARE OFFICE AT QUTAB CANAL, PHONE: 0604920150

PHYSICAL ,CHEMICAL & BIOLOGICAL ANALYSIS REPORT OF WATER

Depth: .....ft	Laboratory No: 01/DWTL/RP/NGO/2026
Source & Location: Sample From Hand Pump Village Nizam Shah U/c Wah Lashari	Place: Village Nizam Shah
	District : Rajanpur
	Date of Analysis: 15-01-2026
	Date of Receipt in Lab: 15-01-2026
Date of Collection: 15-01-2026	Collected By: Indus Consortium Kot Mithan

Sr.No	Parameters	PHED Maximum Limit	Results
1	Temperature		25°C
2	pH	6.5-8.5 (PEQSDW)	7.7
3	Odour	Unobjectionable (PEQSDW)	Odourless
4	Colour	≤15 TCU (PEQSDW)	Colourless
5	Taste	Unobjectionable (PEQSDW)	Objectionable
6	Turbidity	<5 NTU (PEQSDW)	1.58
7	TDS	1000 ppm (PEQSDW)	2030
8	Calcium	200 ppm (EC)	220
9	Magnesium	150 ppm (WHO)	140
10	Hardness	500 ppm (PEQSDW)	1110
11	Alkalinity	-	250
12	Sulfate	250 ppm (WHO)	320
13	Chloride	250 ppm (PEQSDW)	310
14	Nitrate (No_3)	50 ppm (PEQSDW)	2.12
15	Nitrite (No_2)	3 ppm (PEQSDW)	0.17
16	Iron	1ppm (WHO)	0.05
17	Conductivity		3109
18	Arsenic	50 ppb (PEQSDW)	5
19	Fluoride	1.5 ppm (PEQSDW)	0.69
20	Total Coliforms analysis result	There should be no colony of coliform bacteria per 100/ml sample	6

Remarks:-

1:This water sample is Chemically **UNFIT** for drinking purpose.

2:This water sample is Biologically **UNFIT** for drinking purpose.

Note:- *1: Authenticity of the sample is resting with the sending agency.*
2: The results of the Laboratory analysis, reported by PHED Lab.
are accurate and applicable only for the parameters tested.
3: Report is not valid for court.
4: PEQSDW: Punjab Environment Quality Standards for Drinking Water
5:WHO: World Health Organization
6:EC: European Commission

District Water Testing Laboratory
UN FIT
Public Health Engineering Department Rajanpur

JUNIOR RESEARCH OFFICER
DISTRICT WATER TESTING LABORATORY
PHED RAJANPUR

Pre-Installation Water Quality Tests

PUBLIC HEALTH ENGINEERING DEPARTMENT PUNJAB
DISTRICT WATER TESTING LABORATORY
DISTRICT RAJANPUR
ADJACENT SOCIAL WELFARE OFFICE AT QUTAB CANAL, PHONE: 0604920150

PHYSICAL ,CHEMICAL & BIOLOGICAL ANALYSIS REPORT OF WATER

Depth: .....ft	Laboratory No: 02/DWTL/RP/NGO/2026
Source & Location: Sample From Hand Pump Village Nawab Khan U/c Lundi Saidan	Place: Village Nawab Khan
	District : Rajanpur
	Date of Analysis: 15-01-2026
	Date of Receipt in Lab: 15-01-2026
Date of Collection: 15-01-2026	Collected By: Indus Consortium Kot Mithan

Sr.No	Parameters	PHED Maximum Limit	Results
1	Temperature		25°C
2	pH	6.5-8.5 (PEQSDW)	7.6
3	Odour	Unobjectionable (PEQSDW)	Odourless
4	Colour	≤15 TCU (PEQSDW)	Colourless
5	Taste	Unobjectionable (PEQSDW)	Objectionable
6	Turbidity	<5 NTU (PEQSDW)	1.19
7	TDS	1000 ppm (PEQSDW)	1780
8	Calcium	200 ppm (EC)	196
9	Magnesium	150 ppm (WHO)	113
10	Hardness	500 ppm (PEQSDW)	940
11	Alkalinity	-	230
12	Sulfate	250 ppm (WHO)	295
13	Chloride	250 ppm (PEQSDW)	280
14	Nitrate (No_3)	50 ppm (PEQSDW)	1.24
15	Nitrite (No_2)	3 ppm (PEQSDW)	0.11
16	Iron	1ppm (WHO)	0
17	Conductivity		2726
18	Arsenic	50 ppb (PEQSDW)	0
19	Fluoride	1.5 ppm (PEQSDW)	0.88
20	Total Coliforms analysis result	There should be no colony of coliform bacteria per 100/ml sample	0

Remarks:-

1:This water sample is Chemically **UNFIT** for drinking purpose.

2:This water sample is Biologically **FIT** for drinking purpose.

Note:- *1: Authenticity of the sample is resting with the sending agency.*
2: The results of the Laboratory analysis, reported by PHED Lab.
relate to the data received only for the parameters tested.
3: This Report is not valid for court.
4: PEQSDW: Punjab Environment Quality Standards for Drinking Water
5 WHO: World Health Organization
6 EC: European Commission

UNFIT

JUNIOR RESEARCH OFFICER
DISTRICT WATER TESTING LABORATORY
PHED RAJANPUR

Post Installation Water Quality Tests

PUBLIC HEALTH ENGINEERING DEPARTMENT PUNJAB
DISTRICT WATER TESTING LABORATORY
DISTRICT RAJANPUR
ADJACENT SOCIAL WELFARE OFFICE AT QUTAB CANAL, PHONE: 0604920150

PHYSICAL ,CHEMICAL & BIOLOGICAL ANALYSIS REPORT OF WATER

Depth: .....ft	Laboratory No: 03/DWTL/RP/NGO/2026
Source & Location: Sample From RO Plant Village Nawab Khan U/c Lundi Saidan (Post Test)	Place: Village Nawab Khan
	District : Rajanpur
	Date of Analysis: 11-03-2026
	Date of Receipt in Lab: 11-03-2026
Date of Collection: 11-03-2026	Collected By: Indus Consortium Kot Mithan

Sr.No	Parameters	PHED Maximum Limit	Results
1	Temperature		25°C
2	pH	6.5-8.5 (PEQSDW)	7.1
3	Odour	Unobjectionable (PEQSDW)	Odourless
4	Colour	≤15 TCU (PEQSDW)	Colourless
5	Taste	Unobjectionable (PEQSDW)	Tasteless
6	Turbidity	<5 NTU (PEQSDW)	0.86
7	TDS	1000 ppm (PEQSDW)	220
8	Calcium	200 ppm (EC)	32
9	Magnesium	150 ppm (WHO)	13
10	Hardness	500 ppm (PEQSDW)	130
11	Alkalinity	-	90
12	Sulfate	250 ppm (WHO)	60
13	Chloride	250 ppm (PEQSDW)	55
14	Nitrate (NO_3)	50 ppm (PEQSDW)	0
15	Nitrite (NO_2)	3 ppm (PEQSDW)	0
16	Iron	1ppm (WHO)	0
17	Conductivity		337
18	Arsenic	50 ppb (PEQSDW)	0
19	Fluoride	1.5 ppm (PEQSDW)	0.25
20	Total Coliforms analysis result	There should be no colony of coliform bacteria per 100/ml sample	0

Remarks:-

1:This water sample is Chemically **FIT** for drinking purpose.

2:This water sample is Biologically **FIT** for drinking purpose.

Note:- *1: Authenticity of the sample is resting with the sending agency.*
2: The results of the Laboratory analysis, reported by PHED Lab. are accurate and authentic only for the parameters tested.
3: This Report is not valid for court.
4: PEQSDW: Punjab Environment Quality Standards for Drinking Water
5: WHO: World Health Organization
6: EC: European Commission

District Water Testing Laboratory
FIT
Public Health Engineering Department Rajanpur

JUNIOR RESEARCH OFFICER
DISTRICT WATER TESTING LABORATORY
PHED RAJANPUR

PUBLIC HEALTH ENGINEERING DEPARTMENT PUNJAB
DISTRICT WATER TESTING LABORATORY
DISTRICT RAJANPUR
ADJACENT SOCIAL WELFARE OFFICE AT QUTAB CANAL, PHONE: 0604920150

PHYSICAL ,CHEMICAL & BIOLOGICAL ANALYSIS REPORT OF WATER

Depth: .....ft	Laboratory No: 04/DWTL/RP/NGO/2026
Source & Location: Sample From RO Plant Village Nizam Shah U/c Wah Lashari (Post Test)	Place: Village Nizam Shah
	District : Rajanpur
	Date of Analysis: 11-03-2026
	Date of Receipt in Lab: 11-03-2026
Date of Collection: 11-03-2026	Collected By: Indus Consortium Kot Mithan

Sr.No	Parameters	PHED Maximum Limit	Results
1	Temperature		25°C
2	pH	6.5-8.5 (PEQSDW)	7.1
3	Odour	Unobjectionable (PEQSDW)	Odourless
4	Colour	≤15 TCU (PEQSDW)	Colourless
5	Taste	Unobjectionable (PEQSDW)	Tasteless
6	Turbidity	<5 NTU (PEQSDW)	0.77
7	TDS	1000 ppm (PEQSDW)	240
8	Calcium	200 ppm (EC)	36
9	Magnesium	150 ppm (WHO)	13
10	Hardness	500 ppm (PEQSDW)	140
11	Alkalinity	-	100
12	Sulfate	250 ppm (WHO)	65
13	Chloride	250 ppm (PEQSDW)	60
14	Nitrate (No_3)	50 ppm (PEQSDW)	0
15	Nitrite (No_2)	3 ppm (PEQSDW)	0
16	Iron	1ppm (WHO)	0
17	Conductivity		368
18	Arsenic	50 ppb (PEQSDW)	0
19	Fluoride	1.5 ppm (PEQSDW)	0.29
20	Total Colliforms analysis result	There should be no colony of coliform bacteria per 100/ml sample	0

Remarks:-

1:This water sample is Chemically **FIT** for drinking purpose.

2:This water sample is Biologically **FIT** for drinking purpose.

Note:- *1: Authenticity of the sample is resting with the sending agency.*
2: The results of the Laboratory analysis, reported by PHED Lab. are accurate and authentic only for the parameters tested.
3: This Report is not valid for court.
4: PEQSDW: Punjab Environment Quality Standards for Drinking Water
5:WHO: World Health Organization
6:EC: European Commission

District Water Testing Laboratory
FIT
Public Health Engineering Department Rajanpur

JUNIOR RESEARCH OFFICER
DISTRICT WATER TESTING LABORATORY
PHED RAJANPUR

Annex 2: Beneficiaries of Awareness Raising Sessions

Sr. #	Activity	No of Session	Women	Men	Total
1	Capacity Building Session on "Organization Management"	15	45	120	165
2	Refresher Capacity Building Session on "Organization Management"	15	58	102	160
3	Session on Complaint Response Mechanism (CRM)	15	75	30	105
4	Plants Care for plants destitution at household level	6	501	9	510
5	International Forest Day	1	13	40	53
6	International Women Day	1	42	16	58
	Total	53	734	317	1051

Annex 3: Data Collection Tool – Field Visit and FGD with the local communities

Sr #	Project Activity	Questions for FGD	Observations Checklist
1	Fodder Tree Species:	i- Will you be able to produce enough fodder to meet the needs of your livestock? ii- What are your cash or in-kind contributions to setting up the fodder tree plots?	Current status of the activity Type of trees Community maintenance practices/system in place
2	Small Community Forests	i- What is the role of your community in forest protection and management? ii- What benefits do you see when this forest is raised? iii- What are your cash or in-kind contributions to this activity?	Current status of the activity Type and number of trees. Community maintenance practices/system in place
3	Small Nursery	i- How are/will you manage and operate the nursery? ii- Will you be able to sustain the nursery after the project's life? If yes, what skills will help you with this? iii- What are your cash or in-kind contributions to this activity?	Seedling production and distribution Participation of community members in nursery management Types of plants being raised
4	Plantation of free trees	i- What are a few household and farm-level benefits of tree plantation you see in the future? ii- What are your cash or in-kind contributions to this activity?	Condition and growth of planted trees Survival and maintenance of planted trees
5	Small Scale Rod Kohi irrigation / Water control/ storage water ponds	i- Will the availability of water for agricultural activities increase after the project? If yes, how will this impact your agriculture production and food security? ii- Will you be able to start cultivating any agricultural land that was previously unused or barren because of a lack of water, but has now become cultivable after water became available through the project activities? iii- What are your cash or in-kind contributions to this activity?	Functionality of earthen ponds and water storage structures

6	RO Plants	i- Do you now have regular access to clean and safe drinking water after the project interventions? ii- Compared to the situation before the project, how much time do you now spend on fetching water? iii- What is the role of the maintenance committee. in any contribution collection in terms of monetary terms for future maintenance? iv- What are your cash or in-kind contributions to this activity?	Functionality and maintenance of RO plants Accessibility of clean drinking water for community members Community management arrangements

Annex 4: Agenda of the Lessons Learnt Workshop

Time	Session	Method	Responsibility
10:00 – 10:15	Registration and introduction of participants	Plenary	Indus Consortium
10:15– 10:20	Opening remarks and objectives of the workshop	Plenary	Indus Consortium
10:20 – 10:30	Brief presentation of project overview and key results	Plenary	Indus Consortium
Working Groups			
10:30 – 12:00	Group Work 1: Watershed Management Facilitator: Hasnain Reporteur: Aslam	Changes or Impacts: What has improved since the project. Challenges covered: What problems still remain? Gender participation/impact Future Plan: What should be done differently in the future?	Consultants
	Group Work 2: Rangeland management Facilitator: Samra Reporteur: Jameel		
	Group Work 3: Role of women in the project Facilitator: Shaista Reporteur: Maria		
12:00 – 1:00 pm	Group presentations and plenary discussion		Group Leaders
1:00 - 1:30 pm	Closing		Indus Consortium

Annex 5: Key Informants Interviews with Government Representatives

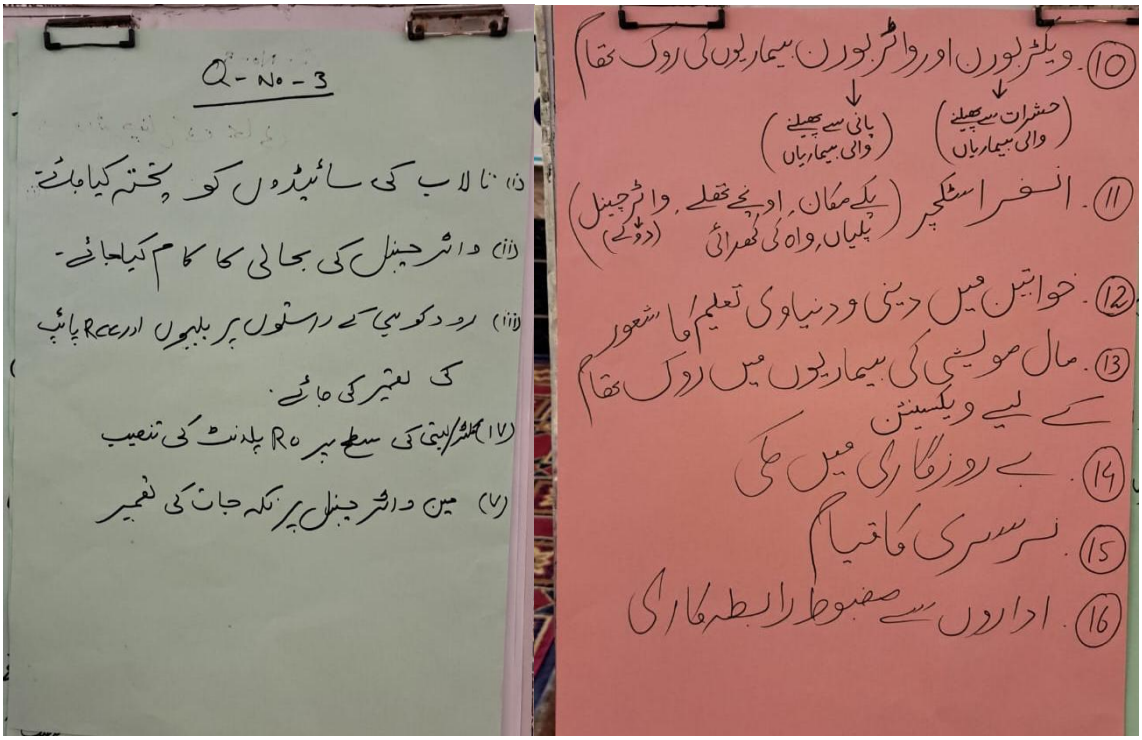
Mainly the representatives of the following departments will be consulted:

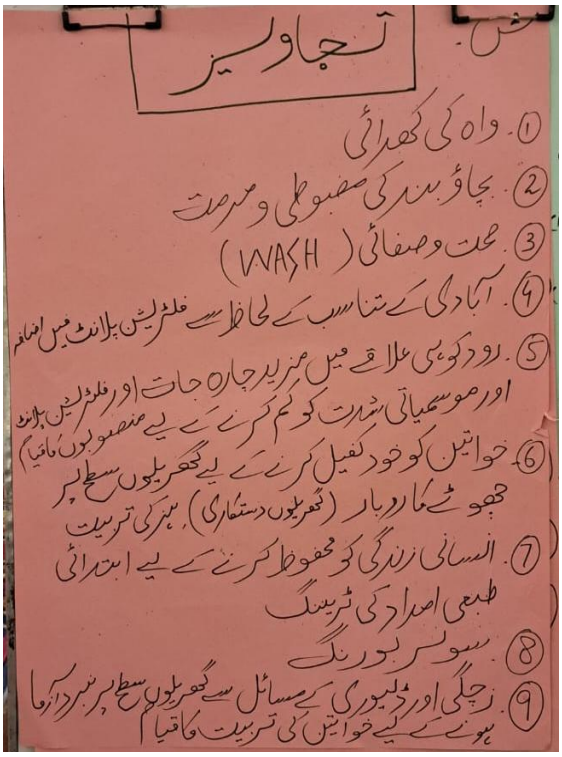
1. Social Welfare and

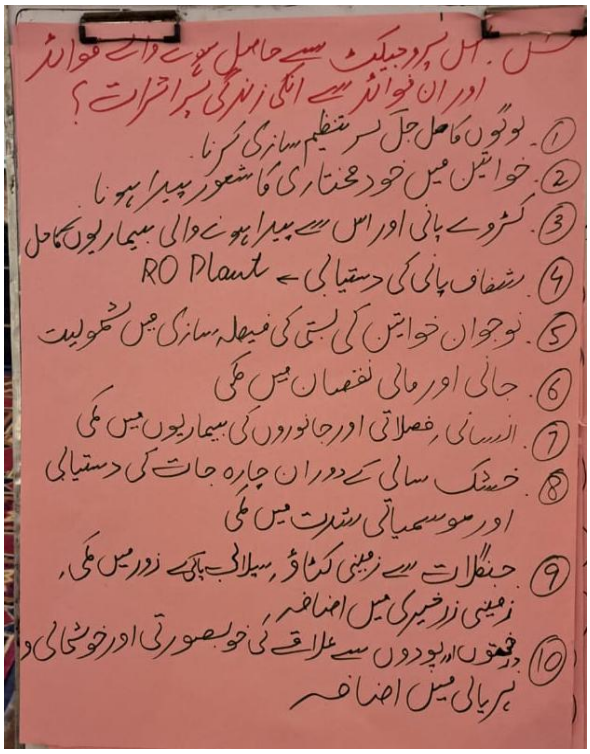
2. Forest Departments

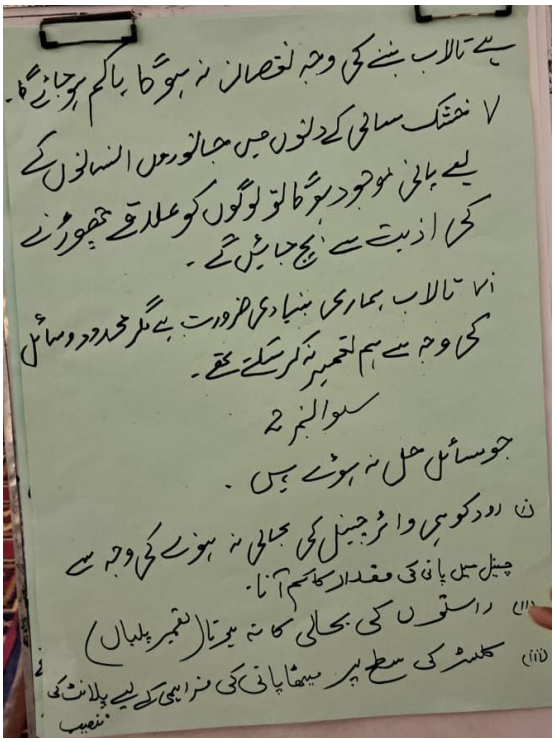
1. How do these projects activities align with district or provincial development priorities?
2. Are there existing government programs related to watershed management, Rod Kohi irrigation, forestry, or drinking water that complement these interventions?
3. Do you see potential for integrating these approaches into government programs?
4. Based on your experience, what technical improvements would you suggest for, Rod Kohi irrigation structures, Water storage ponds, Community forestry initiatives, and RO plants.
5. How effective do you think community-based organizations (CBOs) are in managing natural resources such as forests and water systems?
6. Do you think this model could be replicated in other Rod Kohi areas of Rajanpur or other districts?

Annex 6: Group works presentations by communities during lessons learnt workshop.









ہے تالاب بننے کی وجہ نقصان نہ ہوگا بالکل ہو جائے گا۔

۷ خشک سالی کے دنوں میں جانوروں انسانوں کے لیے پانی موجود ہوگا تو لوگوں کو علاقے چھوڑنے کی اذیت سے بچ جائیں گے۔

۸ تالاب ہماری بنیادی ضرورت ہے مگر محدود وسائل کی وجہ سے ہم تعمیر نہ کر سکتے تھے۔

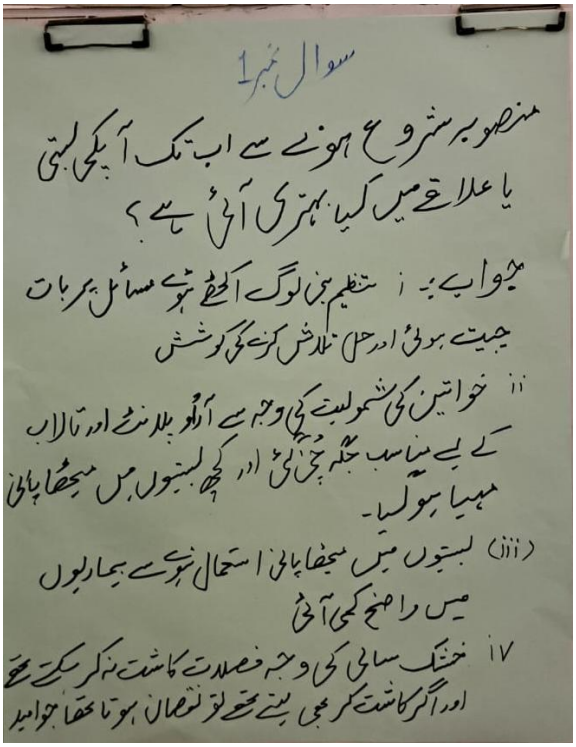
سوال نمبر 2

جو مسائل حل نہ ہوئے ہیں۔

(i) رود کوہی واٹر چینل کی بحالی نہ ہونے کی وجہ سے چینل میں پانی کی مقدار کم آنا۔

(ii) راستوں کی بحالی کا نہ ہونا (تعمیر پلیاں)

(iii) کلسٹر کی سطح پر میٹھا پانی کی فراہمی کے لیے پلانٹ کی تنصیب



سوال نمبر 1

منصوبہ شروع ہونے سے اب تک آپکی بستی یا علاقے میں کیا بہتری آئی ہے؟

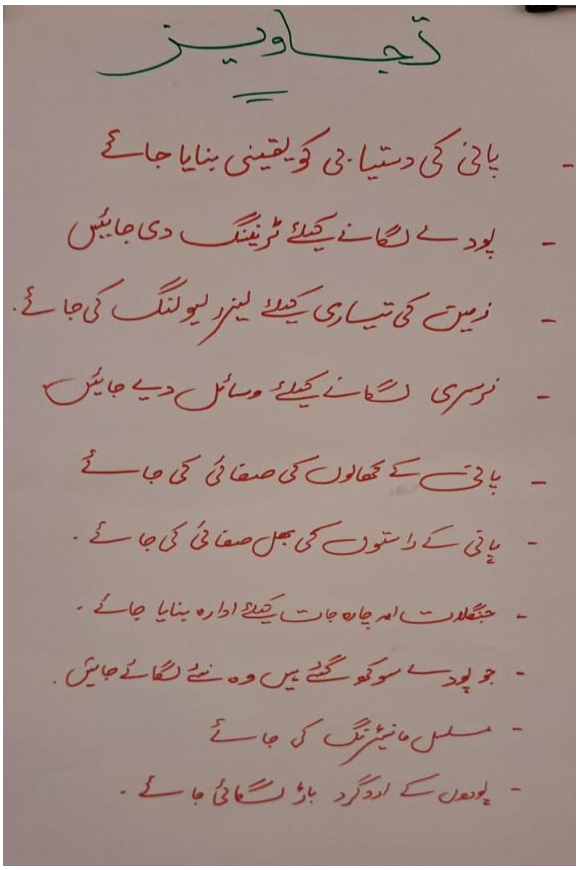
جواب:

i تنظیم میں لوگ اکٹھے ہوئے مسائل پر بات چیت ہوئی اور حل تلاش کرنے کی کوشش

ii خواتین کی شمولیت کی وجہ سے آرگو پلانٹ اور تالاب کے لیے مناسب جگہ چنی گئی اور کچھ بستیوں میں میٹھا پانی مہیا ہو گیا۔

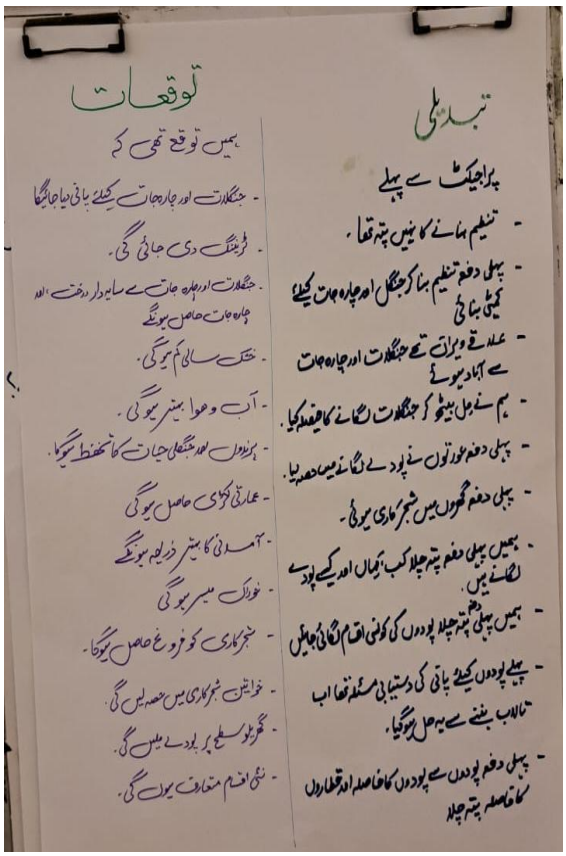
(iii) بستیوں میں میٹھا پانی استعمال ہونے سے بیماریوں میں واضح کمی آئی

۱۷ خشک سالی کی وجہ فصلات کاشت نہ کر سکتے تھے اور اگر کاشت کر بھی لیتے تھے تو نقصان ہوتا تھا جو امید



تجاویز

- پانی کی دستیابی کو یقینی بنایا جائے
- پودے لگانے کیلئے ٹریننگ دی جائیں
- زمین کی تیاری کیلئے لینڈ لیولنگ کی جائے۔
- نرسری لگانے کیلئے وسائل دیے جائیں
- پانی کے ٹھالوں کی صفائی کی جائے
- پانی کے راستوں کی بھل صفائی کی جائے۔
- جنگلات اور چارہ جات کیلئے ادارہ بنایا جائے۔
- جو پودے سوکھ گئے ہیں وہ نئے لگائے جائیں۔
- مسلسل مانیٹرنگ کی جائے
- پودوں کے اردگرد باڑ لگائی جائے۔



توقعات

ہمیں توقع تھی کہ

- جنگلات اور چارہ جات کیلئے پانی دیا جائیگا
- ٹریننگ دی جائی گی۔
- جنگلات اور چارہ جات سے سایہ دار درخت، اور چارہ جات حاصل ہونگے
- خشک سالی کم ہوگی۔
- آب و ہوا بہتر ہوگی۔
- پرندوں اور جنگلی حیات کا تحفظ ہوگا۔
- عمارتی لکڑی حاصل ہوگی
- آمدنی کا بہتر ذریعہ ہونگے
- خوراک میسر ہوگی
- شہد کاری کو فروغ حاصل ہوگا۔
- خواتین شہد کاری میں حصہ لیں گی۔
- گھریلو سطح پر پودے ملیں گی۔
- نئی اقسام متعارف ہوں گی۔

تبدیلی

پراجیکٹ سے پہلے

- تنظیم بنانے کا نہیں پتہ تھا۔
- پہلی دفعہ تنظیم بنا کر جنگل اور چارہ جات کیلئے کمیٹی بنائی
- علاقے ویران تھے جنگلات اور چارہ جات سے آباد ہوئے
- ہم نے مل بیٹھ کر جنگلات لگانے کا فیصلہ کیا۔
- پہلی دفعہ خواتین نے پودے لگانے میں حصہ لیا۔
- پہلی دفعہ گھروں میں شہد کاری ہوئی۔
- ہمیں پہلی دفعہ پتہ چلا کب، کہاں اور کیسے پودے لگانے ہیں۔
- ہمیں پہلی دفعہ پتہ چلا پودوں کی کونسی اقسام لگائی جائیں
- پہلے پودوں کیلئے پانی کی دستیابی مسئلہ تھا اب تالاب بننے سے یہ حل ہو گیا۔
- پہلی دفعہ پودوں سے پودوں کا فاصلہ اور قطاروں کا فاصلہ پتہ چلا

Indus Consortium
Humanitarian Environment and Development Initiatives

Indus Consortium is a humanitarian and development organization working to improve livelihoods, resilience, and sustainable natural resource management in vulnerable communities across Pakistan.

Project Partners:
Oxford Policy Management
UK International Development

Project Information:
Integrated Watershed & Livelihood Improvement Project
District Rajanpur, Punjab, Pakistan

Oxford Policy Management

UK International Development
Partnership | Progress | Prosperity