



PMIC
Pakistan Microfinance Investment
Company Limited

OUTCOMES ASSESSMENT REPORT 2023

ACCELERATING ACCESS TO FINANCE
AND INCREASING THE INCOME OF
SMALL FARMERS



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A photograph of three women sitting in a field of tall, golden-brown grass. The woman on the left is wearing a red headscarf with a gold pattern and a red garment. The woman in the center is wearing a yellow and gold patterned headscarf and a red garment. The woman on the right is wearing a solid red headscarf and a red garment. The background is a soft, out-of-focus field of similar grass. A large, semi-transparent diamond-shaped pattern is overlaid on the entire image. In the bottom left corner, there is a solid teal triangle pointing towards the center.

EXECUTIVE SUMMARY

The outcome assessment report for 'Accelerating Access to Finance and Increasing the Income of Small Farmers' project has six sections, the first section presents introduction and background of the project being assessed. The second section highlights the objectives of the outcome assessment. The third section presents the approach, methodology and sampling for the study. It also includes profile of the study respondents for context. The fourth section presents key findings of the outcome assessment. It reports on the relevance, coherence, effectiveness, efficiency, emerging impact, and sustainability of the project. The emerging impact section of this report presents economic and social outcomes of the project. The fifth and sixth sections identify the best practices, lessons learnt and recommendations for future project planning respectively.

The 'Accelerating Access to Finance and Increasing the Income of Small Farmers' project was launched by the Pakistan Microfinance Investment Company (PMIC) to achieve its triple bottom line mandate, that is, to create an economic, social, and environmental impact financed by microcredit.

The aim of this project was to benefit small farmers with financial and complimentary non-financial services that will result in lower input costs and increased crop yield, consequently, higher incomes for the farmers. This project was implemented through an Agri-Tech entity known as GrowTech Services Pvt Ltd in 311 locations across Pakistan. The allocated budget for this project was PKR 33 million including PKR 22 million and PKR 10 million contributions by PMIC and GrowTech Services respectively. This was a 12-month project, initiated on 1st June 2022 and ended on 31st May 2023. The project interventions include the following.

- a) Provide reports on farm soil analysis, seed variety, weather forecast, pest and water management to farmers.
- b) Optimise farmers cost of inputs per acre based on crop requirements and information analysis.
- c) Provide technical advisory services to improve crop yield through field visits.
- d) Agriculture inputs-based lending to farmers.
- e) Create synergies with the markets, financing partners and outreach partners for fair prices, timely access to better quality inputs and financial services.
- f) Equip farmers with knowledge, skills, and confidence to utilise technology for optimal yield and profits.

The overall objective of the outcome assessment was to conduct in-depth and mixed methods research that assesses the overall social, economic, and environmental outcome(s) of this project. The specific objectives of the assignment are as follows.

- (i) To assess the relevance, coherence, effectiveness, efficiency, impact, and sustainability of the project
- (ii) To assess the progress on the project outputs
- (iii) To assess the economic, social, and environmental outcomes of the project
- (iv) To document the best practices and the lessons learnt for future programme planning.

The Research team used a combination of data collection and analysis methods for this assessment. The existing data from the GrowTech dashboard was extracted and analysed using descriptive and correlation tests to acquire insights on quantitative indicators. These include changes in the cost of inputs, yield, and revenue.

The overall data from GrowTech dashboard included 2,226 farmers that were registered during the project period (June 2022 to May 2023). The data reveals largest farm area wise coverage in the provinces of Punjab and Sindh. The major crops cultivated by farm area include wheat and rice. The clean sample for this study included 124 farmers including 111 wheat farmers from Sindh and 13 rice farmers from Punjab. A total of 08 Focused Groups were conducted with 63 participants (14 female and 49 male farmers) and 37 KIIs were conducted including 19 GT farmers and 18 non-GT farmers.

The project interventions and implementation strategies were found relevant, coherent, effective, efficient, sustainable, and impactful. The intervention fits well with the policies and interventions that support the agriculture ecosystem in Pakistan. All targets of the project, including reduction in input cost, increased yield and revenue were met during the project implementation period and the program utilised technology to optimize operational costs.

Findings

The major sources of information on market prices, new seed varieties, weather forecasts, and improved agricultural practices include relatives/friends/neighbours, market/buyers and mobile phones that include SMS, YouTube, and WhatsApp. This preference for non-governmental information sources highlights a perceived lack of trust and effective government information system.

Economic Outcomes

In the context of wheat and rice, project farmers achieved a notable 28% increase in average yield, while input costs remained unaffected by the prevailing high inflation. Nevertheless, there was a visible reduction in

input consumption, corroborated by project respondents in Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs), particularly in the usage of DAP, urea, and water for irrigation. As total revenue is computed by multiplying the fixed price by yield, the 28% increase in average revenue directly aligns with the yield increment.

For the average investment per acre of PKR 3,932, wheat farmer's incremental gain was PKR 22,818 compared to non-project farmers. For rice farmers, the incremental gain was PKR 9,943 compared with last year. This comparison indicates that both crops present positive returns on investment. The return on investment for wheat is significantly higher than that of rice in this case.

Social Outcomes

The improvement in yield and increase in net income of farmers contributed to a) better food consumption due to improved livelihoods b) improved food security contributing to the SDG: Zero Hunger. Improved agricultural knowledge and practices including crop shifting, crop diversification and early sowing techniques contributed to the SDG: Climate Change Adaptation and Mitigation. The project nutrient value addition contributes to the SDG: a) Responsible Consumption and Production and b) Improved Health Outcomes.

The best practices observed during the field visits include the following:

- (a) GrowTech team collaborated with an NGO and NARC to make a high yielding variety of seed accessible to the farmers in Sindh. The availability of quality seed, supplemented with GrowTech services has significantly increased the yield and revenue for wheat farmers in Sindh. Such synergies are critical for the agriculture ecosystem.
- (b) The utilization of technology for soil analysis

and water stress management has yield improved outcomes for farmers while enhancing their understanding of soil fertility, the appropriate quantity and type of fertilizer specific crops, and precise water management.

- (c) Fostering collaborations with community workers and leaders on the ground has provided the GrowTech team with a strong foundation for effective outreach.
- (d) The emphasis on incorporating innovation and technology into localized solutions remains relevant for achieving sustainable and accelerated growth.

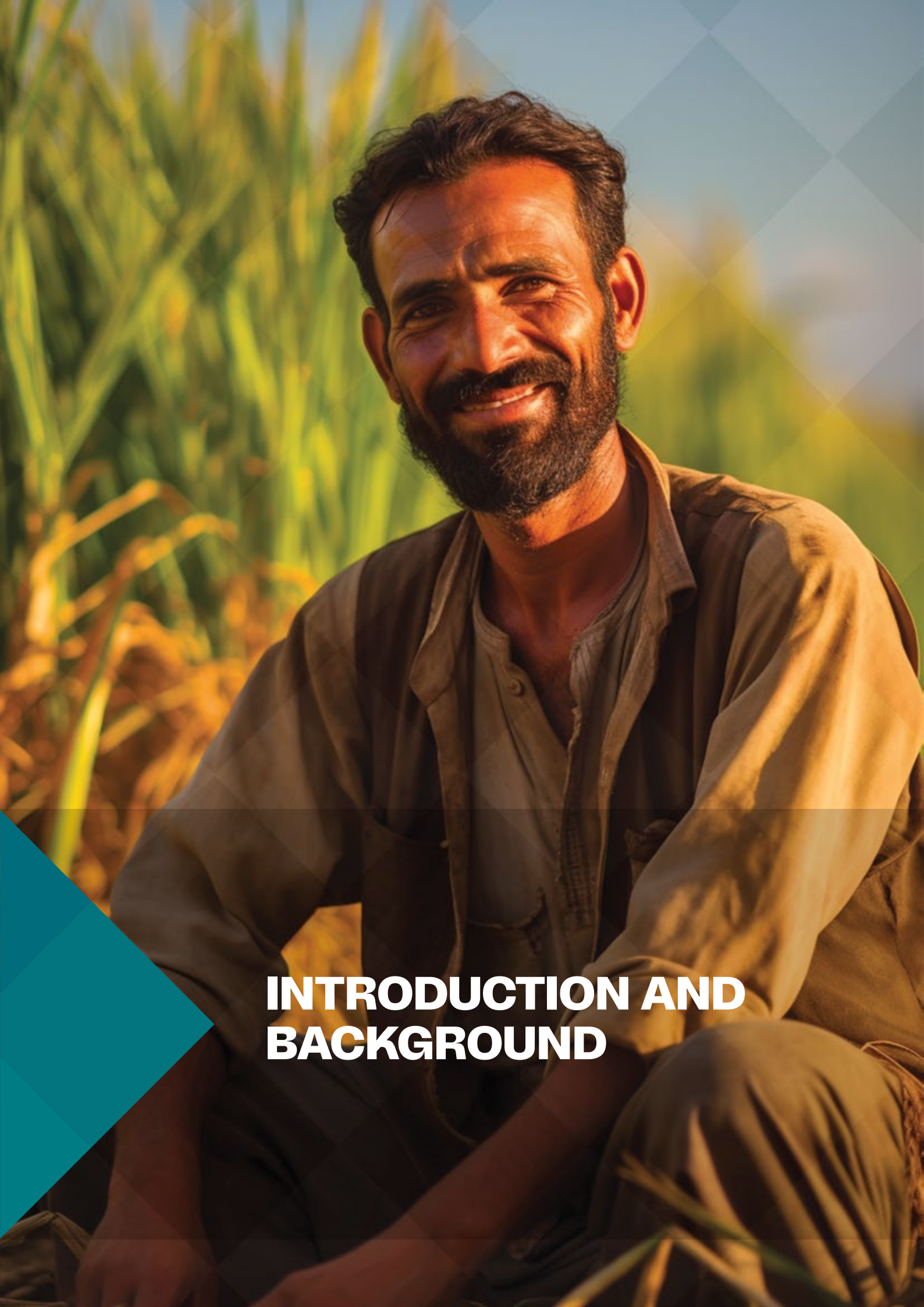
The key recommendations for future project planning include the following.

- (i) Access to finance remains a significant challenge, exacerbated by worsening climate change and rising inflation, pushing farmers further into reliance on local intermediaries. Despite recognizing

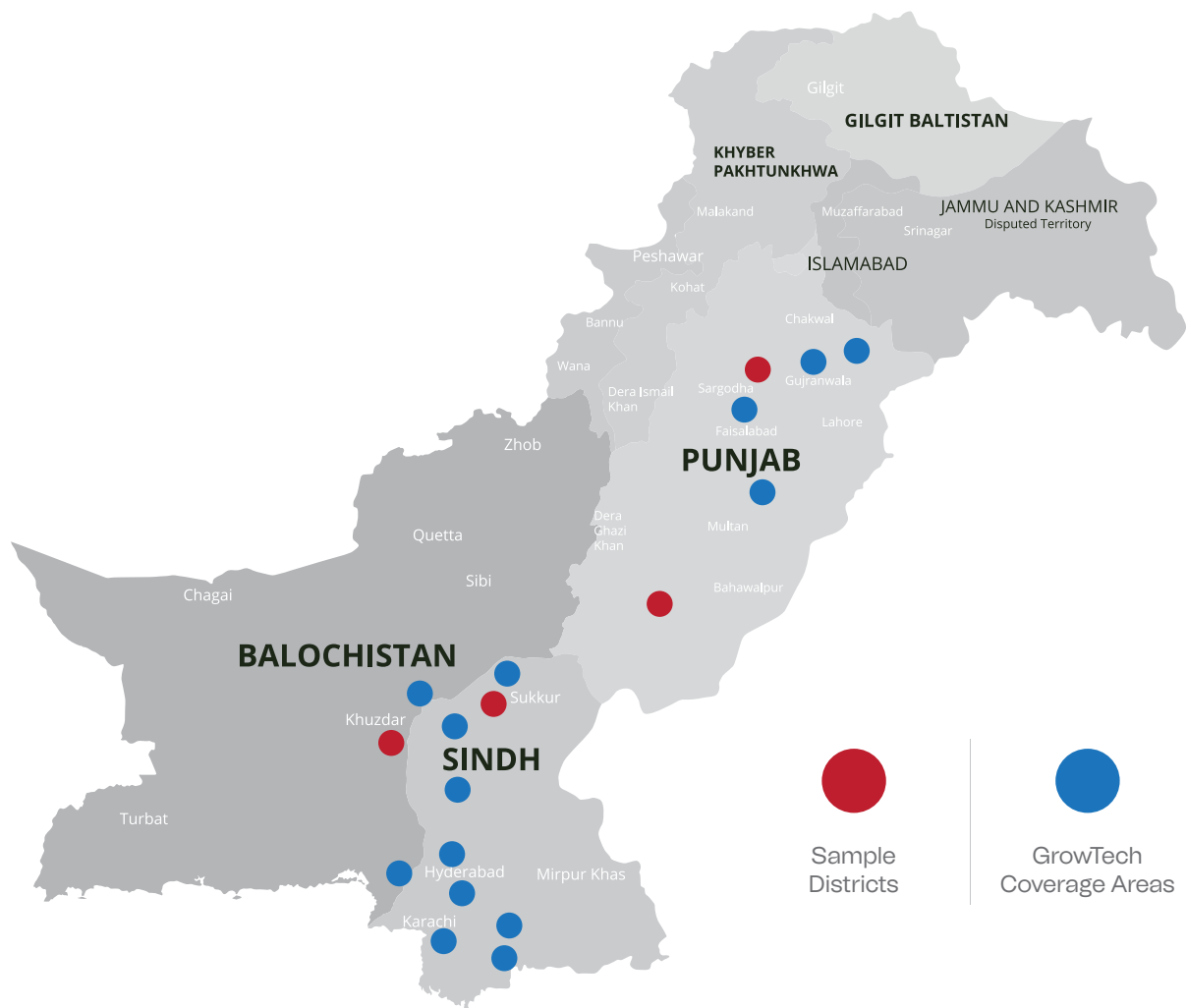
the exploitative nature of their relationship with Arthi's, farmers lack viable alternatives. This presents a substantial opportunity for initiatives focused on financial inclusion in the agricultural sector.

- (ii) Farmers exhibit a strong appetite for innovation and technology adoption, with social media serving as a crucial catalyst for change. The farmers are transitioning from manual labour to embracing mechanisation and advanced technology. This opportunity should be leveraged to develop and provide blended financial services to farmers on easier terms.
- (iii) Women make up a huge segment of the labour force in the agriculture sector in Pakistan.

Thus, project designs that ensure financial and social benefits for women are pertinent for the improvement of the overall sector.

A photograph of a man with a dark beard and mustache, smiling warmly at the camera. He is wearing a light-colored, long-sleeved button-down shirt. He is sitting in a field of tall, green grass or reeds, with the background slightly blurred. The lighting is warm, suggesting late afternoon or early morning. A teal-colored geometric shape is overlaid on the bottom left corner of the image.

INTRODUCTION AND BACKGROUND



Pakistan Microfinance Investment Company

Pakistan Microfinance Investment Company Limited (PMIC) is a national-level apex institution for microfinance providers in the country. PMIC is registered under Section 32 of the Companies Ordinance 1984 and is licensed under Rule 5 of the non-banking finance company (establishment and regulations) Rules, to undertake or carry out Investment Finance Services. It was setup in 2016 as an important pillar of the National Financial Inclusion Strategy formulated by the Government of Pakistan and its shareholders including Pakistan Poverty Alleviation Fund (PPAF), Karandaaz Pakistan (KRN) and KfW Development Bank.

PMIC's goal is to create a pro-poor impact for the poorest and under-served Pakistanis through improving their access to financial services, job creation, and provision of income generating opportunities. It is achieved through providing financial and institutional services to strengthen and scale-up the provision of sustainable and responsible access to finance to individuals, micro-entrepreneurs, and micro-enterprises in Pakistan.

Overview of the Project

PMIC launched '**Accelerating Access to Finance and Increasing the Income of Small Farmers**' project to achieve its triple bottom line mandate, that is, to create an economic, social, and environmental impact financed by microcredit. The aim of this project was to benefit small farmers with financial and complimentary non-financial services that will result in lower input costs and increased crop yield, consequently, higher incomes for the farmers. This project is implemented through an Agri-Tech entity known as GrowTech Services Pvt Ltd in 311 districts in all 4 provinces, Islamabad, and Karachi (refer to map I). The allocated budget for this project was PKR 33 million including PKR 22 million and PKR 10 million contributions by PMIC and GrowTech Services respectively. This was a 12-month

project, initiated on 1st June 2022 and ended on 31st May 2023. The project interventions include the following.

- a) Provide accurate information on soil analysis, water stress management, seed variety, weather forecast and pest management to farmers.
- b) Optimise farmers cost of inputs per acre based on crop requirements and information analysis.
- c) Provide technical advisory services to improve crop yield through farmer field visits.
- d) Agriculture inputs-based lending to farmers.
- e) Create synergies with the markets, financing partners and outreach partners for fair prices, timely access to better quality inputs and financial services.
- f) Equip farmers with knowledge, skills, and confidence to utilise technology for optimal yield and profits.

Aim of the Outcome Assessment

The Project: Accelerating Access to Finance and Increasing the Income of Small Farmers created synergy between the financial and non-financial services offered by PMIC and GrowTech respectively. The project aimed at increasing farmers' income through providing loans to farmers, supplemented with non-financial technical advisory. Although the final project report presents progress on output indicators, PMIC aims to conduct in-depth and mixed methods research that assesses the overall social, economic, and environmental outcome(s) of this project. The specific objectives of the assignment are as follows.

- (i) To assess the relevance, coherence, effectiveness, efficiency, impact, and sustainability of the project
- (ii) To assess the extent of progress on the project outputs
- (ii) To assess the economic, social, and environmental outcomes of the project
- (vi) To document the best practices and the lessons learnt for future programme planning.

A photograph of a middle-aged man with a mustache and a large orange turban, smiling warmly. He is wearing a light green button-down shirt and is seated on a piece of agricultural machinery, likely a tractor, with a large blue tire visible in the lower right. The background is a soft-focus green field. A semi-transparent teal triangle is positioned in the bottom-left corner, partially overlapping the man's leg and the tractor.

APPROACH AND METHODOLOGY

Approach

The PMIC research team used the Consultation, Collaboration and Understanding approach to undertake this assignment. The team conducted consultation meetings and engaged with the CEO of the implementing partner, GrowTech, to understand the overall project. During their visits, the team collaborated with the GrowTech field teams in Sindh and Punjab provinces. This collaboration was pertinent to ensure smooth field activities as well as addressing information and knowledge gaps. The overall approach proved effective in developing a sound understanding of the project interventions that served critical for data analysis and results reporting.

Methodology

At the initial stages, the Research team conducted a thorough desk review of all the relevant documents including the project proposal, case studies and final project report. This desk review was followed by a consultative meeting with the GrowTech team to request data according to the desired template. The Research team used a combination of data collection and analysis methods for this assessment. The existing data from the GrowTech dashboard was extracted and

analysed using descriptive and correlation tests to acquire insights on quantitative indicators. These include changes in the cost of inputs, yield, and revenue. No new data was collected for the output indicators for this study.

Following this, the team identified information gaps that required further qualitative data collection and finalised the survey tools including questionnaire for the KIs and FGD. The research team conducted Focus Group Discussions (FGDs) to understand and acquire insights on the OECD-DAC indicators. These include relevance, efficiency, effectiveness, and sustainability of the project interventions. The teams also conducted Key Informant Interviews (KIs) to get further insights on their level of education, access to finance and information and the key challenges and barriers faced.

Sample

The overall data from GrowTech dashboard includes 2,226 farmers that were registered during the project period (June 2022 to May 2023). The data reveals largest farm area wise coverage in the provinces of Punjab and Sindh. The major crops cultivated by farm area include wheat and rice.

Figure 1: GrowTech Farm Area Coverage

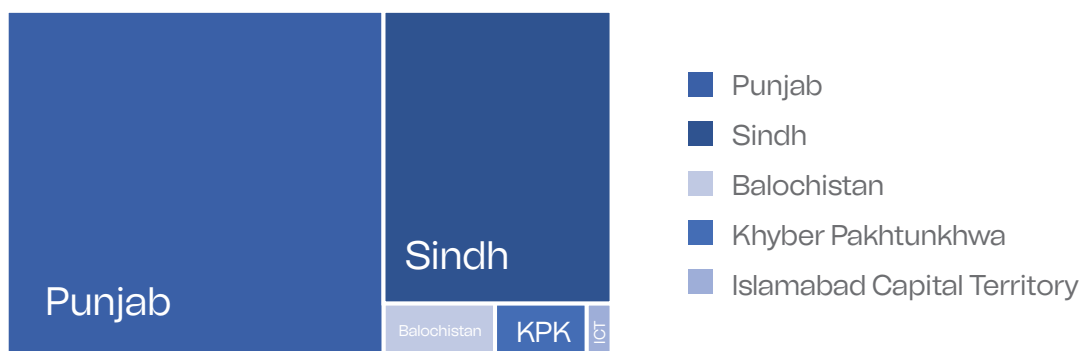
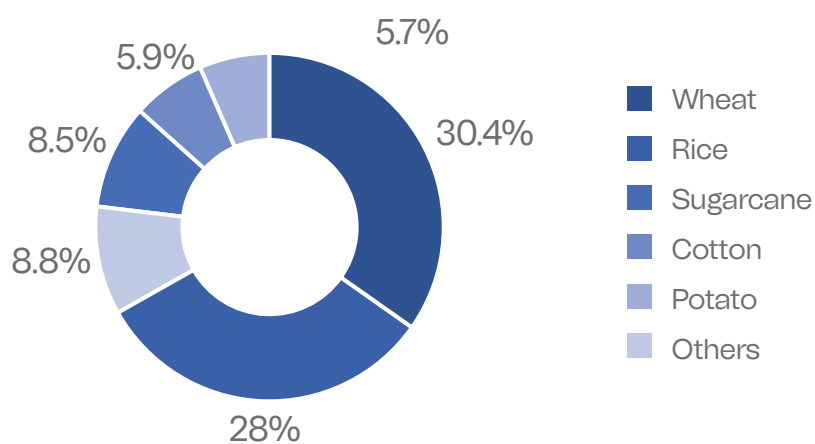


Figure 2: Major Crops Cultivated with GrowTech



Quantitative Data

The available data for wheat and rice farmers in Sindh and Punjab was cleaned. The clean sample for this study included 124 farmers including 111 wheat farmers from Sindh and 13 rice farmers from Punjab. This data was then analysed through determining the change in indicators for project farmers with non-project farmers and last year (2021-22).

Selection of Districts: A district-wise preliminary analysis was conducted for the selection of the districts for focused groups formation based on the following parameters.

- Districts with maximum land area for wheat: **Warah and Tando Allahyar**
- Districts with maximum land area for rice: **Gujranwala**

Figure 3: District wise Rice Coverage

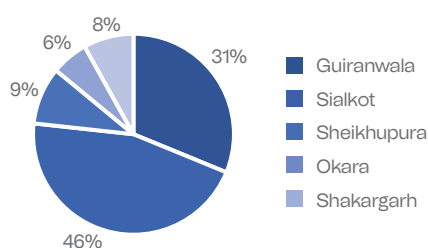
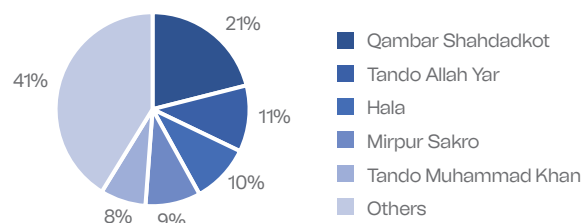


Figure 4: District wise Wheat Coverage



Focused Groups

The sampled districts were Tando Allah Yar, Qambar Shahdadkot, Bahawalpur and Gujranwala – two in each, Sindh, and Punjab provinces. Following this, cluster sampling was used at the district level. The clusters were formed based on proximity, to ensure homogeneity within the cluster sample. Further, non-project farmer clusters were added in each district to better understand the prevailing conditions, create comparisons, and validate

the findings.

The sample included 09 FDGs. Each FGD included 6-10 members as per the plan. However, due to non-availability of farmers in Kamoke, and issues in the field, a total of 08 Focused Groups could be conducted. It included 63 participants (14 female and 49 male farmers). The number of participants in Sindh was 41 and 22 in Punjab. The table below provides further details.

FDG	Province	District	Crop	Criteria
1	Sindh	Qambar Shahdadkot	Wheat	Farmers using Project Services
2	Sindh	Tando Allah Yar	Wheat	Farmers using Project Services
3	Sindh	Tando Allah Yar	Wheat	Farmers not using Project Services
4	Sindh	Tando Allah Yar	Wheat	Female Farmers using Project Services
5	Punjab	Kamoke	Rice	Farmers using Project Services
6	Punjab	Kamoke	Rice	Farmers not using Project Services
7	Punjab	Bahawalpur	Any	Farmers using Project Services
8	Punjab	Bahawalpur	Any	Farmers not using Project Services

Table 1: List for Focused Group Discussion conducted.

Key Informant Interviews (KIIs)

The primary source of qualitative data collection was FGDs. In addition, Key Informant Interviews (KIIs) were conducted with 3-4 members from each focused group. A total of 37 KIIs were conducted including 19 GT farmers and 18 non-GT farmers.

Respondent's Profile

For qualitative information, a total of 37 respondents were interviewed during the field visits to districts Tando Allahyar and Qambar Shahdadkot in Sindh province and districts Bahawalpur and Kamoke in Punjab province. These include 30 (81%) male and 7 (19%) female respondents. The average age of the respondents was 42 years. The average household size of the respondents is 8 members per household. For this survey, the definition of a household is people who live together and share the food expense. Out of the total of 37, 13% had completed intermediate, 31% respondents were educated till grade 10, 11% respondents studied till grade 8, 22% respondents studied till grade 5, and 24% respondents had received no education. Out of the total respondents, 24(65%) were landowners, 11 (30%) were sharecroppers and 5 (13%) were farming on rented land.

It was interesting to note that most of the respondents had diversified sources of income. In addition to agriculture, 22 (57%) earned from livestock, 9 (24%) were wage labour, 6 (16%) had enterprises such as biryani stalls or small shops, 2 (5%) received remittance and 12 (32%) had other sources of income. Out of 37, 13 (35%) of the respondents used Jazz Cash, 11 (30%) had a bank account and 7 (19%) used Easy Paisa. A total of 24 (65%) of the respondents had a smartphone and 25 (68%) had access to WhatsApp either through their own phones or relatives. Out of 37, 19 (51%) of the respondents were registered with GrowTech.

It is pertinent to note that the major source of information includes relatives/friends/neighbours, market/buyers and mobile phones that include SMS, YouTube, and WhatsApp. Farmers rely heavily on social media platforms, such as YouTube channels and Facebook, as their primary sources of information on new seed varieties, weather forecasts, and best agricultural practices.

This preference for non-governmental information sources highlights a perceived lack of trust and effective government information system.

The status of farmers access to information on key factors is presented in Figure 5. Indicator wise information is provided in Figures 6 to 12 below.

Figure 5: Farmers Access to Key Information

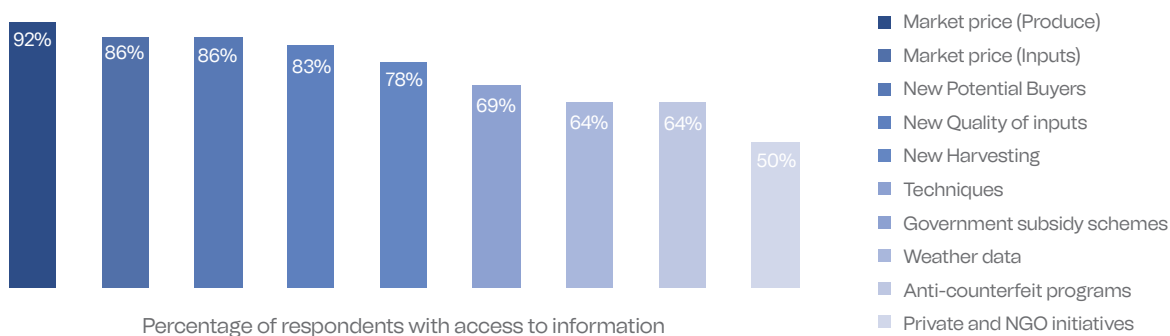


Figure 6: Access to information of Market Price of Produce

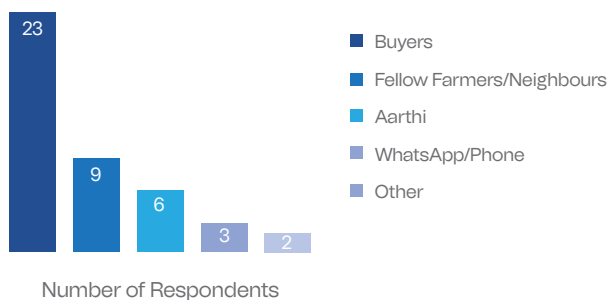


Figure 7: Access to Information of New Quality of Inputs

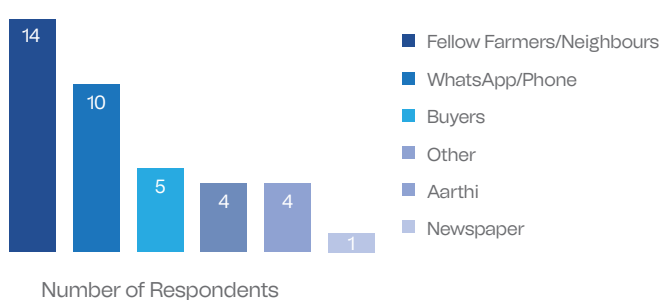


Figure 8: Access to Information of Weather Data

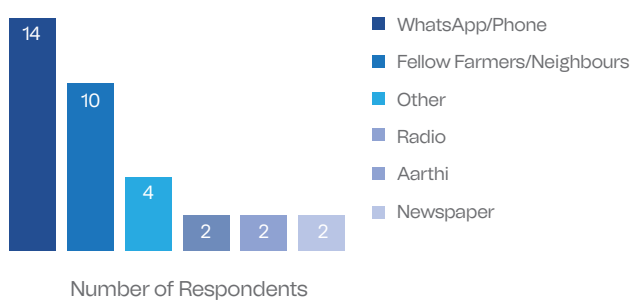


Figure 9: Access to Information of Government subsidy schemes

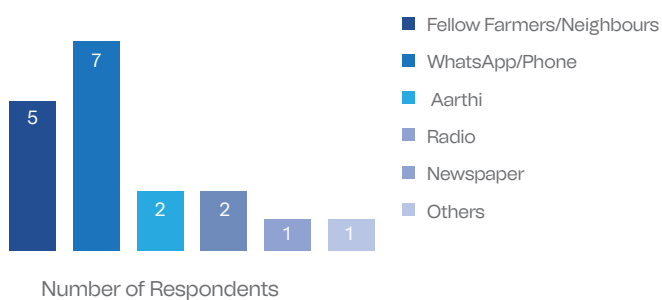


Figure 10: Access to Information of New Potential Buyers

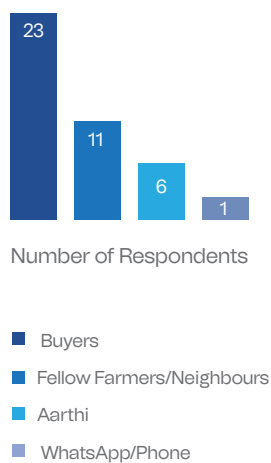


Figure 11: Access to Information of New Harvesting Techniques

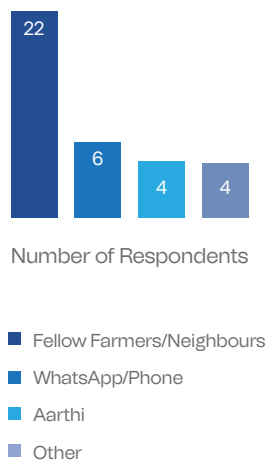
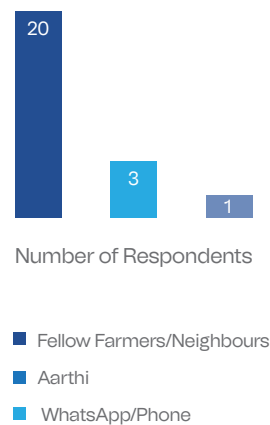


Figure 12: Access to Information of anti-counterfeit programs



A photograph of a woman with a warm smile, wearing a vibrant green dress and a red headscarf with a patterned border. She is sitting in a field of tall, golden wheat under a clear blue sky. The image has a diamond-patterned overlay in shades of blue and teal. A teal triangle is in the bottom left corner, and a semi-transparent teal bar is at the bottom.

FINDINGS

Relevance

In the context of Pakistan, agricultural sector contributes to 24% in the country's GDP and is central to the overall economic growth, food security, employment generation and poverty alleviation. The agriculture sector employs 37.54% of the national labour force. Over 65% of rural population is directly or indirectly dependent on agriculture for their livelihood. The project was implemented in the rural areas catering to the needs of small farmers. Overall, 100% of the FGD participants found the project relevant to their needs. In addition, 100% of the interview respondents also showed willingness for a technical training to improve their crop quality and increase their incomes.

Coherence

Revamping Pakistan's Agriculture Sector: Challenges and Way Forward reports that the use of outdated farming techniques, inefficient irrigation systems, pest management

techniques, agricultural practices tailored to local conditions and inaccessibility to modern agricultural tools and equipment are major factors that hinder higher crop yields and efficiency. Pakistan Institute of Development Economics (2020) also reports that major issues faced by the agriculture sector include high cost of production, low crop yields and low-quality crops. It further reports a 40% yield gap between the average and progressive farmer. The Government of Pakistan, Non-Government Organizations (NGOs) and commercial entities are making efforts to address this gap to meet the country's food requirements as well as reducing the imports. The intervention fits well with the policies and interventions that support the agriculture ecosystem in Pakistan.

Effectiveness

The progress on the outputs reported by GrowTech for this project is presented in table 2.

Sr. No	Target Indicator	Progress against Targets	Status
Output 1	Services provided to 1,000 farmers holding 5,000 acres of land	2,226 farmers including 1,626 small farmers holding 8,392 acres of farm area were registered on the GrowPak App during the project.	Target Exceeded
Output 2	Input Based Loans provided to 100 farmers (total fund of PKR 5 million)	36 farmers including 29 in the first loan cycle and 7 in the next loan cycle) out of 100 were provided loans through the Agri-lending model. A total budget of PKR 6.8 million was utilised.	Target Achieved – Total Fund utilised but total number of farmers not reached
Output 3	Farmers cost of input reduced by 10%	The project interventions resulted in an average reduction in fertilizer by 20%, and water by 30%	Target Achieved
Output 4	Farmers cost of input reduced by 10%	The project interventions resulted in an average increase in crop yield by 15%	Target Achieved
Output 4	Farmers Net Income increased by 25%	The net income of all farmers on average increased by 25%	Target Achieved

Table 2: Progress Against Targets – GrowTech Final Project Report (June 2023)

Efficiency

The activities were economically feasible and were cost effective since the program utilised a digital application, and coordination through WhatsApp messages and calls. The project services were provided to 1626 farmers holding below 12.5 acres of land with a total area of 8,392 acres of land against the target of 1000 farmers with 5,000 acres of land. For output 2, loans were provided to 36 farmers including 29 in the first loan cycle and 7 in the next loan cycle against the target of 100. Inflation resulted in an exuberant increase in capital needs. Due to budget constraints the number of farmers was reduced, and the loan size for each farmer was increased. A total amount of PKR 6.8 million was provided as microcredit. This cost was met through utilizing savings from the project budget. Similarly, progress against all outputs including reduction in input cost, increased yield and revenue was made during the project

implementation period. Thus, the project was implemented in the most efficient way.

Emerging Impact

PMIC aims to create a pro-poor impact through financial inclusion as well as introducing blended finance products that cater to the unmet need from different sectors in Pakistan. PMIC promotes opportunities for livelihood enhancement and improved living standards. This section highlights the positive and negative changes, direct or indirect emerging impacts of the project. It focuses on improved income as well as the overall well-being of the people. These include a) Social Outcomes and b) Economic Outcomes that are presented below. The economic outcomes of this study are also supported by the Rural Support Programmes Network (RSPN) case study on Wheat and Bank of Punjab (BoP) case study on Rice.

8 DECENT WORK AND ECONOMIC GROWTH



The Economic Outcomes for this project are measured using three indicators 1) Reduced inputs 2) Increase in Yield and c) Increase in Revenue.

The average revenue of wheat farmers for the year 2021-22 was PKR 52,225. The average revenue for wheat farmers for the year 2022-23 without project intervention increased to PKR 54,068 which is a 4% increase from last year. In contrast, the revenue of wheat farmers using project services reflects a remarkable increase to PKR 78,486 indicating a 50% increase in their revenue since last year. Notably, it is imperative to acknowledge that the price remained consistent at PKR 2,200, which was the prevailing market price for the fiscal year 2021-22.

Table 3 presents a comparison between project and non-project wheat farmers for the year 2022-23. It reveals that while total input expenditure remained consistent for both groups, project farmers achieved a substantial 45% increase in both yield and revenue in comparison to the control group. Moreover, the net revenue of project farmers exceeded that of non-project farmers by 57%, a proportion directly aligned with the increase in productivity, specifically yield per acre. It is noteworthy that the introduction of a high-yielding seed variety, Akbar-2019, alongside improved agricultural practices significantly contributed to this enhanced crop yield. This underscores the potential for better economic outcomes through the provision of high-yielding seeds complementing improved agricultural techniques

Outputs	Non-Project Farmers (2022-23)	Project Farmers (2022-23)	Change Percentage
Input Expense	13,815	13,815	0%
Yield/acre	25	36	45%
Total Revenue	54,068	78,486	45%
Net Revenue	40,254	63,072	57%

Table 3: Comparison between project and non-project wheat farmers

Table 4 presents the comparison between project farmers for the current year (2022-23). non-project farmers for last year (2021-22) and

Outputs	2021-22 (non-project farmers)	2022-23 (Project farmers)	Change Percentage
Total Fertilizer cost (in pkr)	21,538	11,737	-46%
Use of Urea (bag/acre)	2.15	1.35	-37%
Use of DAP (bag/acre)	1.35	0.7	-48%
Land Prep + Harvest cost (in pkr)	34,192	43,353	27%
Yield/acre (mound/acre)	43.1	47.9	11%
Total Revenue (cost/acre)	96,923	107,826	11%
Net Revenue (cost/acre)	41,192	51,135	24%

Table 4: Comparison of non-project rice farmers (2021-22) and project rice farmers (2022-23).

Cost of Inputs

Among rice farmers utilizing project services, the average urea consumption decreased from 2.15 bags/acre in the previous year to 1.35 bags/acre in the current year, representing a noticeable 37% reduction. Similarly, the average DAP usage decreased by 48%, declining from 1.35 bags to 0.70 bags/acre. It is essential to note that input prices remained constant, eliminating the influence of price fluctuations. Moreover, the cost associated with land preparation and irrigation increased by 27%, rising from PKR 34,192 to PKR 43,353. This increase, however, can be attributed to inflation, as community feedback indicates a significant reduction in water consumption.

Yield and Revenue

The yield of rice farmers utilizing project services grew by 11% over the past year, increasing from 43.1 mounds/acre to 47.9 mounds/acre. This led to an 11% rise in revenue for project farmers, reaching PKR 107,826/acre, considering a fixed price of PKR 2,250/mound (market price 2021-22). The net revenue of project farmers also saw a substantial 24% increase, climbing from PKR 41,192/acre to PKR 51,135/acre, primarily attributed to the significant yield increase and a reduction in input costs per acre.

Overall Economic Outcomes for Wheat and Rice

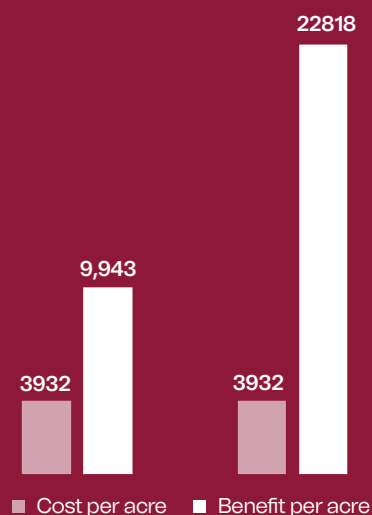
In the context of wheat and rice, project farmers achieved a notable 28% increase in average yield, while input costs remained unaffected by the prevailing high inflation. Nevertheless, there was a visible reduction in input consumption, corroborated by project respondents in Focus

Group Discussions (FGDs) and Key Informant Interviews (KIs), particularly in the usage of DAP, urea, and irrigation water. As total revenue is computed by multiplying the fixed price by yield, the 28% increase in average revenue directly aligns with the yield increment.

Return on Investment

A total of 1,626 small farmers were provided services with an investment of PKR 33 million under this project. It is to be noted that the cost for each crop varies. For calculation, the average investment per acre was PKR 3,932. For wheat farmers, the incremental gain was PKR 22,818 compared to non-project farmers. For rice farmers, the incremental gain PKR 9,943 compared with last year. The comparison of wheat and rice crops indicate that both crops present positive returns on investment. The return on investment for wheat is significantly higher than that of rice in this case.

Return on Investment/acre (in PKR)



2 ZERO HUNGER



The improvement in yield and increase in net income of farmers contributed to a) better food consumption due to improved livelihoods and b) improved food security.

The analysis of the FGD indicates that all participants utilised their increased income for household food consumption. The participants explained that despite an increase in income, their purchasing power is significantly reduced due to rising inflation. The women and men collectively argued that they are unable to save or invest in any other expense. Thus, the increased income due to the project intervention contributed to keeping the households afloat and able to meet their food expenditure despite the rising inflation. Since part of the total produce is kept by the farmers for household consumption, they also shared that the increased yield contributed to making them more food secure. Some of the farmers also reported utilising the profits to pay off their debts.

13 CLIMATE ACTION



Improved agricultural knowledge and practices including crop shifting, crop diversification and early sowing techniques contributed to climate change adaptation and mitigation.

During the discussions, 2022 floods in Pakistan was recurrently identified as one of the major challenges faced by farmers in the recent past. Some of the farmers are still coping from the loss and devastation caused by it. The farmers in the provinces of Sindh and Punjab now actively understand the erratic changes in the weather as well as its devastating impact on agriculture and their livelihoods. To mitigate these risks of climate change, the farmers are practicing crop shifting, crop diversification and early sowing techniques.

In Punjab, significant crop shifts and diversification were observed, primarily influenced by market dynamics and climate change. Notably, in Bahawalpur, traditionally a cotton-centric region, farmers have transitioned from cotton cultivation to sugar cane and maize. Similarly, in Kamoke, renowned for its rice cultivation, farmers are increasingly opting for maize and Berseem grass (Barsin or Charra). Several factors played pivotal roles in motivating these shifts, including considerations of profitability (Profit rations), government support prices, market volatility, input costs, and the changing patterns of seasonal weather, temperature, pests, and flooding events, as well as altered sowing timelines.

In addition to this, the farmers are now using techniques that consume less water especially in the case of rice. The project interventions like water stress management tools and weather forecasts have proven invaluable in avoiding unnecessary water consumption. The farmers collectively agreed that the technical advice on usage of water has significantly contributed to decrease in water consumption. This has not only led to efficient utilisation of water but also reduces the overall cost of irrigation required at the input level.

3 GOOD HEALTH AND WELL-BEING



The project Nutrition Value addition contributes to a) responsible consumption and production and b) Improved Health Outcomes.

During the FGD, farmers in Sindh highlighted that the use of conventional inputs such as DAP, urea and water was reduced based on the technical advisory under this project and the use of additional nutrients was promoted. The farmers reported that they did not see any direct effect of adding these nutrients besides improving the production of yield. However, it is critical to understand that these inputs contribute to significant nutrient value addition. The farmers and community members may not be able to see immediate benefits, but these inputs will contribute to the overall positive health and nutrition status. It is also important to note that this will reduce expenditure on health. Consequently, a high return on investments in economic terms in the long run.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



The soil analysis technology used under this project identifies the exact area and piece of land where specific nutrients or inputs are required. This not only leads to improved farming practice and cost saving, but it also contributes to the SDG for responsible consumption and production through avoiding the use of unnecessary chemicals and pesticides.

Farmers' primary concerns are how to boost their output and profits and get rid of obstacles, such as pests, for which they apply pesticides without considering the additional side effects or how it will affect their environment. In the context of both Sindh and Punjab, farmers are faced with pest infestations that lead to poor quality produce. This infected produce is sold at cheaper prices consequently incurring a loss to the farmer. The farmers in Union Council Warah shared that they were struggling with a new pest and tried popular pesticides that normally work. However, the nature of the pest was different from the usual and required a localised solution. The project expert's field visits, diagnosis of the problem and technical advisory for using the correct pesticide not only helped the farmers who were directly engaged with him but also most farmers in Warah who were struggling with the same issue. The technical expert also bears in mind the quality and long-term effects of his recommended products; indirectly promoting the adoption of environmentally safe inputs.

Sustainability

Access to better quality seeds and improved farming practices are sustainable and continue to benefit the farmers. In terms of Agri based lending to farmers, the project is designed such that the recovered amount of loan will be provided to more farmers in the consecutive rounds to ensure the availability of funds.

However, the economic and social benefits of this project are highly centred around maximising productivity that is yield/acre of farmers. The project interventions may be

sustainable if the farmers are willing to continue their subscription to the project services for the next crop cycle. The discussions during the focus groups highlighted, particularly in the case of Sindh, that the farmers were provided a subsidy to register with the project by other NGOs working in the area. Although this aided in expanding the outreach of the project, it has also led to an expectation that the services should be provided free of cost. Some farmers also suggested charging a subscription from the landlord as an alternative.

A photograph of a man with a beard and mustache, smiling at the camera. He is wearing a light-colored, long-sleeved button-down shirt. In the background, several other people are visible, standing in a field of green plants. The image has a diamond-patterned overlay and a teal triangle in the bottom left corner.

**BEST
PRACTICES**

The best practices observed during the field visits include the following:

- (a) The project team collaborated with an NGO and NARC to make a high yielding variety of seed accessible to the farmers in Sindh. The availability of quality seed, supplemented with project services has significantly increased the yield and revenue for wheat farmers in Sindh. Such synergies are critical for the agriculture ecosystem.
- (b) The utilization of technology for soil analysis and water stress management has yielded improved outcomes for farmers while enhancing their understanding of soil fertility, the appropriate quantity and type of fertilizer for specific crops, and precise water management.
- (c) Fostering collaborations with community workers and leaders on the ground has provided the project team with a strong foundation for effective outreach.
- (d) The emphasis on incorporating innovation and technology into localized solutions remains relevant for achieving sustainable and accelerated growth.



LESSONS LEARNT AND RECOMMENDATIONS

The key recommendations for future project planning include the following

- (i) The lack of access to finance, technology, unfavourable weather, uneven water concentration, natural disasters, pests, soil nutrients, lack of government support and lack of formal financial services prevent farmers from earning more money.
- (ii) Access to finance remains a significant challenge, exacerbated by worsening climate change and rising inflation, pushing farmers further into reliance on local intermediaries. Despite recognizing the exploitative nature of their relationship with Arthi's, farmers lack viable alternatives. This presents a substantial opportunity for initiatives focused on financial inclusion in the agricultural sector.
- (ii) Farmers exhibit a strong appetite for innovation and technology adoption, with social media serving as a crucial catalyst for change. The farmers are transitioning from manual labour to embracing mechanisation and advanced technology. This opportunity should be leveraged to develop and provide blended financial services to farmers on easier terms.
- (iv) Conventionally, the improvement in agriculture is driven by input intensification and area expansion. However, soil analysis, water stress management and technical advisory under the project services provide evidence that an increase in revenue is closely linked with the increase in productivity that is yield/acre and reduced but targeted inputs. The farm may benefit significantly from using this service. However, this should be supplemented with promoting the use of a better and high yielding variety of seed as observed in Sindh.
- (v) The absence of local teams at the district level and limited outreach has hindered the project's ability to fully tap into the market potential of the region. It was noted that the service providers preferred to work with educated and autonomous farmers that exercised agency and own a large land area for ease of coordination and visible outcomes. While it may be beneficial initially, this can result in exclusion of small farmers. Thus, mobilising resources to expand the outreach is critical. It will also help in addressing issues of slow adoption by new farmers, training and technical issues including network services and login issues reported by the farmers.
- (vi) There is a difference between the agency of the farmer in Sindh and in Punjab. The farmers in Punjab are more autonomous. Therefore, any project model or intervention should take the varying local context into account.
- (vii) Although the inclusion of women farmers is witnessed under the project, it is pertinent to note that project team does not have any female field staff which consequently means exclusion or limited outreach to women.



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