EUROPEAN UNION

PROGRAMME FOR IMPROVED NUTRITION IN SINDH

In support of the Accelerated Action Plan, Government of Sindh

Baseline Survey – Final Report
Nutrition-Sensitive Component

Developed by AASA Consulting (Pvt) Limited, Pakistan

CONSEIL SANTÉ RSPN ACTION AGAINST HUNGER NRSP National Rural Support Programme SRSO TRDP THARDEEP RURAL DEVELOPMENT PROGRAMME

Volume 1

Final Report

Baseline Survey of Implementation of the Nutrition-Sensitive Component (ER3) of the Programme for Improved Nutrition in Sindh (PINS)

By AASA Consulting (Pvt) Limited, Pakistan

June 10th, 2019

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CEO's Note

Malnutrition is a major issue that plagues Pakistan. The Pakistan National Nutritional Survey (PNNS) of 2011, which is the primary resource used by many sector stakeholders, details the sad story of the plight of the nutrition sector in Pakistan. According to its findings, 58% of households in Pakistan are food insecure, and 18% of women aged 15-49 years and 31% of children are underweight. The nutrition status of children under 5 years has shown no improvement in the last 46 years and anemia has worsened in pregnant and non-pregnant women. Unfortunately, the situation in the Sindh province is even more challenging. The children under five affected by stunting is rising to 50% in Sindh province and to a 63% average in rural Sindh. Under-five mortality is 104 out of every 1000 live births implying that about one out of every 10 children born will not survive until their fifth birthday. Other nutrition statistics of Sindh province are equally worrying: Low Birth Weight of 30%; 0-5 Months Exclusive Breastfeeding of 68.0%; Under Five Wasting of 14%; Woman Anemia 15-49 years of 62.0%; growing stunting inequality; etc. The Sindh province has the highest rate of child and maternal under-nutrition (respectively 40% and 62%), child anemia (73%) and child food insecurity (72%).

To help overcome this, the Rural Support Programmes Network (RSPN) is implementing the nutrition-sensitive component of the Programme for Improved Nutrition in Sindh (PINS ER3) which supports the Government of Sindh's Accelerated Action Plan (AAP) for the reduction of stunting and malnutrition to sustainably improve the nutritional status of pregnant and lactating women and of children under-5. PINS also aims to mobilise nutritionally vulnerable communities to collectively ensure that the future they face is not burdened by the brunt of malnutrition. PINS is being implemented across 10 districts of Sindh. The National Rural Support Programme (NRSP), Sindh Rural Support Organisation, Thardeep Rural Development Programme (TRDP) and Action Against Hunger (ACF) are partnering RSPN in the implementation of the PINS nutrition sensitive component.

PINS ER3 works with women's community institutions fostered by NRSP, SRSO and TRDP under the EU-funded Sindh Union Council and Community Economic Strengthening Support (SUCCESS) Programme and the Government of Sindh's People's Poverty Reduction Programme (PPRP).These community institutions have been fostered through the RSP social mobilization approach to community driven development.

The Rural Support Programmes (RSPs) have worked tirelessly to foster and capacitate community institutions of the people that enable otherwise destitute communities to take charge of their own development. Rural households are mobilised and organised into three-tiers (ie neighbourhood, village and union council) community institutions to find solutions to the problems they face. The RSPs are committed to ensuring that, across Pakistan, these institutions are sustainable, both financially and socially, and are the social pillar that can interact and increase the outreach of services provided by the state.

RSPN and RSPs are in the process of strengthening their monitoring and evaluation systems. This is being done to capture the outcomes and impacts of projects, including PINS. For this purpose, RSPN has collaborated and engaged the services of the University of Mannheim and the Center for Evaluation & Development (C4ED), Germany, for overall technical support for the overall monitoring and evaluation component of the PINS ER3 Programme. RSPN, with technical support of the University of Mannheim and the C4ED has developed an impact evaluation design for PINS ER3 in order to measure the outcomes and impact of the Programme. In this regard, RSPN is conducting a series of impact evaluation surveys, of which this document is the first, conducted by AASA Consulting (Pvt) limited, with support from technical advisors based at the University of Mannheim and the C4ED. A total of 5,047 randomly selected households participated in the survey and organised focus group discussions were held across 50 union councils in the 10 Programme districts during November 2018 to May 2019.

This baseline study for PINS ER3 is important and provides much needed data that would help in mitigating the nutrition and health status in Sindh, particularly in the context of the PINS and GoS' AAP. This baseline study is a key milestone in understanding the current nutrition condition in the Sindh province, particularly in the 10 Programme districts. The study also sets a baseline against which subsequent mid-line and end-line evaluation surveys will be done to measure and report the achievements at the close of the PINS ER3 Programme.

I want to thank all the stakeholders for supporting the production of this baseline study. I want to give a special thanks to the European Union and the Government of Sindh.

Shandana H. Khan
Chief Executive Officer RSPN.

LIST OF ABBREVIATIONS

AAP	Accelerated Action Plan
ACF	Action Against Hunger
BCC	Behaviour Change Communication
BISP	Benazir Income Support Programme
C4ED	Centre for Evaluation & Development
CAPI	Computer-Assisted Personal Interviewing
CHWs	Community Health Worker
CMWs	Community Mid Wives
CRPS	Community Resource Persons
DCM	Data Collection Module
ER3	Expected Results
EU	European Union
FAO	Food Agriculture Organization
FGD	Focus Group Discussion
GoS	Government of Sindh
GPS	Global Positioning System
HIES	Household Income and Expenditure Survey
IBM	International Business Machines
IPs	Implementing Partners
IYCF	Infant And Young Child Feeding Practices
KPIs	Key Performance Indicators
LHWs	Lady Health Worker
MAD	Minimum Acceptable Diet
MDD	Minimum Dietary Diversity
MDD-W	Minimum Dietary Diversity of Women
MDER	Minimum Dietary Energy Requirement
MICS	Multiple Indicators Cluster Survey
MMF	Minimum Meal Frequency
NARC	National Agriculture Research Centre

NGOs	Non-Government Organizations
NSER	National Socio-Economic Registry
ORS	Oral Rehydration Solution
OTP	Outpatient Therapeutic Programme
PDHS	Pakistan Demographic Health Indicator Survey
PINS	Programme for Improved Nutrition in Sindh
PLW	Pregnant and Lactating Women
PMD	Pakistan Meteorological Department
PNNS	Pakistan National Nutrition Survey
PSC	Poverty Score Card
PSLM	Pakistan Social and Living Standards Measurement Survey
RSPN	Rural Support Programme Network
SDG	Sustainable Development Goals
SDNA	Sindh Droughts Needs Assessment
SPSS	Statistical Package for Social Sciences
SRSO	Sindh Rural Support Programme
TRDP	Thardeep Rural Development Programme
U-5	Under 5
U5MR	Under 5 Year Mortality Rate
UCs	Union Council
UK	United Kingdom
UNICEF	United Nation's International Children's Emergency Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organizations

LIST OF EXHIBITS

EXECUTIVE SUMMARY

INTRODUCTION

The Programme for Improved Nutrition in Sindh (PINS) is a four-year-long health and nutrition intervention of the European Union and led by the Rural Support Programme Network (RSPN).

Its overarching aim is to sustainably improve the nutritional status of children under five years of age and of pregnant and lactating women in Sindh, in line with the second target indicator of the Sustainable Development Goal (SDG) No. 2. The PINS targets implementation in a total of ten districts of the province across 50% of its total union councils (UC). These UCs comprises the treatment group in the Programme. The Government of Sindh targets the remaining 50% of the UCs under Accelerated Action Plan (AAP), hence comprise the control group in the Programme. The selected districts are namely: Dadu, Tando Allah Yar, Tando Muhammad Khan, Jamshoro, Matiari, Thatta, Sujawal, Kamber Shahdadkot, and Shikarpur.

The project is implemented in consortium with the National Rural Support Programme (NRSP), the Sindh Rural Support Programme (SRSO) and the Thardeep Rural Development Programme (TRDP) as local implementing partners (IPs). Action against Hunger (ACF) and Food and Agriculture Organization (FAO) are also associated with the Programme as technical partners, along with C4ED Germany for technical assistance in Monitoring and Evaluation.

The PINS comprises three Expected Results (ERs). AASA Consulting (Pvt.) Limited was commissioned to conduct a baseline study in terms of ER3, the nutrition-sensitive component of the Programme. The component aims specifically to improve community-level WASH (infrastructure and behavior), and nutrition-sensitive food production system adapted to climate change in rural areas. This document provides findings of the baseline study undertaken between November 2018 and May 2019.

STUDY METHODOLOGY

The baseline survey was conducted based on the PINS (ER3) Impact Evaluation Design as developed by the C4ED, Germany, and RSPN, as part of the overall PINS impact evaluation in the selected districts. The calculated sample size for household survey constituted of 5,000 households across 50 UCs of the ten target districts. The households randomly selected for surveying was provided to AASA Consulting by the RSPN. Focus group discussions (FGDs) were also required to be conducted in the villages of the sampled areas.

Given the indicative log frame of the Programme's ER3 component, AASA Consulting designed and two primary survey instruments; a quantitative tool for household surveys and a semi-structured qualitative tool for focus group discussion (FGD) at the cluster level. In total, 5047 household surveys and 176 FGDs were conducted in the targeted UCs.

SALIENT FINDINGS OF THE PINS (ER3) BASELINE STUDY

The key findings of this baseline study are summarily presented below:

Socio-economic profile of the surveyed households

Given the sample of 5,047 households, the incidence of poverty among the treatment and control groups constitutes of ~52% and ~50% respectively. The difference between the means of the two groups is insignificant; however, it may be noted that the proportion of poor households in the treatment area is relatively higher than in the control areas.

The family size remains between an average of 7 and 8 individuals with an average gender ratio of 1.3 males to every female.

The two largest age groups comprise of individuals aged 6-24 years old (42% of the households) and those aged 25-50 years (31% of the households). The average age of the household survey respondent is 38 years old, and are recorded to be married. Majority of them are housewives (around 88%). They are often involved in undertaking productive work such as livestock rearing and input in agricultural activities, but respondents may not have correctly reported it since they don't earn any income from these activities. Nonetheless, a few of them also said being either employed or self-employed. Furthermore, they had completed only seven years of formal schooling. Similar respondent profiles were recorded among the treatment and control groups.

Sharp differences were observed among treatment and control areas on per capita monthly income and expenditure. However, according to the t-test, the difference in only per capita income is significant. The reported income comprises of Rs. 5,376, and Rs. 5,604 in control and treatment areas, respectively. Furthermore, on household expenditure, on an average around 60% of the total expenditure is reported to be spent on food items (~59% in the treatment households and ~60% in the control households). As mentioned, the mean difference in expenditure among groups is not significant.

Calorie Intake, Dietary Diversity, and Acceptable Diet

Using standard consumption module (2001), household members were estimated of consuming daily an average of 3,449 kcal per adult equivalent calories, i.e., higher than the minimum recommended daily calorie intake of 2,350 kcal per adult per day. Grains constituted more than half of the proportion (54%) of the total calorie intake, followed by oil and ghee (20%). Contribution of vegetable, fruits, dairy products, meat to the calories intake was calculated to be minimum.

Disaggregating household food expenditure by food groups as determined by FAO (2016), consumption of grains received a maximum share of household spending. It reportedly reached an estimate of Rs. 4,843[1]. It was followed by spending in beverages group (mainly tea *patti*) with an equivalent of average Rs. 3,567. Expenditures are relatively higher reported in the households in the treatment group as compared with the control group. Application of t-test clearly indicates that the mean differences in expenditures of the groups are statistically significant for the groups of pulses, dairy products, eggs, vegetables, fruits, and sweets.

In terms of dietary diversity, only ~19% of women (female respondents) were reported of receiving minimum dietary diversity (MDD), estimated based on reported food groups' consumption during the previous day or night. The proportion of MDD receiving females remains similar across the treatment and control group holding no statistical significance in the average.

Furthermore, among the age bracket of 6-23 months, only ~16% of children received a minimum acceptable diet (MAD), calculated based on the food groups consumed during the previous day or night. Statistical difference in the mean of the control and treatment groups is insignificant, but it may be noteworthy to mention that the proportion of children receiving MAD in the treatment group is relatively lower (~15%) than the proportion estimated in the control group (~17%).

Water, Sanitation, and Hygiene

Approximately 69% of the surveyed households have access to safe drinking water. The percentage of households gaining water from improved sources is relatively higher in the treatment areas (~69%) than reported in the control areas (~69%), but the difference is not statistically significant. Protected/closed hand pumps remain the most common sources of clean water (~62% of the households). Adult female members of the households were found to shoulder the responsibility of collecting/acquiring water across districts.

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[1] It should be noted that the averages may be higher reported since these also include imputed values of food items consumed from their production

In terms of water treatment practice, close to 93% of the households reported of not treating their drinking water. The prevalence is recorded to be similar among treatment and control groups. ~76% of the households believed that their drinking water was already safe for drinking, and therefore required of no treatment. However, of the households using water treatment methods, 5% reported of straining water through a cloth/fabric, 1.4% boiled water, and 0.5% used alum, sulphur, chlorine or other methods.

About the condition of sanitation in the sampled areas, 64% of the households have access to toilet/latrines, whether inside or outside the household, and only ~18% of them reported of using improved sanitation facility (i.e., toilets connected with sewer pipes or septic tanks). ~46% of households were such who were using toilets with open drainage, and ~36% used toilets with no drainage. The percentage of population having access to improved facility were lower in the treatment areas (~16%) in comparison with the control areas (~19%).

Of the households with latrine inside the household prime, only 7% of the households reported having hand washing space with soap and water. If independently assessed, water was stated to be present in only ~33% of households and soap and water to be in ~19% of households. ~4% of the households had hand washing space inside the latrine area, and ~23% had it outside the latrine area. No evident difference is reported across the treatment and control households.

Hand-washing practices were reported in ~73% of the households. 75% of them stated of washing their hands with soap, but the instance of hand washing before feeding children was recorded significantly low. Only 2% of the female respondents stated of washing their hands with soap before feeding to children. The most recorded instance was washing hands after the usage of the latrine (~24%), followed by before preparing cooking (~18%) and after cooking (~13%). A similar trend was recorded over both treatment and control groups.

Diarrhea: Awareness of Symptoms, Treatment, and Incidences

Around 35% of the surveyed respondents identified the main symptoms of diarrhea in children (watery stools), whereas 18% of the respondents identified other symptoms (stomach pain). *Nimcol* and oral rehydration solution (ORS) were identified by 72% of the respondents to be immediately given during diarrhea. However, only ~55% of the respondents were aware of preparing *nimcol (prepared at home with salt and sugar)*. Furthermore, seldom instances were recorded of respondents being aware of the importance of administrating zinc and so the combination of zinc and ORS during diarrhea. Only 3% of the respondents identified zinc as to be given immediately during the condition. No significant difference was recorded in the awareness level between control and treatment groups.

Overall, ~33% of all respondents reported the incidence of diarrhea in children under 5 years of age during the past two past week. The prevalence was similar in both the control and treatment areas. Such children were taken to a health facility by 86% of the respondents. Only zinc syrup or ORS was administered by ~7% and ~24% of all respondents (respectively), whereas a combination of zinc and ORS was administered by 7.5% of the respondents. Home-made *nimcol* was given to only ~5% of the cases. Zinc and ORS were obtained mainly from medical stores and doctors (47% and 43% respectively).

Food Production Systems (adapted to Climate Change)

Only 18% of the surveyed households owned cultivable land with an average holding of only 6 acres. Households were reported of cultivating mainly rice (36%) and wheat (34%) followed by vegetables (12%) across the sample areas. Cultivation of fruits and pulses were seldom recorded.

Lack of water for irrigation is reportedly one of the significant reasons why farmers grow a limited variety of crops. Available water is mainly used for producing staples. Furthermore, farmers were also reported to be not widely aware of the method of vegetable cultivation as well.

Deriving from the responses recorded during the FGDs, water scarcity has become a severe challenge in the matter of the recent past. UCs in Tando Allah Yar, Thatta, Sujawal, Kamber Shahdadkot, Larkana, and Matiari has been suffering from drought (or drought-like conditions). For agriculture, most of the sample areas source their water for irrigation from non-perennial canals, of which receipt frequency and abundance have reduced substantially. The reasons reported cover both the issues about poor water management and overall dryness in the region due to lack of rainfall. Farmers with better economic status have got tube wells in addition to canal irrigation. However, poor farmers still depend on canal irrigation. Sampled treatment UCs in Dadu requires significant attention as irrigation continues to be depended on the rainfall mostly. No way as such was stated in the survey otherwise for countering water scarcity across the districts. When agriculture is not a possibility during the times of drought, FGD participants stated that locals would opt to temporarily migrate to urban centers for employment or sell off their livestock for subsistence earning.

It is important to understand that floods are not a prevalent condition in the Programme districts, according to the responses recorded in FGDs. Most of the UCs have suffered from floods in 2010-2011 or 2015. The latter is the case for a few UCs in Larkana. Exception exists only in the UCs of Dadu and Thatta where floods reportedly occur every year when rain fall occurs. Only a few respondents reported of building small barriers to protect the area from water flow, but no measure was widely adopted by the locals to minimize the impact of floods.

Furthermore, related to climate change, increase in heat is another primary concern found among farmers for agriculture. FGDs informed that significant proportion of farmers are not aware of the ways for protecting crops from heat. Technique of tunnel farming reducing the heat intensity was seldom stated.

It is essential to realize that farmers' capacity to deal with climate change and other challenges to crop cultivation should not be viewed in isolation; it is vital to be seen in the overall context of their standing in the adoption of more considerable changes in the agriculture sector. As widely reported during the FGDs, farming in the targeted areas of the Programme is somewhat mechanized such as ploughing and leveling through tractors. Threshing is done entirely by using multi-crop threshers now in the fields. Picking and harvesting of the crop is still done manually. Females in the households play an integral role in this process as they are widely involved for vegetables and cotton picking, and likewise. Threshers, however, are generally common for threshing, but otherwise the use of machines and other advanced techniques are not largely adopted.

Nonetheless given the overall spell of climate change in the region, kitchen gardening is one of the ways adopted to improve food security experience at the level household and communities. In the Programme target areas, only ~7% of the sampled households had separate cultivable space available inside or adjoined to their houses for gardening. The percentage of such households is almost twice in the treatment (9.5%) as compared with the control group (~5%). Of them at overall level, only ~16% of the households reported of cultivating fruits or vegetables, mostly common in the treatment areas. The method of cultivation adopted for kitchen gardening remains predominantly through in ground sowing of seeds than in the pots.

CONCLUSION

The following findings of the baseline study are seen in response to the PINS (ER3) performance indicators, as stated in the Programmatic log-frame:

1. Households surveyed spend an augmented total of Rs. 21,000 approximately on food. The range of expenditure is between Rs. 20,000, and Rs. 22, 000 in the control and treatment areas, approximately;

2. On an average 19-20% of women age 15-49 years from the households surveyed receive the minimum dietary diversity in the treatment and control areas, compared to 27% under PINS district nutrition profiles;

3. On an average around 16% of children in the age bracket of 6-23 months receive the minimum acceptable diet (~15% in the treatment areas and ~17 in the control areas), compared to 13% given in PINS district nutrition profiles;

4. Approximately 32-33% of children under 5 years old suffered from pediatric diarrhea in the control and treatment areas, compared to 28% reported in MICS 2014;

5. Approximately 69% of households have access to safe drinking water in the control and treatment areas, compared to 90.5% as stated in MICS 2014;

6. Only 2% of households in both treatment and control areas use water treatment method, compared to 12.8% recorded in MICS 2014;

7. Around 18% of households have access to an improved sanitation facility, in contrast to 72.8% as provided in MICS 2014. In the treatment areas, such households comprise 16%, and in the control areas comprise 19%;

8. Only 7% of households across the treatment and control areas have hand washing facilities with soap and water, in contrast to 41% recorded in MICS 2014;

9. Only 2% of mothers and caregivers wash their hands before feeding children;

10. Around 3-4% of households in treatment and control areas reported of having demonstration sites for poultry farming or livestock in their localities;

11. Around 16% of households in treatment and control areas reported of practicing kitchen gardening;

12. There are no such agricultural techniques adapted by small farmers in the treatment and control areas against climate change. Tube well is adopted as a way to counter water scarcity, however, only prevalent among big farmers; and

13. Similarly, no resilient measures are widely adapted to counter the impact of floods and drought. Seldom instances reported include the building of water barriers for preventing an excess of water, and installing tube wells and boring to prevent water shortage during the dry period.

CHAPTER 1: INTRODUCTION

In November 2018, the Rural Support Programmes Network (RSPN) awarded a contract for undertaking a baseline study on the implementation of the nutrition-sensitive component (ER3) of the Programme for Improved Nutrition in Sindh (PINS) to AASA Consulting (Pvt.) Ltd. This report documents the findings of the baseline study undertaken during the period of November 2018 to May 2019 of all ten target districts, and their constituent villages and Union Councils (UCs).

1.1   STUDY BACKGROUND

The Programme for Improved Nutrition in Sindh (PINS) is a four-year long project of the European Union (EU) led by the RSPN in ten target districts of Sindh in consortium with several implementing partners (IPs). The target districts are Dadu, Jamshoro, Tando Mohammad Khan, Tando Allah Yar, Shikarpur, Larkana, Kamber Shahdadkot, Sajawal and Thatta. As highlighted in Exhibit 1.1, this constitutes the districts situated predominantly on the western border of Sindh.

EXHIBIT 1.1
GEOGRAPHIC COVERAGE OF 10 TARGET DISTRICTS OF PINS

PINS aims to sustainably improve the nutrition status of children under five years of age, and of Pregnant and Lactating Women (PLW) in Sindh in line with the second target indicator of the Sustainable Development Goal No.2. It plans to develop a socio-health structure "to capacitate the Government of Sindh (GoS) so that it may efficiently implement its nutrition multi-sectorial policy while providing direct assistance to significantly and rapidly reduce malnutrition in rural Sindh".

The Programme is implemented in 50% of UCs (194 out of 388) in the aforementioned target districts. These UCs constitute the treatment group in the Programme. The remaining 50% of UCs, categorized as the control group, are covered under the Accelerated Action Plan (AAP) of the GoS.

RSPN's technical partners on this project include Action Against Hunger (ACF), the National Agriculture Research Centre (NARC), and the Food and Agriculture Organization (FAO). Furthermore, Thardeep Rural Development Programme (TRDP) is engaged as the IP in the districts of Dadu and Jamshoro; National Rural Support Programme (NRSP) in Tando Muhammad Khan, Tando Allah Yar, Thatta, Matiari, and Sujawal; and Sindh Rural Support Programme (SRSO) in Larkana, Shikarpur, and Kamber Shahdadkot.

The Programme framework comprises of three Expected Results (ER):

- ER1: Improved capacity of the Government of Sindh and other stakeholders regarding nutrition-related policy/strategy development, coordination, implementation, adaptive research, data collection, analysis, and communication;

- ER2 (nutrition-specific): Treatment of malnutrition in health facilities supported by an outreach programme to screen children, a referral system for their follow-up, and a Behaviour Change Communication (BCC) programme for improved childcare, sanitation, and feeding practices;

- ER3 (nutrition-sensitive): Improved community-level WASH (infrastructure and BCC) and nutrition-sensitive food production systems adapted to climate change in rural areas.
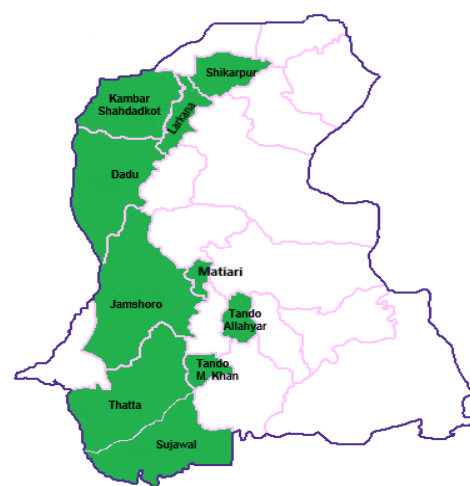
The purpose of the study was to gauge:

a) Current multi-sectoral malnutrition condition in the population with respect to nutrition sensitive expected result component (ER3) of the Programme, i.e. "Improved community-level WASH (infrastructure and behavior change) and nutrition sensitive food production systems adapted to climate change in rural areas"; and

b) Serve as a primary reference to measure impact of the Programme via subsequent mid-line and end-line studies.

1.2   SCOPE OF WORK

The scope of the work as stated by the RSPN for this study included the following:

1. Develop, translate, and pre-test household and village questionnaires, focusing on child and maternal nutrition, water and sanitation, and environmentally sustainable agriculture at both the household and village levels;

2. Develop an Android-based Data Collection Module (DCM) to be used in household survey activities in the aforementioned ten (10) targeted districts of Sindh;

3. Hire and train (including the development of Training and Instructions Manual) of field personnel (including Field Supervisors and Enumerators), who would be tasked with conducting interviews at the household and village levels;

4. Conduct field research in the selected union councils

5. Monitor field data collection and data quality assurance including progress and results monitoring;

6. Data analysis;

7. Drafting and submission of Baseline Survey Report.

1.3   REPORT STRUCTURE

This Baseline Survey Report is divided into five chapters.

The first chapter comprises of the introduction and scope of work of the Project. It is followed by Chapter 2, which details the methodology of the study, its data management mechanisms and quality assurance protocols, and challenges faced by AASA Consulting's project team. Chapter 3 details the finding of the baseline study specified by treatment and control groups UCs, followed by Chapter 4 documenting impact assessment of the Programme across the components of relevance, efficiency, effectivity, and sustainability of its interventions. In view of the assessment, the following Chapter 5 highlights suggestions for way forward that may improve the Programme's initiatives and implementations strategies. Finally Chapter 6 summarizes the major conclusions of the study, disaggregated by expected outcomes and key performance indicators of PINS (ER3) as provided in the relevant log-frame.

CHAPTER 2: STUDY METHODOLOGY

The baseline survey was conducted based on the PINS (ER3) Impact Evaluation Design as developed by the C4ED, Germany[2] and RSPN, as part of the overall PINS impact evaluation in the target districts. AASA Consulting was responsible to design and develop the baseline survey instruments based on the Evaluation Design[3], and undertake data collection and data analysis.

Two primary survey tools were developed and deployed at two administrative levels:

▪ Quantitative survey at the household level using a Computer-Assisted Personal Interviewing (CAPI) module; and

▪ Semi-structured qualitative focus group discussion (FGD) at the village level.

2.1   HOUSEHOLD SURVEY

The household survey aimed to explore and study nutrition conditions of target households (particularly with respect to children under 5 years of age and mothers) from a multi-dimensional perspective covering areas such as socio-economic demographics of the households, nutrition-sensitive components of water, sanitation, and hygiene (WASH), agriculture, livestock, and food security of the households.

Given the indicative log-frame of the Programme's ER3 component (attached herewith as Annexure 1), the household survey covered the following Key Performance Indicators (KPIs).

EXHIBIT 2.1
INDICATORS FROM INDICATIVE LOG FRAME, PROGRAMME FOR IMPROVED NUTRITION IN SINDH (PINS) – ER3
COVERED IN BASELINE HOUSEHOLD SURVEY

Intervention Logic	**OUTCOME:** To contribute in efforts of Government of Sindh (GoS) in improving food diversity and reducing water borne diseases while implementing climate resilient nutrition sensitive interventions in programme target areas of Sindh.	ER1: Improved community-level climate resilient WASH infrastructures including behaviour change in programme target areas of Sindh.	ER2: Improved community-level nutrition sensitive food production systems adapted to climate change in in programme target areas of Sindh.
Indicators	1. Percentage of expenditure dedicated to a minimum of four food groups (outside staples) by target households 2. Percentage of women, age 15-49 years from targeted population, who consume at least 5 out of 10 defined food groups of Minimum Dietary Diversity-W 3. Percentage of children (age 6-23 months) that consume a minimum acceptable diet 4. Percentage of incidence of diarrhea in U-5 children in programme target areas	5. Percentage of target population using safely managed drinking water sources 6. Percentage of programme-targeted population who use an appropriate water treatment method 7. Percentage of programme target of population using an improved sanitation facility 8. Percentage of program target households with a specific place for hand washing with water and soap 9. Percentage of mothers/care-givers in targeted villages who practice hand washing before feeding children	10. Number of Villages with at least one integrated farmer field school and/or community-managed demonstration sites for poultry, livestock or aquaculture 11. Number of target households (0-23 on PSC) who have established kitchen garden in programme villages

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[2] C4ED has been engaged by the RSPN to provide overall technical support in monitoring and evaluation. As such, C4ED is responsible for designing of impact evaluation strategy, design and sampling strategy for the project.
[3] The Impact Evaluation Design document is attached in Annexure 2 of the report.

The questionnaire was divided into 12 modules illustrated in Exhibit 2.2 (and is attached herewith as Annexure 3).

The primary respondent of the household survey were females of the household, particularly mothers of children under 5 years of age. The rationale for respondent selection was to gain insight from women on nutrition conditions of women (hygiene and their dietary diversity) along with their children under 5 years old (on breastfeeding, child diet, and prevalence of diarrhea).

> **Exhibit 2.2**
> **PINS BASELINE STUDY HOUSEHOLD SURVEY MODULES**
> **Section 1**: Family Roster
> **Section 2**: Housing Unit Characteristics
> **Section 3.1**: Availability & Quality of Drinking Water
> **Section 3.2**: Water Treatment
> **Section 4**: Latrine/Toilet
> **Section 5**: Hygiene & Cleanliness
> **Section 6**: Menstrual Hygiene
> **Section 7**: Diarrhea
> **Section 8**: Food Security
> **Section 9**: Child Diet
> **Section 10**: Agriculture
> **Section 11**: Livestock
> **Section 12**: Household Income Expenditure

One female respondent per household was chosen for the survey, based on the following methodology:

- Priority was given to mother with children in the bracket of 6-23 months of age in the household.

- In case such a respondent was not found/available, a mother with children in the age bracket of 24-59 months was required to be selected.

- In case of presence of more than one eligible mothers in household, the mother of the youngest child was given priority.

- If both options were not available, any pregnant woman were preferred.

- In case there was no pregnant woman in household, precedence was given to the youngest married women in the age bracket of 15-49 years.

- In the scenario where the latter criterion did not apply, any woman regardless of marital status and age was surveyed.

No cases were encountered where female below 15 years had to be surveyed. Neither were there any cases where households did not have female members.

EXHIBIT 2.3
FIELD TEAM CONDUCTING HOUSEHOLD SURVEY WITH U5 CHILDREN MOTHER IN TANDO ALLAH YAR DISTRICT

EXHIBIT 2.4
FIELD TEAM CONDUCTING HOUSEHOLD SURVEY WITH U5 CHILDREN MOTHER IN DADU DISTRICT

Household Survey Sample Size

The survey sample size was determined by the C4ED as part of the overall sampling framework they developed for the survey[4]. Accordingly, the survey was conducted in 5,047 randomly selected households in 50 selected UCs (interviewing a minimum of 100 households per UC) against the target of 5,000 households

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[4] Detail description on the survey sampling framework is provided in the Impact Evaluation Design document attached in Annexure 1 of this Report.

distributed across the target districts. The survey was conducted from the list of selected sample households already drawn by C4ED.

The sample equally catered to control and treatment households for the purpose of impact evaluation of PINS (ER3) in comparison with AAP. The treatment group comprised of households in the UCs served by PINS, whereas the control group comprised of households in the UCs served by AAP. The number of households surveyed disaggregated by the treatment status is illustrated in Exhibit 2.5.

EXHIBIT 2.5
HOUSEHOLD SAMPLE SURVEYED

Districts	Treatment UCs	Control UCs	Total Randomly Selected UCs Surveyed	Treatment HHs	Control HHs	Total Randomly Selected HHs Surveyed
Dadu	4	4	8	400	400	**800**
Jamshoro	2	2	4	201	200	**401**
Kamber Shahdadkot	4	4	8	406	404	**810**
Larkana	3	3	6	302	302	**604**
Matiari	2	2	4	200	200	**400**
Shikarpur	2	2	4	201	202	**403**
Sujawal	2	2	4	209	208	**417**
Tando Allah Yar	2	2	4	205	203	**408**
Tando Muhammad Khan	2	2	4	202	200	402
Thatta	2	2	4	200	202	402
Grand Total	**25**	**25**	**50**	**2526**	**2521**	**5047**

As per the sampling framework, CE4D employed a two-stage sampling process in each district to select the number of UCs and households for the survey with overall statistical significance level of 5%, intra-cluster correlation of 0.1, and power of 80%. The sampling process dictated the number of UCs to be in proportion with the total number of UCs in a district followed by an equal proportion of households on random from the target Poverty Score Card (PSC) category, i.e. 0-23.

AASA Consulting was thereafter provided the list of selected households (including the names of UCs, revenue villages, and household details) sampled using the given approach, and was tasked with tracking the identified households to collect the necessary survey data. A systemic process of household marking was also followed for record and monitoring purposes, as illustrated in Exhibit 2.6.

EXHIBIT 2.6
DOOR MARKING AT HOUSEHOLDS AFTER CONDUCTING THE SURVEY

2.2 VILLAGE-BASED FOCUS GROUP DISCUSSIONS (V-FGDS)

The FGDs constituted the qualitative component of the study. It aimed to explore nutrition-sensitive practices at village level across UCs (treatment and control), and use it to substantiate the quantitative findings recorded at the household level, particularly for the components of hygiene, food diversity, and food expenditure. This tool also targeted the study of macro-food security indicators that affect food intake and overall nutrition condition of the population. It included components such as climate change and its impact in the villages, modernization in the agriculture, and livestock practices.

The KPIs of the indicative log-frame of the PINS ER3 component covered in the V-FGD questionnaire are provided in Exhibit 2.7.

EXHIBIT 2.7
INDICATORS FROM INDICATIVE LOG FRAME PROGRAMME FOR IMPROVED NUTRITION IN SINDH (PINS) –ER 3 COVERED IN THE VILLAGE FOCUS GROUP DISCUSSION CHECKLIST

Intervention Logic	**Outcome:** To contribute in efforts of Government of Sindh (GoS) in improving food diversity and reducing water borne diseases while implementing climate resilient nutrition sensitive interventions in programme target areas of Sindh.	ER1: Improved community-level climate resilient WASH infrastructures including behaviour change in programme target areas of Sindh.	ER2: Improved community-level nutrition sensitive food production systems adapted to climate change in in programme target areas of Sindh.
Indicators	1. Percentage of expenditure dedicated to a minimum of four food groups (outside staples) by target households	2. Percentage of target population using safely managed drinking water sources 3. Percentage of programme-targeted population who use an appropriate water treatment method 4. Percentage of programme target of population using an improved sanitation facility	5. Number of Villages with at least one integrated farmer field school and/or community-managed demonstration sites for poultry, livestock or aquaculture 6. Number of target households (0-23 on PSC) who have established kitchen garden in programme villages 7. Proportion of targeted small farmers (disaggregated data by gender) implementing new agriculture techniques adapted to climate change 8. Number and type of climate resilient measures for mitigating floods and drought impacts at local level

In perspective to the log frame, the FGD questionnaire was organized into six major themes, outlined in Exhibit 2.8 (the Village FGD questionnaire is attached to this Report as Annexure 4).

EXHIBIT 2.8
PINS VILLAGE BASED FOCUS GROUP DISCUSSIONS KEY THEMES

1. Agriculture	2. Droughts
3. Floods	4. Plantation
5. Village Hygiene	6. Consumer Basket Prices

Focus Group Discussion Sample Size

FGDs were conducted in clusters at the level of revenue village in all the sampled UCs in the target districts. Each cluster constituted of three to four revenue villages found in the sample list. The primary participants of the village-based FGDs were male members of the villages. The number of FGDs completed in each of the ten districts is illustrated in Exhibit 2.9:

EXHIBIT 2.9
VILLAGE BASED FOCUS GROUP DISCUSSION (V-FGDs)

District	Number of FGDs completed
Dadu	32
Jamshoro	18
Kamber Shahdadkot	23
Larkana	19
Matiari	7
Sajawal	15
Shikarpur	16
Tando Allah Yar	17
Tando Muhammad Khan	13
Thatta	16
Total	**176**

EXHIBIT 2.10
VILLAGE BASED FOCUS GROUP DISCUSSIONS IN TARGET DISTRICTS WITH MALE MEMBERS

2.3 ADHERENCE TO QUALITY ASSURANCE PROTOCOLS

During the data collection phase of the study, a three-tier monitoring mechanism was adopted to ensure the quality of data collected.

The first tier comprises daily back-check of household survey forms by the District Supervisors using the CAPI method. Supervisors (via the monitoring form attached in Annexure 5 of the document) back-checked and validated at least one survey form per enumerator on a daily basis. Following the receipt of monitoring forms, daily desk review of monitoring and household survey forms was undertaken at AASA Consulting's Karachi head office to identify any data gap or falsification. The findings of daily monitoring was shared with District Supervisors on a regular basis through the Field Operations Manager.

The second tier comprised of monitoring visits by the Project's senior core staff. The Survey Specialist Lead and Field Coordinator undertook several visits across districts to ensure the authenticity of data collection

and take notice of the challenges faced in the fields. The Field Coordinator also validated the District Supervisor's monitoring forms on a random basis to validate the data collection.

The third tier characterized process monitoring at the level of District Supervisors where they monitored the overall process of data collection ensuring field protocols and ethics were properly followed by enumerators.

At regular intervals of field work, the RSPN team was also engaged in the field monitoring activities. RSPN's representative along with the local IP's district officers would review the field teams' work plan and track their activities on ground through IP's community resource persons or local officers.

EXHIBIT 2.11
DAILY MONITORING EXERCISE CONDUCTED BY DISTRICT SUPERVISORS WITH FEMALE RESPONDENTS OF THE HOUSEHOLD SURVEY

EXHIBIT 2.12
DOOR MARKING BY DISTRICT SUPERVISORS AFTER CONDUCTING DAILY MONITORING CHECKS

2.4   DATA MANAGEMENT AND ANALYSIS

2.4.1   QUALITATIVE SURVEYS

FGDs were conducted in local languages. The data recorded was translated into Urdu and entered into the Excel sheets by data entry operators and editors under the supervision of research analysts and the Team Lead. The translation was carefully undertaken to enable the analysts to appreciate the verbatim and idioms of respondents on particular issues and comments so that strongly held opinions, variations in language, concerns, and any compelling issues of the different groups were adequately identified.

The interpretation of FGDs was at several levels of analysis. Attention was given to the way words were spoken by individuals and the key points made by a group as a whole. In addition, the main ideas that emerged across all the interviews were examined for similarities and differences. This assisted in identifying knowledge and attitudes about nutrition, interest in the utilization and provision of services, and sources of information.

2.4.2   QUANTITATIVE SURVEYS

Given the data collection of household survey was undertaken through CAPI methods, mandatory fields check for extreme values and responses codes were pre-designed and already incorporated in the survey tool. The data received was analyzed using IBM SPSS, a reputed statistics software.

Descriptive statistics, frequencies, and proportions were computed based on the respondents' socio-demographic and household characteristics. The mean, median, and standard deviation were calculated for

the continuous variables and proportions for the categorical variables. Data analysis addressed the survey objectives of reporting key findings on RSPN indicators according to the KPI indicator framework.

2.5   MANAGING CHALLENGES FOR CONDUCTING MID-LINE AND END-LINE SURVEYS

Given the experience of rolling out of the baseline survey, following action points can be carried out to improve the efficiency of other PINS evaluation surveys.

Foremost is the realization of the capacity of survey field teams to locate target households in the study sample areas, independent of the assistance from local RSPs. During the baseline survey, the survey field teams were required to closely coordinate with the local RSPs to locate villages and urban settlements, and track sample households. The coordination became a very time consuming matter, but it familiarized the field staff with the local geography of the sampled areas. The supervisors can be engaged for future evaluation surveys phases as well. This will ease the tracking of the surveyed households in future assignments.

Furthermore, a database of contacts of resource persons, who were independently identified during the survey, is developed. These resource persons—can be further contacted if any difficulty is faced while identifying the surveyed households. It provides the field intelligence required to undertake smooth data collection during other assignments and foresee and counter challenges related to field operations, of any nature.

Developing effective field monitoring indicators and tools would also be an important survey implementation strategy. During the baseline study, Programme-specific data collection monitoring indicators were developed to regulate and track the survey activities. It was effective and shared field progress on a daily basis. The indicators can be used as the basis for further enhancement and improving monitoring mechanism for mid-line and end-line evaluation studies.

The CAPI tool was Android-based and was launched through the Survey CTO platform. The application

> **EXHIBIT 2.13**
>
> **CHALLENGES FACED DURING THE BASELINE STUDY**
>
> **Scattered Households:** In sample UCs, there were *dehs* (i.e. revenue village) where household sample size was only 1 to 4 households. Such *dehs* had a small sample size, and were also farther apart from one other. This increased traveling time which reduced per day productivity.
>
> **Difficulty In Tracking Households:** The GPS and the village name provided in the sample list were not always accurate, hampering field teams in locating households efficiently. Moreover, the sample list constituted names of central village/settlement, whereas households were located in the proximity of 1-5 kilometers from the central village.
>
> **Limited Knowledge Of Implementing Partners Community Resource Persons (CRPS):** The CRPs assigned to support AASA Consulting's field teams were found to have limited knowledge of the settlements and localities. To address this issue, local resources were involved.
>
> **Difficulty In Retaining Field Staff In Some Districts Due To NSER-BISP Rollout**: Due to the recent initiation of the National Socio-Economic Registry-Benazir Income Support Programme (NSER-BISP), enumerators and supervisors of certain field teams (particularly in Jamshoro and Tando Muhammad Khan) resigned. Even the lists of enumerators and supervisors in the supplementary pool of field staff were exhausted. As a consequence, the Project Team had to undertake repetitive processes of hiring new field team personnel.

developed for the household questionnaire can also be useful for upcoming evaluation surveys for the Programme. The usage of Microsoft Power Business Intelligence can be an addition to later evaluation surveys to create an online digital dashboard to effectively track progress of survey activities and implement course correction as and when required.

We understand that RSPN, PINS (ER3) will have follow up research studies for mid-line and end-line evaluation. AASA Consulting will be keen on participation in these research studies, as the firm possesses experience of the baseline study that can be leveraged and improved for upcoming study phases.

2.6   UNDERSTANDING HEALTH AND NUTRITION STATUS OF MOTHERS & CHILDREN UNDER 5 YEARS OLD IN SINDH

The 6th Population and Housing Census 2017 has recorded an increase of 57% in the country's population since the last census (held in 1998). The population in Sindh has also increased by 57%[5]. Given the growth and present urban-rural divide in the province, it is essential to explore and understand availability, access, and utilization of health and hygiene resources by citizens to assess their quality of health and living.

Approaching 2030, the renewed focus of governmental and international (multilateral and bilateral) organizations working in Pakistan is gaining impetus towards implementing interventions that improve health and nutrition of the population that is suffering from malnutrition and food insecurity. These interventions envision "ending hunger, achieving food security and improving nutrition, and promoting sustainable agriculture"[6] as part of Sustainable Development Goals (SDGs) Goal 2.

According to the Pakistan National Nutrition Survey (PNNS) 2011, the state of nutrition of children under five years of age is grim: 43.7% of children in this age group are stunted, 15.1% suffer from wasting, and 31.5% are underweight. The conditions are recorded to be even more severe dire in rural areas, as compared to urban areas[7].

At the provincial level, Multiple Indicators Cluster Survey (MICS) 2014 for Sindh reveals that 48% of children under five years of age to be moderately stunted and 15.4% to be moderately wasted. Moreover, 24.4% and 3.6% of children are severely stunted and wasted, respectively[8]. The nutritional indicators are highlighted in Exhibit 2.14, which indicate that a higher percentage of children under five year from rural areas of Sindh suffer from malnutrition than those living in the urban areas.

EXHIBIT 2.14
NUTRITION STATUS OF CHILDREN UNDER 5 YEARS OLD IN SINDH

	Underweight			Stunted			Wasted		
	Moderate (-2SD)	Severe (-3SD)	Mean SD	Moderate (-2SD)	Severe (-3SD)	Mean	Moderate (-2SD)	Severe (-3SD)	Mean
Overall	42.0	17.0	1.8	48.0	24.4	1.9	15.4	3.6	0.9
Urban	32.7	10.5	1.5	37.2	15.5	1.5	13.5	2.8	0.9
Rural	50.0	22.6	2.0	57.3	32.2	2.3	17.0	4.3	1.0
SOURCE: MICS SURVEY 2014									

Malnutrition results in high prevalence of infant mortality rate affecting child survival[9]. At national level, under-5 year mortality rate (U5MR) records 75 deaths per 1000 live births[10]. Provincial average of U5MR in Sindh hits above the national average, recording an average of approximately 82 infant deaths per 1000 live births and the 104 deaths per 1000 live births for under 5 years old children[11]. Three quarters of the children die from moderately malnourished-showing no outward sign of their vulnerability[12].

Mothers, like children, also suffer from malnourishment. Overall, in Pakistan, 14.1% women are found to be malnourished and 33.4% to be overweight. Micronutrient deficiencies are quite prevalent: 51% of pregnant

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[5]Province wise Provisional Results of Censes (2017), Pakistan Bureau of Statistic
http://www.pbs.gov.pk/sites/default/files/PAKISTAN%20TEHSIL%20WISE%20FOR%20WEB%20CENSUS_2017.pdf
[6] https://unstats.un.org/sdgs/report/2017/goal-02/
[7] National Nutrition Survey (2011), Planning and Development Division, Government of Pakistan.
[8] Multiple Indicator Cluster Survey Sindh 2014 (2015), Planning and Development Department, Government of Sindh, Ministry of Science and Technology, Government of Pakistan, United Nations Children's Fund.
[9] ibid
[10] https://data.unicef.org/country/pak/
[11] Multiple Indicator Cluster Survey Sindh 2014 (2015), Planning and Development Department, Government of Sindh, Ministry of Science and Technology, Government of Pakistan, United Nations Children's Fund.
[12] ibid

women were found to be anemic, 37% to be iron deficient, 46% to be Vitamin A deficient, 47.6% to be zinc deficient and 68.9% to be vitamin D deficient. Similar results are recorded for non-pregnant women[13].

There are various reasons attached to malnutrition, mainly: Sub-optimal diet (including inadequate breastfeeding for young babies); lack of access to water, sanitation and hygiene; poor quality of health services, education and income[14]. In light of ER-3 component of PINS, we shall explore the former two in turn in the following section:

Suboptimal Diet Intake and Food Insecurity:
In developing countries like Pakistan, people do not have adequate intake of food both in terms of enough quantity and enough substances/nutrients necessary for growth[15]. More than a quarter of the population in Pakistan is unable to meet recommended minimum dietary energy requirement (MDER) by Food and Agriculture Organization (FAO) in 2017 i.e. 1910kcal/day/adult equivalent[16]. Only 8.9% of children population under 2 year old receive minimum acceptable diet (MAD) with only 14.2% children receiving dietary diversity (MDD)[17].

Dwelling upon longitudinal data over the period of 2004 to 2016, studies have revealed that in spite of increasing per capita dietary energy supply, average per capita dietary consumption has been in decline[18]. The very imbalance between the dietary energy supply and consumption determines the population to be living in the condition of food insecurity.

FAO defines food security as a state of existence where "all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life"[19]. In response to which food insecurity is defined as the state or condition when people do not have physical and (socio) economic access to food. Considering this context, overall 30-37% of population in Pakistan is found out to be food insecure[20]. The trends have been fluctuating over years but more food insecurity has been found in urban areas (29-47%) and relatively lesser in rural areas (26-32%) due to the latter's stronger connection with the agricultural activities[21]. Following details out two primary causes of food insecurity in the country in general and in province in particular:

Vulnerable Food Availability: Natural Disasters and Climate Uncertainty
Similar to many developing countries, Pakistan has been vulnerable to natural disasters/shocks like earth quake in 2005, floods in 2010, 2011, and 2014, and security crisis due to which conditions of food availability and access to country population across rural and urban areas become troublesome.

Sindh in particular has not been under any major floods since 2015, but the drought/drought like condition[22] have been prevalent since 2013[23]. This adversely affects food security and livelihood conditions in the province as a consequence to which Sindh along with Balochistan experiences higher level of food insecurity[24].

Sindh Drought Needs Assessment (SDNA) records that many districts are under moderate to severe drought-like conditions due to very low or no precipitation and persistent dry conditions. They do not have access to canal water and depend largely on rainfall for agriculture. Arid zones in the western side of the province including districts such as Jamshoro and Dadu got most affected by droughts in duration of 2013-2015 where

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[13] National Nutrition Survey (2011), Planning and Development Division, Government of Pakistan.
[14] Global Nutrition Report: Shining a light to spur action on nutrition (2018). Bristol UK: Development Initiatives
[15] ibid
[16] Food Insecurity in Pakistan: A region-wise analysis of trends (2018), Adeeba Ishaq et al, Pakistan Institute of Development Economics.
[17] Multiple Indicator Cluster Survey Sindh 2014 (2015), Planning and Development Department, Government of Sindh, Ministry of Science and Technology, Government of Pakistan, United Nations Children's Fund.
[18] The State of Food Insecurity in Pakistan: Future challenges and coping strategies (2010); M. Ahmed et al, The Pakistan Development Review.
[19] http://www.fao.org/3/al936e/al936e00.pdf
[20] Food Insecurity in Pakistan: A region-wise analysis of trends (2018), Adeeba Ishaq et al, Pakistan Institute of Development Economics.
[21] ibid
[22] Drought is defined by Pakistan Meteorological Department as "an extended period of months or years when a region notes a deficiency in its water supply. Generally, this occurs when a region receives consistently below average precipitation". http://www.pmd.gov.pk/ndmc/index_files/Page912.htm
[23] Sindh Drought Needs Assessment Report (2019), International Organization for Migration.
[24] Food Insecurity in Pakistan: A region-wise analysis of trends (2018), Adeeba Ishaq et al, Pakistan Institute of Development Economics.

the conditions have worsened since July 2018. The rain anomalies also increased since the past year[25]. Pakistan Meteorological Department notes that rainfall was largely deficient, below normal, in Sindh in 2018[26]. These conditions of limited availability of water and lack of rainfall have resulted into change in crop cultivation and crop production pattern in the province[27]. In comparison with 2016-2017, households overall in 2017-2018 reduced the cultivation area of wheat by 17%, rice by 70%, cotton by 16%, millet by 38% and pulses by 45%. Whereas the areas for sorghum, sesame and chilies increased by 26%, 30%, and 15% respectively. Thereby, crop production of wheat, rice, cotton, millet and pulses reduced by 23%, 35%, 18%, 83%, and 95% respectively. Furthermore, cereal production used for household own consumption has also been noted to be in decline considerably[28].

One of the most commonly used coping strategy, employed particularly in the rural areas has been selling out of livestock to meet dietary and monetary needs. This results in loss of livestock making them further vulnerable to not only to food but also to economic shocks. Limited adaptive capacity to manage environmental disasters adversely affects both the agricultural productivity and local food security in Pakistan.

Socio-Economic Accessibility-Poverty Trap
Sufficiency of socio-economic accessibility to food is a major factor limiting to food security and intake of optimal diet determined by population's differences in landholding, employment and education[29] impacting household incomes. 43% of Sindh population is recorded to be multi-dimensionally poor (76% in rural areas and 11% in urban areas). Poor are always vulnerable to changes in crop output or price shocks in economy making them disabled to catch up with high food prices[30]. The effects of inflation period that struck Pakistan in 2008 along with energy crisis and shut down of industries have remained in the population at national level reducing their purchasing power by 50%[31]. It is despite of the fact 34.8% of total household expenditure is spend just on food expenses[32]. Analysis of longitudinal data series of HIES from 2005-2016 has shown that the bottom quintile of the population is highly food insecure which impacts their MDER intake and thereby their productivity. The adverse impact on their productivity limits their income generation thereby pushing them into the poverty trap[33].

Limited Improved Water, Sanitation and Hygiene (WASH) Practices
Water, sanitation and hygiene (WASH) is an essential component in strategies combating malnutrition[34]. Poor WASH conditions hold direct correlation with the spread of infectious diseases such as diarrhea making it an endemic cause for undernourishment. In low income developing countries, diarrhea is the second leading cause of morbidity and mortality, particularly among children under 5 years old[35]. Each year diarrhea kills around 500,000 children[36]. According to MICS 2014, 28.4% of children under 5 years old were noted be suffering from diarrhea[37]. The condition can be prevented from the provision of safe drinking water, sanitation and adequate hygiene.

Use of Improved Sources of Drinking Water
Safe drinking water as defined by Joint Monitoring Programme for Water Supply at United Nation's International Children's Emergency Fund (UNICEF) and World Health Organizations (WHO) constitutes a five-tier household drinking water services ladder, namely: safely managed, basic, limited, unimproved, and no service. Safely managed characterizes "drinking water from an improved source which is located on

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[25] Sindh Drought Needs Assessment Report (2019), International Organization for Migration.

[26] http://www.pmd.gov.pk/cdpc/monsoon2018rainfall.pdf

[27] Other reasons recorded in SDNA 2019 for change in crop production and crop cultivation pattern includes unavailability or lack of access to seeds/other agricultural inputs, financial constraints, and loss/lack of draught animals.

[28] ibid

[29] Food Insecurity in Pakistan: A region-wise analysis of trends (2018), Adeeba Ishaq et al, Pakistan Institute of Development Economics

[30] The State of Food Insecurity in Pakistan: Future challenges and coping strategies (2010); M. Ahmed et al, The Pakistan Development Review.

[31] Food Insecurity in Pakistan: A region-wise analysis of trends (2018), Adeeba Ishaq et al, Pakistan Institute of Development Economics

[32] https://foodsecurityindex.eiu.com/Country/Details#Pakistan

[33] Food Insecurity in Pakistan: A region-wise analysis of trends (2018), Adeeba Ishaq et al, Pakistan Institute of Development Economics

[34] The Impact of Water, Sanitation and Hygiene on Key Health and Social Outcomes: Review of Evidence (2016), Jaonna Esteves Mills & Oliver Cumming; United Nations Children's Fund.

[35] ibid

[36] https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease

[37] Multiple Indicator Cluster Survey Sindh 2014 (2015), Planning and Development Department, Government of Sindh, Ministry of Science and Technology, Government of Pakistan, United Nations Children's Fund.

premises, available when needed and free of faecal priority chemical contamination"[38]. According to MICS survey 2014 in Sindh as illustrated in Exhibit 2.15, 90.5% of the provincial population at household level use improved sources of drinking water and 9.6% use unimproved sources. Of 90.5%, only 37.5% population use piped water. Pakistan Social and Living Standards Measurement Survey (PSLM) for 2014-2015 records that 10% of the national and 11% of the provincial population in Sindh have no water service at their disposal[39].

EXHIBIT 2.15
SOURCES OF DRINKING WATER SINDH

Main Drinking Water Sources	Urban	Rural	Overall
Improved Sources			
Piped Water	59.8	12.6	37.5
Filtration Plant	2.4	0.7	1.6
Tube-well/bore Hole	6.1	5.2	5.7
Hand Pump	14.3	70.3	40.9
Protected Well	0.2	2.3	1.2
Rainwater Harvesting	0	0	0
Bottled Water	6.9	0.1	3.7
Overall	89.7	91.1	90.5
Unimproved Sources			
Unprotected Well	0	3.2	1.5
Tanker Truck	5.4	1.0	3.3
Cart with Tank/Drum	2.2	0.3	1.3
Surface Water	0.3	3.7	1.9
Bottled Water	0.8	0	0.5
Other	1.6	0.5	1.1
Overall	10.3	8.7	9.6
SOURCE: MICS SINDH 2014			

According to varied national and provincial surveys conducted in recent years illustrated in Exhibit 2.16, 80-87% of households in Sindh using unimproved water sources does not use appropriate water treatment methods. Only 13-17% households process/treat their water before drinking. Appropriate/proper water treatment methods include boiling water, adding bleach or chlorine, using a water filter and using solar disinfection[40].

EXHIBIT 2.16
DRINKING WATER QUALITY

Country/ Province	No Treatment for Drinking (PDHS 12-13)	Appropriate Treatment for Drinking (PDHS 12-13)	No Treatment for Drinking (MICS 2014)	Appropriate Treatment for Drinking (MICS 2014)
Pakistan	89.9	8	NA	NA
Sindh	80.1	16.5	87.2	12.8
SOURCE: NATIONAL WASH DATA DIAGNOSTIC STUDY 2016[41] AND MICS 2014				

Sanitation

Exhibit 2.17 illustrates, 20% of the provincial population have no toilet facility and defecate in bushes and open field. The numbers are high (39.9%) in rural areas. However, of the population using toilet facility, 73% have access to improved sanitation facility. Improves sanitation facility characterizes as having of "piped sewer system, septic tank, soakage pit latrine, ventilated improved pit latrine, pit latrine with slab, composting

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[38] https://data.unicef.org/wp-content/uploads/2017/03/safely-managed-drinking-water-JMP-2017-1.pdf
[39] PSLM (2014-2015): National and Provincial District, Bureau of Statistics, Government of Pakistan.
[40] Multiple Indicator Cluster Survey Sindh 2014 (2015), Planning and Development Department, Government of Sindh, Ministry of Science and Technology, Government of Pakistan, United Nations Children's Fund.
[41] https://www.sindh.gov.pk/dpt/phe/Sindh%20Strategic%20WASH%20Sector%20Plan%20final%20draft%206.0.pdf

toilet"[42]. Whereas, unimproved sanitation facility is defined as having of "flush/pour flush to somewhere else, pit latrine without slab/open pit, and bucket"[43]. As illustrated in Exhibit 2.16, percentage of population using improved sanitation facilities is considerably lower in rural areas in comparison with the urban.

EXHIBIT 2.17
TYPE OF TOILET FACILITY USED BY HOUSEHOLDS IN SINDH

	Improved Sanitation Facility	Unimproved Sanitation Facility	Open Defecation (no facility, bush, field)
Overall	72.8	6.8	20.2
Urban	95.9	1.9	2.2
Rural	47.6	12.5	39.9
SOURCE: MICS SINDH 2014			

Combining the statistics of usage of both improved sources of drinking water and sanitation, it is revealed that only 58.8% of the provincial population uses improved water sources and sanitation facility, illustrated in Exhibit 2.18.

EXHIBIT 2.18
DRINKING WATER AND SANITATION LADDERS

	Improved Drinking Water	Unimproved Drinking Water	Improved Sanitation	Unimproved Sanitation Facility	Improved Water Sources and Improved Sanitation
Overall	90.4	9.5	64.6	35.4	58.8
Urban	89.6	10.3	89.0	10.9	80.1
Rural	91.3	8.7	37.7	62.3	35.5
SOURCE: MICS SINDH 2014					

Hygiene-Hand Washing Practices

Hygiene is defined as access and usage of "basic and limited hand washing facilities constitutes a private place to wash and change, along with the adequate usage of menstrual hygiene material (for females)". Exhibit 2.19 illustrates that in Sindh 33.5% households do not have specific place for hand washing where soap or other cleansing agents are present.

EXHIBIT 2.19
WATER AND SOAP AT PLACE FOR HAND WASHING

	% of households where place for hand washing was observed	% of households with no specific place for hand-washing in the dwelling, yard, or plot	% of households with a specific place for hand-washing where water and soap or other cleansing agent are present
Overall	80.7	5.4	66.5
Urban	88.4	1.6	84.4
Rural	71.1	10.3	41.4
SOURCE: MICS SINDH 2014			

Conclusively, the review of existing literature on nutrition conditions in Sindh indicates that the prevalence of malnutrition in the province is a combined outcome of various factors. Those factors particularly include inadequate dietary pattern linked directly with limited food availability (affected adversely by climate and weather condition and food inflation) and economic accessibility; and limited usage of improved WASH practices. In order to improve on the nutrition condition of the population, holistic interventions targeting on multi-sectoral aspect of health is integral.

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[42] Multiple Indicator Cluster Survey Sindh 2014 (2015), Planning and Development Department, Government of Sindh, Ministry of Science and Technology, Government of Pakistan, United Nations Children's Fund.
[43] ibid

Chapter 3: Findings of the Survey

This section documents study findings disaggregated by treatment and control group UCs in the districts. Because of the quasi-random assignment to the projects, it can be assumed that households in these groups are quite similar and that they would evolve similarly in the absence of the project.

The similarity or differences among Treatment and Control groups are statistically evaluated by applying t-test on those variables which fit a normal or approximately normal distribution. The t-test is one type of inferential statistics. It is used to determine whether there is a significant difference between the means of two groups. The p-value tells the statistical significance of the difference. A p-value of less than 0.05 indicates that the mean difference between treatment and control groups is statistically significant.

The following sub-sections summarily present survey results by comparing mean values associated with households in the treatment and control groups. Wherever possible, the t-test is applied to evaluate the statistical significance of the differences.   Detailed analysis of each district is documented in Volume 2 (section 1-10) of the report. The volume provides treatment and control group specific findings for each district. However, comparisons between districts are drawn in the main report (Volume 1).

3.1   SOCIO-ECONOMIC PROFILE OF SELECTED DISTRICTS

This section details the socio-economic findings of the surveyed household specific to the treatment and control groups of the Programme. It outlines the poverty status of the households based on poverty score card methodology, along with providing insights on household income and expenditure pattern of the households. An in-depth section on housing unit characteristics is provided in Annexure 6 of the document.

3.1.1   POVERTY STATUS

Exhibit 3.1.demonstrates the poverty rates calculated according to the Poverty Score Card (PSC) methodology. Households with poverty score less than 23 are designated as "poor". According to this, slight difference in the incidence of poverty among treatment and control areas (~52 % in comparison with ~50%) is evident. However, the difference is not statistically significant as estimated by t-value (1.59) and p-value (0.112).

Nonetheless, inter-districts variations exist. The highest proportion of poor households are found in Shikarpur (~70%), whereas the comparative lowest proportions are found in Matiari (~41%) and Larkana (~39%). (Refer to Volume 2, Section 4, 5, 6, and Table 1.1)

EXHIBIT 3.1
POVERTY STATUS OF SURVEYED HOUSEHOLDS (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
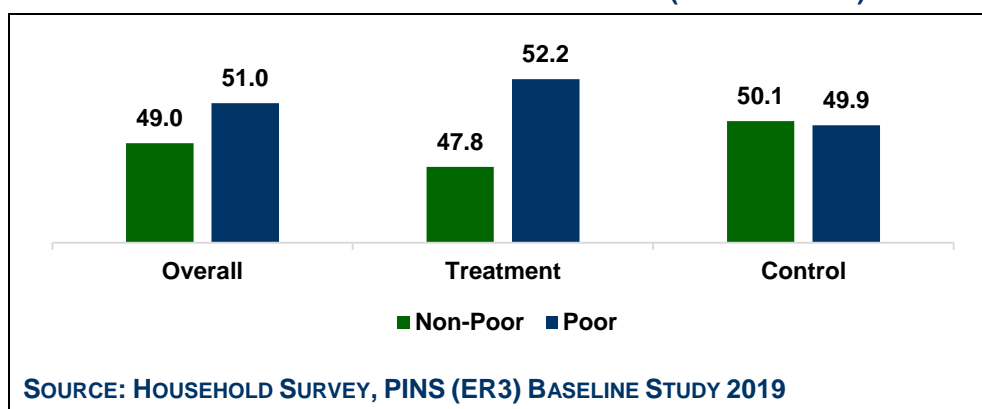
3.1.2 HOUSEHOLD FAMILY SIZE AND COMPOSITION

In terms of average family size and composition by age group, the size of the surveyed households remains between an average of 7 to 8 individuals per household (as seen in Exhibit 3.2), except in the case of Jamshoro (where the average family size is 6 individuals per household). The average gender ratio within the households stands at an average of 1.3 males to every female. It ranges from 1.2 to 1.4 across districts (Refer to Volume 2, Section 1-10, and Table 1.2).

The households in both treatment and control groups are not dissimilar, as noted in Exhibit 3.2. The p-values associated with these dimensions are not statistically significant. However, the mean difference in gender ratio across treatment and control groups is statistically significant with p-value 0.01.

EXHIBIT 3.2
FAMILY SIZE AND COMPOSITION OF HOUSEHOLDS

	Overall	Group		t-value	p-value
		Treatment	Control		
Family Size (Individuals)	7.41	7.47	7.36	1.08	0.28
Sex-Ratio (M:F)	1.30	1.27	1.34	-2.59	0.01
Dependency Ratio	117.42	118.34	116.63	0.62	0.54
Family Composition (in percentage):					
Less than 5 Years	-	18	18	1.40	0.16
6-24 Years	-	42	43	-1.75	0.08
25-50 Years	-	31	31	0.05	0.96
51-65 Years	-	6	6	-0.05	0.96
65+ Years	-	3	2	1.88	0.06
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

Proportioning overall family size by age group, the two largest age groups comprise individuals aged 6-24 years (42% of the households), and those aged 25-50 years (31% of the households), as seen in Exhibit 3.3.

Children under five years of age comprise the third-largest group among the households. However, the proportion of children reported in the age group varies across districts, from an average of 13% in Jamshoro, to 22% in Sujawal. (Refer to Volume 2, Section 2 and7, Table 1.2) On the other hand, individuals aged 51 and above, comes to average of 9% of the sampled households.

EXHIBIT 3.3
FAMILY COMPOSITION BY AGE GROUP (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
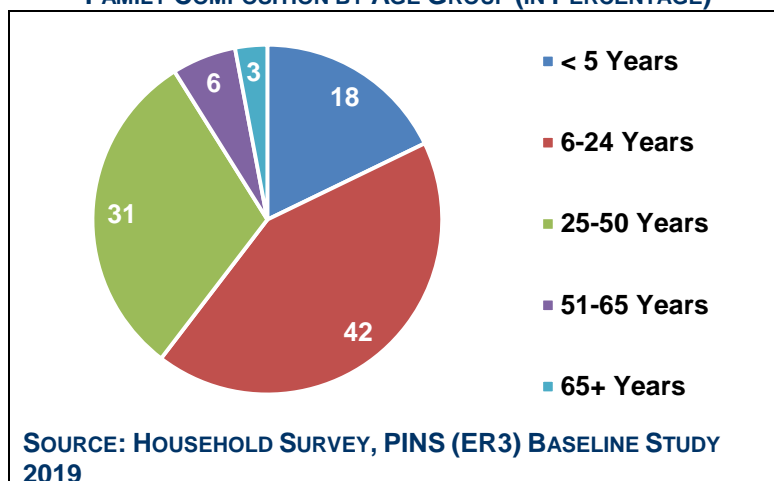
3.1.3 CHARACTERISTICS OF HOUSEHOLD SURVEY RESPONDENT

The household questionnaire was responded by one female member of each surveyed households. A mother of under 5 year old child in the household was prioritized for responding to the questionnaire. In case, such profile of the respondent could not be matched, an adult female who may not be a mother of under 5 year old child was interviewed. Given that the sample was representative of the total population of the targeted UCs, households with children under 5 years old hold an equal representation in the survey responses[44].

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[44] For detail, please see section 2.1 in Chapter 2 of this document.

Recorded in Exhibit 3.4, the females' respondents, across control and treatment areas, are of an average age of 38 years old. Their education attainment level reportedly ensures completion of 7 years of formal schooling.

EXHIBIT 3.4
CHARACTERISTIC OF HOUSEHOLD SURVEY RESPONDENT

	Overall	Group		t-value	p-value
		Treatment	Control		
Age of Respondent (Mean)	38	38	38	0.28	0.77
Years of Schooling (Mean)	7	7	7	0.94	0.93
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

Details of the respondent's relationship to the household head and her marital status are provided in Exhibit 3.5. Almost 93% of the females interviewed were married.

EXHIBIT 3.5
RELATIONSHIP WITH THE HOUSEHOLD HEAD AND MARITAL STATUS OF HOUSEHOLD SURVEY RESPONDENT (IN PERCENTAGE)

	Overall	Group	
		Treatment	Control
Relationship with the Household Head			
Self **(Head of Household)**	3.3	3.0	3.6
Wife	79.5	80.0	78.9
Son/Daughter	3.3	3.2	3.4
Father/Mother	3.4	3.3	3.5
Brother/Sister	1.2	1.2	1.3
Grandson/Grand-Daughter	0.1	0.1	0
Son-in-law/Daughter-in-Law	7.5	7.1	8.0
Brother-in-Law/Sister-in-Law	1.1	1.3	0.9
Father-in-in-Law/Mother-in-Law	0.2	0.3	0.0
Uncle/Aunt	0.1	0.1	0.0
Grandfather/Grandmother	0.0	0.0	0.0
Nephew/Niece	0.1	0.1	0.0
Other Relation	0.2	0.2	0.2
Marital Status			
Married	93.0	93.2	92.8
Single	1.9	2.1	1.8
Divorce	0.2	0.2	0.1
Widow/Widower	4.7	4.3	5.1
Separated	0.3	0.2	0.3
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Close to 88% of them were recorded to be the housewives as provided in Exhibit 3.6. A small proportion of female reported labour force participation. One of the main reasons for this is low reporting of productive work by females as they consider livestock rearing or input in agricultural activities part of their household chores.

Only ~3% are employed (in private, government or semi-government organizations or are self-employed). The trend is generally the same across treatment and control areas in districts.

Furthermore, following is the count of children under 5 years of age recorded in the interviewed households (Exhibit 3.7):

EXHIBIT 3.6
OCCUPATION OF SURVEY RESPONDENTS (IN PERCENTAGE)

- Employed
- Agriculture
- Unskilled Labourer
- Unemployed
- Student
- Housewife

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
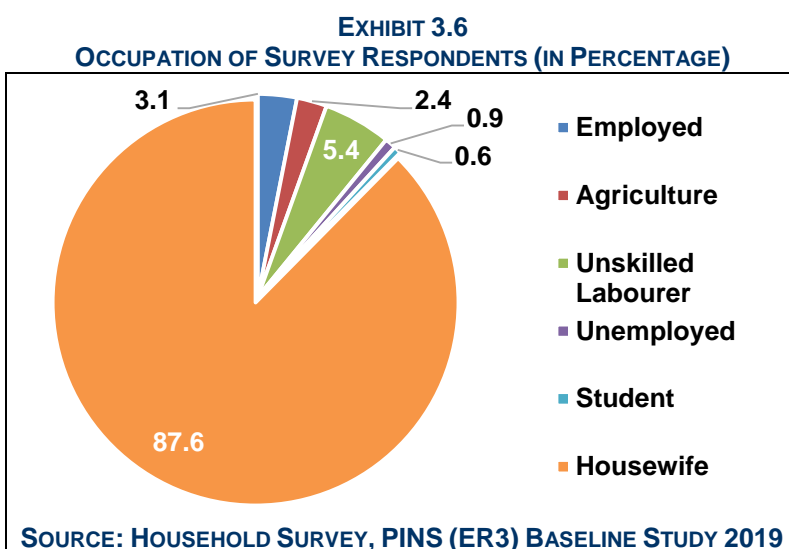
EXHIBIT 3.7
NUMBER OF CHILDREN UNDER 5 YEARS OF AGE IN SURVEYED HOUSEHOLDS

	Treatment			Control			Overall		
	Male	Female	Overall	Male	Female	Overall	Male	Female	Overall
0-<6 months	206	185	391	195	179	374	401	364	765
6-23 months	382	410	792	387	314	701	769	724	1,493
24-59 months	841	856	1,697	829	808	1,637	1,670	1,664	3,334
0-<59 months	1,429	1,451	2,880	1,411	1,301	2,712	2,840	2,752	5,592
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019									

3.1.4 CHARACTERISTICS OF HOUSEHOLD HEAD

Documented in Exhibit 3.8, average age of the household head is 44 years old irrespective of the treatment group status. They have reported to complete 2 and 3 years of formal schooling on an average in treatment and control group respectively. This difference is statistically significant with p-value of 0.04.

EXHIBIT 3.8
CHARACTERISTICS OF HOUSEHOLD HEAD OF SURVEYED HOUSEHOLDS

	Overall	Group		t-value	p-value
		Treatment	Control		
Age of Head (Years)	44	44	44	0.35	0.73
Female Headed Household (%)	5.0	4.6	5.4	-1.30	0.19
Schooling of Head (Years)	2.6	2.5	2.7	-2.09	0.04
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

On an average 5% of households were headed by a woman. The variation is not statistically significant among the treatment and control groups. District differences however exist in the occurrence of women headed households. Highest (~8%) incidence is observed in the district of Dadu while the lowest (~2%) is observed in case of Tando Muhammed Khan. (Refer to Volume 2, Section 1 and 9, Table 1.5)

EXHIBIT 3.9
OCCUPATION OF HOUSEHOLD HEADS (IN PERCENTAGE)

- **Employee**
- **Agriculture Landowners**
- **Business**
- **Not in Labor Force**
- **Unskilled/Agriculture Labourer**
- **Unemployed**

2.3
12.5
8.2
6.1
14.4
56.5

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
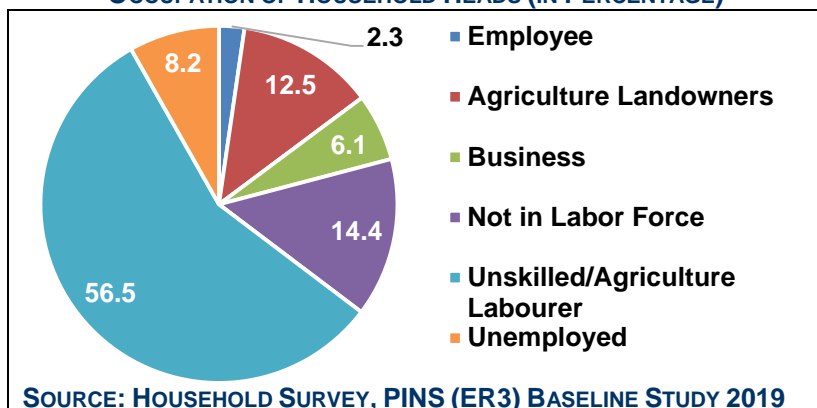
Furthermore, as illustrated in Exhibit 3.9, the predominant occupation of a household head is unskilled/agriculture labour (~57%) followed by agriculture landowners (~12%). Significant variations are observed in occupation across districts. For example, in Jamshoro, Tando Allah Yar, and Thatta, agriculture is the reported profession of only ~4%, ~6%, and ~2% (respectively) of household heads, whereas it is the dominant occupation in Matiari (~23%) and Shikarpur (~35%) (Refer to Volume 2, Section 5, 6, 8, and 10, Table 1.6)

3.1.5 HOUSEHOLD INCOME AND EXPENDITURE

Exhibit 3.10 demonstrates reported per capita income and expenditure by households. Glaring differences are observed in treatment and control groups. Statistical tests show that the difference in per capita household income is statistically significant, with an estimated t-value of 2.06 and p-value of 0.04. However, per capita expenditure, it is not statistically significant with a p-value of 0.26.

It is pertinent to mention that detailed income and expenditure modules were not used in the survey, instead a simple one liner question was probed 'What is your household total income/expenditure?' Thus estimates are crude and should be interpreted accordingly. Expenditure includes money spent on food (including betel nut and tobacco products) and non-food items (e.g. utilities, rent, fuel, children's education and other miscellaneous expenses). Reported monthly income and expenditure values are recorded in Exhibit 3.11.

It may be essential to note that households in the target regions though not live in financially deficit condition but their

EXHIBIT 3.10
SURVEYED HOUSEHOLDS PER CAPITA INCOME AND EXPENDITURE
(AVERAGE RUPEES PER MONTH)

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019

situation is tight as the end of the month leaves a minimal surplus. However, a survey with a detailed expenditure and income module is required to ascertain their economic conditions.
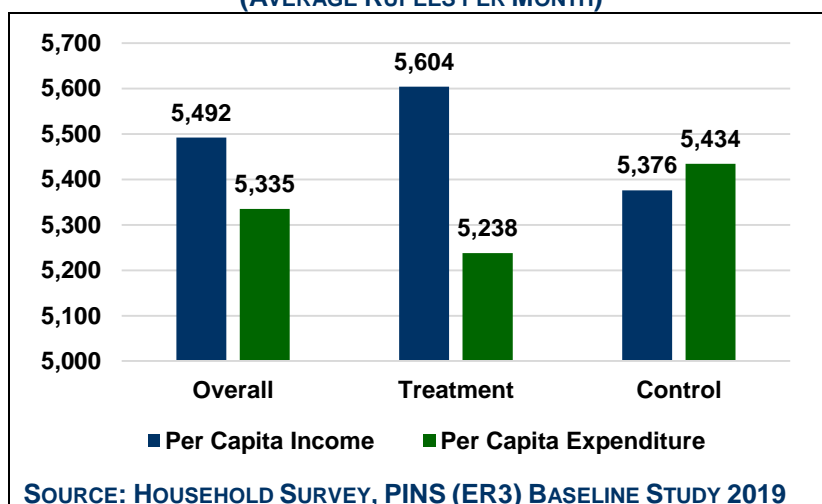
EXHIBIT 3.11
SURVEYED HOUSEHOLD INCOME AND EXPENDITURE (AVERAGE RUPEES PER MONTH)

| | Overall | Group | | t-value | p-value |
		Treatment	Control		
Monthly Income	36,609	37,324	35,866	1.59	0.11
Monthly Expenditure	35,992	35,596	36,399	1.85	0.06
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

Dwelling upon the rationalization of household expenditure, Exhibit 3.12 compares food and non-food expenditure across treatment and control groups. Statistical tests show that variation among the groups is

not significant. The Exhibit however notes that 63% of the total expenditure constitutes of spending on food items (62% and 64% among treatment and control groups respectively). It is significantly higher than the share of non-food expenditure.

EXHIBIT 3.12
SURVEYED HOUSEHOLDS FOOD VS. NON-FOOD EXPENDITURE (AVERAGE RUPEES PER MONTH)

	Overall	Group		t-value	p-value
		Treatment	Control		
Food Expenditure	21,926	22,157	21,694	0.14	0.89
Non-Food Expenditure	13,366	13,624	13,103	1.67	0.09
Per Capita Food Expenditure	3,276	3,276	3,276	-0.10	0.92
Per Capita Non-Food Expenditure	1,991	1,989	1,993	1.01	0.31
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

3.2 FOOD INTAKE AND DIVERSITY

This section aims to highlight the current situation of household food consumption and calorie intake. It explains the pattern of household food expenditure required to ensure the use of a variety of food groups for healthy living. The section concludes with providing analysis of food diversity among women and children who comprises the major stakeholders of the PINS intervention. Furthermore, an in-depth analysis on household food insecurity experience is documented in Annexure 7 of the report.

3.2.1 HOUSEHOLD CALORIE INTAKE

The Survey questionnaire constituted of a detailed household food consumption module to probe weekly household consumption. It comprised a list of 44 food items. The reported food consumption was translated into calories (Food Energy – Kcal) using Food Consumption Tables for Pakistan[45] to estimate daily calorie intake per adult equivalent.   The results are recorded at overall and at group level in Exhibit 3.13.

EXHIBIT 3.13
MEDIAN CALORIE INTAKE (ESTIMATED FROM HOUSEHOLD WEEKLY CONSUMPTION OF FOOD ITEMS)

	Overall	Group		t-value	p-value
		Treatment	Control		
Per Capita Daily Calories	2, 834	2, 852	2, 813	2.04	0.041
Per Adult Equivalent Unit Daily Calories	3, 449	3, 482	3, 415	2.34	0.019
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

The findings show that households across treatment and control areas are estimated to be consuming calories more than 2,350 kcal per adult equivalent per day i.e., the minimum standard of daily calorie intake[46]. The Government of Pakistan uses this cutoff for deriving the official poverty line. The proportion of such households are however found to be relatively higher in the treatment areas than the control. The mean difference among the groups is statistically significant, according to the p-values.

District variations are evident against the highest intake of 4,472 kcal/ per adult in Tando Allah Yar, the lowest value of 2,890 kcal/ per adult is noted in Sujawal district (Refer to Volume 2, Section 7 and 8, Table 1.10).

To further understand the aggregate of sample population calorie intake, Exhibit 3.14 disaggregates the analysis by food items consumed that contributes most to the calorie proportion. Grains (such as barley, rice,

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[45] Government of Pakistan (2001), "Food Consumption Table for Pakistan", Department of Agricultural Chemistry, NWFP Agriculture University, Peshawar.
[46] Government of Pakistan (2016), Pakistan Economic Survey (2015-16) – Poverty Estimates, Ministry of Finance, Government of Pakistan

wheat, and corn) constitute over half of the percentage of calories intake among households, i.e., ~54%, recorded in Exhibit 3.17. Use of oil and ghee is also quite high, as it contributes to 20% of the total calories. Other items such as dairy products, vegetables, and meat only add to less than 10% of total calories. It is noteworthy that the uptake of fruits and dry fruits/nuts are almost negligible.

EXHIBIT 3.14
PERCENTAGE SHARE IN TOTAL CALORIES (ESTIMATED FROM HOUSEHOLD WEEKLY CONSUMPTION OF FOOD ITEMS)

	Overall	Group	
		Treatment	Control
Grains	53.88	53.34	54.42
Pulses (beans, peas, lentils)	2.89	2.91	2.86
Nuts and seeds	0.11	0.12	0.10
Dairy products	5.66	5.82	5.49
Fish	0.36	0.40	0.32
Eggs	0.45	0.47	0.42
Vegetables*	1.24	1.3	1.18
Fruits*	0.23	0.21	0.25
Oils and fats	19.73	19.71	19.74
Sweets	9.72	10.12	9.32
Beverages**	1.95	1.91	1.98
Roots and tubers	2.98	2.88	3.09
Flesh meat	0.80	0.79	0.82

*the vegetable food group is a combination of vitamin a rich vegetables, dark leafy vegetables and other vegetables
*the food group is a combination of vitamin a rich fruits and other fruits
**the beverages group comprises consumption of only tea/tea *patti*

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019

3.2.2 HOUSEHOLD EXPENDITURE DISAGGREGATED BY FOOD GROUPS

Following the standard classification of FAO (2016)[47] dietary intake by food groups, Exhibit 3.18 reports average (arithmetic mean) of monthly household expenditure dedicated to obtaining food items from various food groups.

The expenditure is calculated by obtaining average district prices of the food items included in the household consumption module of the survey questionnaire. The rates were separately gathered at UC levels in each district. Those prices were then multiplied with the consumption quantities, as stated by the respondents in the household consumption module of the household survey questionnaire.

Reported in Exhibit 3.15, households spend the maximum proportion of their money on obtaining grains. The spending is equivalent to an average of Rs. 4,843. A significant portion of their expenditure is dedicated to consuming tea, which equals to an average of Rs. 3,567. Dairy products, oils and fats, and eggs also receive a substantial share in food spending. It is important to note that the averages may be higher reported since these also include imputed values of food items consumed from their production.

At an overall level, expenditures are relatively higher reported in the households of the treatment group as compared with the control group. Application of t-test indicates that the mean differences in spending are statistically significant for the food groups of pulses, dairy products, eggs, vegetables, fruits, and sweets.

Comparing Exhibit 3.14 and 3.15, it is critical to understand that higher food expenditure among certain food groups does not ensure that they equally contribute to the overall calorie intake. Food expenditure is contingent to several factors, particularly food inflation and seasonality that may increase the cost of units purchased, whereas the food quantity consumed remains the same. Thereby, higher food expenditure may not necessarily result into higher contribution of the food items on calorie consumed and so the dietary diversity.

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[47] Guidelines for Measuring Household and Individual Dietary Diversity (2010) by FAO and EU

EXHIBIT 3.15
SURVEYED HOUSEHOLDS EXPENDITURE ON FOOD ITEMS (AVERAGE RUPEES PER MONTH)

	Overall	Group		t-value	p-value
		Treatment	Control		
Average Expenditure on:					
Grains	4, 843	4, 885	4, 801	0.61	0.542
Pulses (beans, peas, lentils)	781	843	719	2.28	0.023
Nuts and seeds	186	226	146	0.64	0.521
Dairy products	2, 827	2, 968	2, 686	2.17	0.030
Fish	568	649	488	1.81	0.070
Eggs	1, 617	1, 757	1, 477	3.28	0.001
Vegetables*	1, 081	1, 167	995	2.05	0.000
Fruits*	798	900	696	4.80	0.002
Oils and fats	2,154	2, 173	2, 136	0.22	0.823
Sweets	1,040	1, 157	924	3.51	0.000
Beverages	3, 567	4, 014	3, 120	1.60	0.109
Roots and tubers	557	548	566	-1.48	0.138
Flesh meat	856	889	822	1.53	0.127
Overall food expenditure**	20, 876	22, 176	19, 575	3.49	0.000

*the vegetable food group is a combination of vitamin a rich vegetables, dark leafy vegetables and other vegetables
*the food group is a combination of vitamin a rich fruits and other fruits
**this is an augmented value of food expenditure calculated based on the reported consumption of food and food prices recorded at the UC level.
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019

Illustrated in Exhibit 3.16, 24.6% of households were found to be consuming any of at least four food groups in their diet other than staples. They spend an augmented monthly average of Rs. 10,510. Since the average is calculated based on the consumption of any of the four food groups, the type of food groups may differ, changing the proportion of food expenditure. Therefore, food expenditure across the treatment and control areas cannot be directly compared.

EXHIBIT 3.16
SURVEYED HOUSEHOLDS REPORTED MONTHLY CONSUMPTION OF MINIMUM OF FOUR FOOD GROUPS (OUTSIDE STAPLES)

	Overall	Treatment	Control	t-value	p-value
Percentage of households consuming minimum of four food groups outside staples	24.6	25.3	23.9	-	-
Expenditure dedicated to a minimum of four food groups outside staples (in rupees)	PKR 10,510	PKR 11, 316	PKR 9, 657	0.903	0.367

3.2.3 MINIMUM DIETARY DIVERSITY FOR WOMEN (MDD-W)

Minimum dietary diversity of women (MDD-W) is a food group diversity indicator that reflects minimum micronutrient adequacy needed to improve micronutrient nutrition among women. It defines "whether or not women 15-49 years of age have consumed at least 5 of 10 defined groups during the previous day or night"[48]. The ten food groups are provided in Exhibit 3.17.

For recording MDD-W, the survey questionnaire included a comprehensive dietary module adapted from FAO MDD-W food module (2016)[49]. This section was targeted at the female respondents of the questionnaire. They were instructed to recall

> **EXHIBIT 3.17**
> **MDD-W TEN FOOD GROUPS**
> 1. Grains, white roots and tubers, and plantains
> 2. Pulses (beans, peas and lentils)
> 3. Nuts and seeds
> 4. Dairy
> 5. Meat, poultry and fish
> 6. Eggs
> 7. Dark green leafy vegetables
> 8. Other Vitamin A-rich fruits and vegetables
> 9. Other vegetables
> 10. Other fruits
> **SOURCE: FAO**

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[48] Minimum Dietary Diversity of Women: A guide to measurement, FAO (2016): http://www.fao.org/3/a-i5486e.pdf
[49] ibid

their food intake in the last 24 hours to respond to the consumption of the given food items. The findings are provided in Exhibit 3.18.

Only 19.2% of women were found to receive food from 5 or more food groups. According to t-value, the difference in the treatment and control group is not statistically significant.

EXHIBIT 3.18
WOMEN RECEIVING MINIMUM DIETARY DIVERSITY (IN PERCENTAGE)

	Overall	Group		t-value	p-value
		Treatment	Control		
Minimum Dietary Diversity	19.2	19.6	19.3	0.264	0.792
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

Variations exist in the district's proportions. The lowest percentage of women receiving minimum dietary diversity i.e., 6% are found in Thatta. Noted in Table 1.11[50], a significant portion of household spending is dedicated to consuming beverages (mainly tea) and sweet items. The proportion of women remain under 10% in Dadu and Tando Allah Yar as well. The highest, however, is in Larkana (34.8%) followed by Jamshoro (~34%). (Refer to Volume 2, Section 1, 2, 4, 8 and 10, Table 1.14)

3.2.4 MINIMUM ACCEPTABLE DIET (MAD)

MAD constitutes one of the eight core indicators of infant and young child feeding practices (IYCF) essential to track if multiple dimensions of children's feeding between 6-23 months are fulfilled. It is a composite indicator combining the standards of minimum dietary diversity and feeding frequency. Therefore, the index is a useful way to track the progress of both quantitative and qualitative dimensions of child diet[51].

The survey questionnaire included a dietary module constituting of a list of semi-solid/solid food items and liquids based on food groups essential for children diet. It is adapted from the UNICEF/WHO IYCF MAD module (2010)[52]. The mothers/caregivers of children in the age bracket of 6-23 months were the respondents of this section. They were instructed to report on consumption of the given food items based on the food intake of a child in the previous 24 hours, along with the frequency of meal intake.

3.2.4.1 MINIMUM DIETARY DIVERSITY (MDD)

Dietary diversity is a measure to estimate the consumption of adequate micro-nutrient density of foods among children between 6-23 months. It takes into account the proportion of children in the mentioned age group who received food from at least four food groups. The list of food groups is provided in Exhibit 3.19.

Shown in Exhibit 3.20, the baseline study results show that overall, only ~16% of children in the given age bracket are receiving food from 4 or more food groups. The difference as appeared in the exhibit, however, is statistically insignificant in the treatment and control group. However, it may be essential to note that the proportion of such children is relatively lower in the treatment areas.

Incidence of MDD-receiving children in the districts of Thatta, Tando Muhammad Khan, and Shikarpur fall below 10% with Tando Allah Yar at ~5%. Sujawal, however, constitutes the

EXHIBIT 3.19
7 FOOD GROUPS USED FOR THE CALCULATION OF MDD FOR CHILDREN 6-23 MONTHS
1. Grains, roots, and tubers
2. Legumes and nuts
3. Dairy products (milk, yogurt, cheese)
4. Flesh foods (meat, fish, poultry, organ meats)
5. Eggs
6. Vitamin A rich fruits
7. Other fruits and vegetables
SOURCE: UNICEF

highest proportion of children (34.1%) among the target districts receiving MDD. (Refer to Volume 2, Section 6, 6, 8, 9 and 10, Table 1.16).

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[50] Refer to Volume 2, Section 10 of the report
[51] Indicators for Assessing Infant and Young Child Feeding Practices (IYCF): Part III Country Profiles (2010) by UNICEF/WHO
[52] Indicators for Assessing Infant and Young Child Feeding Practices (IYCF): Part II Measurement (2010) by UNICEF/WHO

EXHIBIT 3.20
CHILDREN 6-23 MONTHS RECEIVING MINIMUM DIETARY DIVERSITY (MDD) (IN PERCENTAGE)

	Overall	Group		t-value	p-value
		Treatment	Control		
Minimum Dietary Diversity	15.8	15.3	16.7	-0.732	0.464
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

Furthermore, Exhibit 3.21 below provides gender disaggregated analysis of children receiving MDD. Contrary to a general perception of gender discrimination impacting malnutrition, the results show that at an overall level, gender is not a factor affecting receipt of MDD among children. The proportion of male children and female children remain approximately of the same percentage.

However, if district wise results are studied, the gender binary exists as a proportion of MDD receiving male children is higher than female children in the majority of the districts, particularly Dadu, Larkana, and Matiari. (Refer to Volume 2, Section 1, 4 and 5, Table 1.16)

EXHIBIT 3.21
CHILDREN 6-23 MONTHS TAKING MINIMUM DIETARY DIVERSITY AMONG CHILDREN (IN PERCENTAGE)

	Overall	Group	
		Treatment	Control
Boys	16.0	15.2	16.8
Girls	15.6	15.4	16.5
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

3.2.4.2   MINIMUM MEAL FREQUENCY (MMF)

MMF is a measure to determine the minimum number of times children between 6-23 months of age receive solid, semi-solid, or soft foods (also including milk feeds for non-breastfed children). The number of meals is an estimate to assure that the amount of energy the child needs is fulfilled[53].

Illustrated in Exhibit 3.22, 63% of the children in the given age bracket receive MMF[54]. There is insignificant difference noted in record for MFF among the treatment and control groups.

EXHIBIT 3.22
CHILDREN 6-23 MONTHS RECEIVING MINIMUM MEAL FREQUENCY (IN PERCENTAGE)

	Overall	Group		t-value	p-value
		Treatment	Control		
Minimum Meal Frequency	63.0	63.0	63.2	-0.097	0.923
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

It is necessary to corroborate results of MFF with the finding of children receiving minimum dietary diversity. It shows that in spite of mothers/caregivers providing an adequate number of meals to children, they do not ensure children's dietary diversity. For instance, in district Tando Allah Yar, ~51% of children receive an adequate number of meals in a day, but only ~5% of children manage to receive dietary diversity. This analysis provides a basis for the Programme to strengthen their intervention related to the provision of dietary diversity to children.

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[53] Indicators for Assessing Infant and Young Child Feeding Practices (IYCF): Part II Measurement (2010) by UNICEF/WHO
[54] For breastfed infants 6–8 months old, they need 2–3 meals per day, while breastfed children 9–23 months needs 3–4 meals per day. Children who are not breastfed should be given 1–2 cups of milk and 1–2 extra meals per day, ibid.

MMF incidences are further disaggregated in the age brackets of 6-8 months and 9-23 months and by gender, provided in Exhibit 3.23.

EXHIBIT 3.23
CHILDREN RECEIVING MINIMUM MEAL FREQUENCY BY AGE GROUPS AND GENDER (IN PERCENTAGE)

	Overall	Group	
		Treatment	Control
Percentage of children Taking MMF 6-8 Months			
Overall	50.4	50.8	50.0
Boys	46.4	50.5	46.4
Girls	54.7	51.1	54.7
Percentage of children Taking MMF 9-23 Months			
Overall	65.9	66.6	65.6
Boys	64.4	63.3	65.8
Girls	67.5	69.5	65.3
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Fundamentally, two observations emerged. The incidence of MMF is lower in the age cohort 6-8 months as compared with the age group 9-23 months. Second, generally, the percentages of girls receiving MMF are higher irrespective of age cohorts. However, the results of statistical tests indicate that the differences among the treatment/control groups are not significant.

Also, disaggregating the MFF results by districts, it shows that Sujawal constitutes the highest proportion (~77%) of children fulfilling MMF requirement, whereas Matiari remains at the lowest (~50%). (Refer to Volume 2, Section 5 and 7, Table 1.17-1.19)

3.2.4.3   MINIMUM ACCEPTABLE DIET (MAD)

Combining[55] the standards of minimum meal frequency and minimum dietary diversity, Exhibit 3.24 provides percentage of children in the target sample areas who receive minimum acceptable diet.

EXHIBIT 3.24
CHILDREN 6-23 MONTHS RECEIVING MINIMUM ACCEPTABLE DIET (IN PERCENTAGE)

	Overall	Group		t-value	p-value
		Treatment	Control		
Minimum Acceptable Diet - Overall	15.8	15.3	16.7	-0.732	0464
Boys	16.0	15.2	16.8	-	-
Girls	15.9	15.4	15.9	-	-
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

At an overall level, close to 16% of children receive acceptable dietary requirement whereas 84% of children do not. The low incidence of MAD is mainly due to the deficient level of dietary diversity. The exhibit also reveals that difference between the control and treatment group is not statistically significant. Variations among districts, however, exist. The proportion of non-MAD receipt children is highest in the district of Tando Allah Yar with only ~5% of children receiving MAD, whereas lowest in Sujawal with ~34% of children receiving it. (Refer to Volume 2, Section 7 and 8, Table 1.20-1.22)

Exhibit 3.25 provides further disaggregated analysis by breastfeeding status among children in the given age group (6-23 months). Although the difference between treatment and control groups concerning child

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[55] To calculate MAD, information on breastfed and non-breastfed children is combined by adding the following two fractions: Breastfed children 6-23 months of age who had at least the minimum dietary diversity and the minimum meal frequency during the previous day / Breastfed children 6-23 months of age and Non-breastfed children 6-23 months of age who received at least 2 milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day / Non-breastfed children 6-23 months of age. Indicators for Assessing Infant and Young Child Feeding Practices (IYCF): Part II Measurement (2010) by UNICEF/WHO

breastfeeding status is not statistically significant, the relatively low level of MAD in non-breastfed children requires thoughtful policy planning and intervention.

EXHIBIT 3.25
CHILDREN 6-23 MONTHS RECEIVING MINIMUM ACCEPTABLE DIET BY BREASTFEEDING STATUS (IN PERCENTAGE)

	Overall	Group		t-value	p-value
		Treatment	Control		
Not-Breastfed	4.8	5.4	4.5	0.25	0.803
Breastfed	17.1	16.3	18.4	-1.01	0.312
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

3.3   WATER, SANITATION, AND HYGIENE

This section highlights community-based infrastructure and practices related to water, hygiene, and sanitation (WASH) in the surveyed households. It fundamentally reflects PINS (ER3) log-frame specific indicators, which includes access to safe drinking water, access to improved sanitation facilities, and incidence of diarrhea, hand washing practices among household members (mainly females and children). However, other aspects of hygiene that were not directly linked with log-frame but are core areas of PINS interventions such as household cleanliness are documented in Annexure 8 of the report.

3.3.1   ACCESS TO IMPROVED/SAFE DRINKING WATER SOURCES

Drinking/potable water is water that is safe for domestic use, drinking, cooking, and personal hygiene. Access to safe drinking water is estimated using a proxy indicator that determines the percentage of the population using improved drinking water sources. A source is considered to be improved if it is adequately protected or covered from outside contamination.

In terms of the baseline survey, improved water sources include protected/covered/closed hand pumps, wells, water supply pipes (installed by the government, NGOs, and other institutions), collected rainwater, water tankers, packaged bottles, and filtration plants. The results on population access to improved/safe drinking water as recorded in the household survey are provided in Exhibit 3.26 and 3.27.

EXHIBIT 3.26
SURVEYED HOUSEHOLDS WITH ACCESS TO IMPROVED/SAFE DRINKING WATER-OVERALL (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019

The findings approximately 69% of all sampled households have access to improved drinking water (provided in Exhibit 3.26). The condition of access is relatively better in the treatment areas. However, survey results indicate that the difference between treatment and control groups is not statistically significant according to the t and p values (illustrated in Exhibit 3.27).
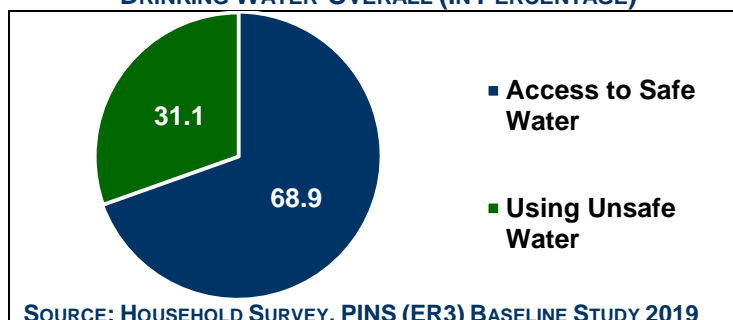
EXHIBIT 3.27
SURVEYED HOUSEHOLDS WITH ACCESS TO SAFE DRINKING WATER BY GROUP-BY GROUPS (IN PERCENTAGE)

	Group		t-value	p-value
	Treatment	Control		
Safe Drinking Water	69.2	68.5	0.575	0.565
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019				

Notable variation is observed across districts. In Matiari and Larkana, comparatively higher proportion of surveyed household have reported of access to safe drinking water (approximately 93% and 83%). It is found lowest in Thatta and Sujwal where approximately 63% and 65% respectively are using unsafe drinking water. (Refer to Volume 2, Section 4, 5, 7 and 10, Table 1.24)

Protected/closed hand pumps remain the most prevalent sources of clean water (~61% of all water sources) overall, as given in Exhibit 3.28. Among the unprotected sources, there is a relatively high incidence of obtaining waters from unprotected/open hand pumps in Sujawal (~53%), Tando Allah Yar (41%), and Shikarpur (~30%). Moreover, approximately 38% of households in Thatta obtain their water from rivers, streams, dams, lakes, or canals. (Refer to Volume 2, Section 5, 8, 10, Table 1.24).

EXHIBIT 3.28
MAIN SOURCES OF WATER AMONG SURVEYED HOUSEHOLDS (IN PERCENTAGE)

	Overall	Group	
		Treatment	Control
Improved Sources			
Piped Water (installed by government/ NGOs/other institutions)	4.6	6.7	2.5
Protected/ Closed Hand Pump	61.2	59.7	62.6
Protected/ Closed Well	0.9	1.0	0.8
Rainwater Harvesting	0.2	0.2	0.2
Filtration Plant	0.7	0.5	0.9
Water Tanker	1.7	1.7	1.7
Bottled Water	0.0	0.0	0.0
Unimproved Sources			
Unprotected Open Hand Pump	21.7	21.7	21.6
Unprotected/ Open Well	1.4	1.5	1.3
Canister Sold over Carts	0.1	0.2	0.0
Small Containers Sold on Donkey Carts	1.7	2.5	1.0
Surface Water (includes River, Stream, Dam, Lake, Canal, Ponds)	5.8	4.3	7.3
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

The study reveals that (adult) female members of the household shoulder the responsibility of collecting/acquiring water in the sample areas, noted in Exhibit 3.29. Only a notable minority (close to 12%) of the household's men are recorded of fetching water. District-wise variations are however observed (Refer to Volume 2, Section 1-10, Table 1.25).

EXHIBIT 3.29
HOUSEHOLD MEMBERS RESPONSIBLE FOR WATER COLLECTION (IN PERCENTAGE)

	Females	Males	Females and children	Females and Males	Children
Control	78.6	10.3	8	2.7	0.4
Treatment	74.1	12.9	8.4	3.8	0.8
Overall	76.6	11.5	8.1	3.2	0.6

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
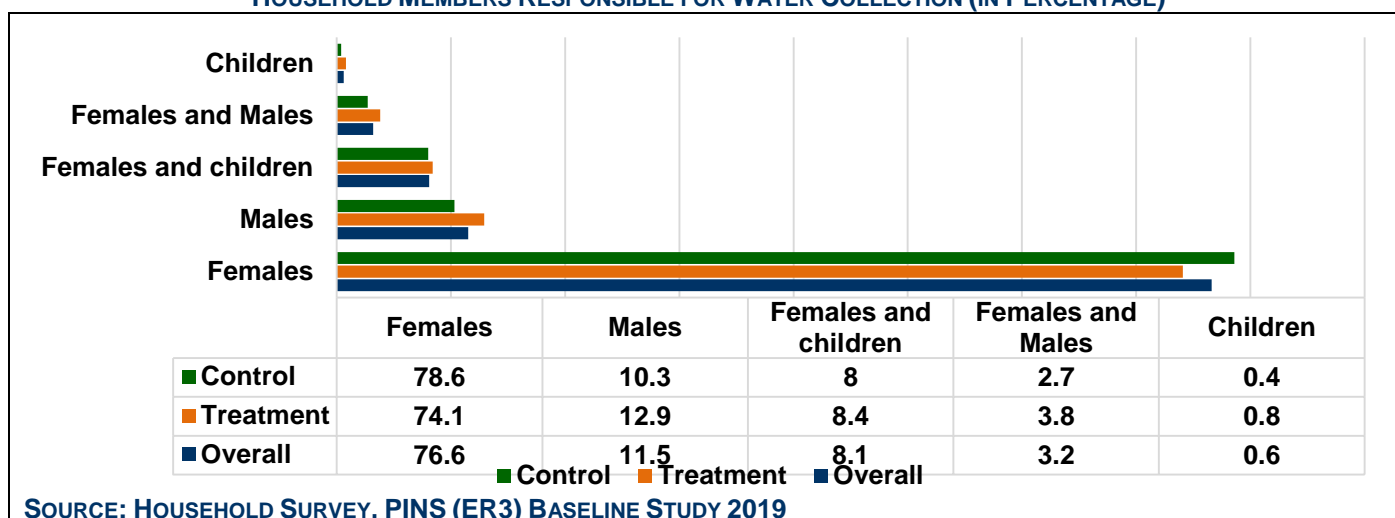
3.3.2 QUALITY OF DRINKING WATER

Pertaining to water quality, 9% of surveyed household complained about unpleasant odor in their drinking water, approximately 10% complained of water coloration, and 14% complained of an unpleasant taste. Insignificant small differences are observed across treatment and control groups. The results are recorded in Exhibit 3.30.

EXHIBIT 3.30
SURVEYED HOUSEHOLDS REPORTED COMPLAINTS REGARDING QUALITY OF WATER (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
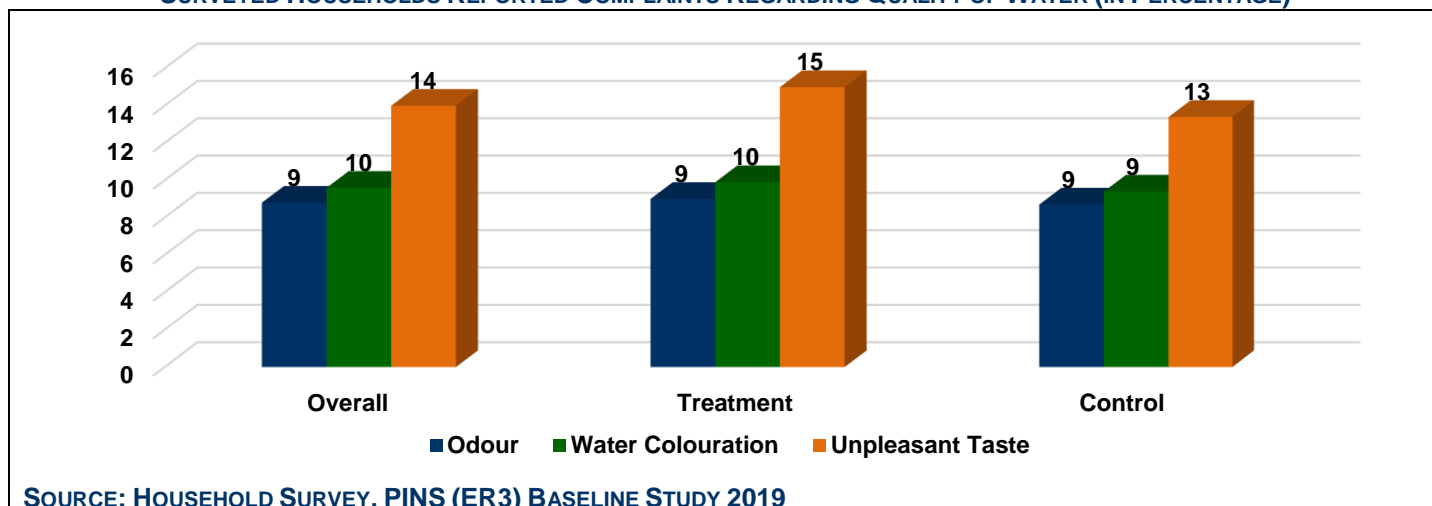
Disaggregating this data by district, significant water quality issues are found in Thatta and Jamshoro, followed by Sujawal, Tando Allah Yar and Tando Muhammad Khan. (Refer to Volume 2, Section 2, 7, 8, 9 and 10, Table 1.25)

3.3.3 WATER TREATMENT AND PURIFICATION

According to MICS 2014, proper water treatment methods include boiling water, adding bleach or chlorine, using a water filter, and solar disinfection. The baseline survey reveals that close to 93% of surveyed households do not treat their drinking water at all, with approximately 5% simply straining water through a cloth/fabric — only a minuscule 1.4% boil water before consumption. The results are aggregated in Exhibit 3.31. The survey confirms that a majority of households across the sample districts do not boil water before use, a simple and effective method for water purification.

EXHIBIT 3.31
PRACTICE OF WATER TREATMENT REPORTED AMONG SURVEYED HOUSEHLDS-
OVERALL (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
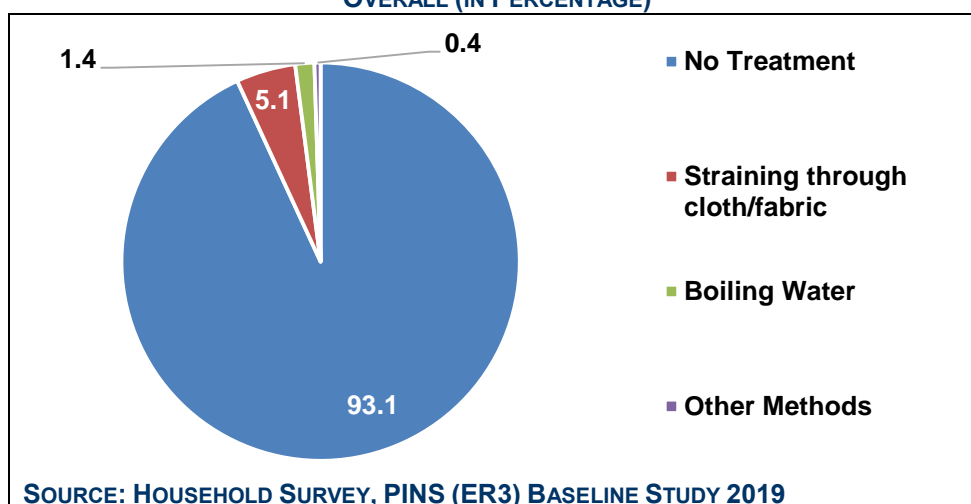
Recorded in Exhibit 3.32, this trend is evident irrespective of the group (treatment or control). No significant variations across districts are observed except Thatta, where 43% of households (a relatively high proportion compared to the other districts) engage in some form of water treatment—approximately 36% of households remove particulate matter by filtering water, 6% of households boil water, and 1% treat water using alum, sulphur, chlorine or other methods. No households were reported of using solar disinfection method. (Refer to Volume 2, Section 10, Table 1.26).

EXHIBIT 3.32
PRACTICE OF WATER TREATMENT REPORTED AMONG SURVEYED HOUSEHLDS –BY GROUP (IN PERCENTAGE)

	Group	
	Treatment	Control
No Treatment	93	93.2
Strain through cloth/fabric	5.3	4.9
Boiling water	1.3	1.5
Other Methods (Alum, Chlorine, Sulphur)	0.4	0.4
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019		

Exhibit 3.33 documents the reasons reported behind not using water treatment methods. ~76% of the households believe that their drinking water is already safe for drinking, and therefore requires no treatment. Their perception could be correlated to the fact that around 69% of the households fetch water from improved water sources. Researches have highlighted that even improved sources are not free of contamination and thereby requires adequate treatment[56]. Therefore, it is crucial for WASH-sensitive interventions to counter this perception among the population so that the adoption of water treatment practices can be ensured. It can be tackled fundamentally through behavior change communication activities at the grass root level.

EXHIBIT 3.33
REASONS FOR NON-TREATMENT OF WATER--OVERALL (PERCENTAGE OF SURVEYED HOUSEHOLDS)

- ■ **Drinking water is already safe for use/drinking**
- ■ **Not enough time to purify water**
- ■ **Do not know about treatment/filtering options**
- ■ **Treatment/filtering technologies or equipment is not available**
- ■ **Treating water is too expensive**
- ■ **No children in the house**

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
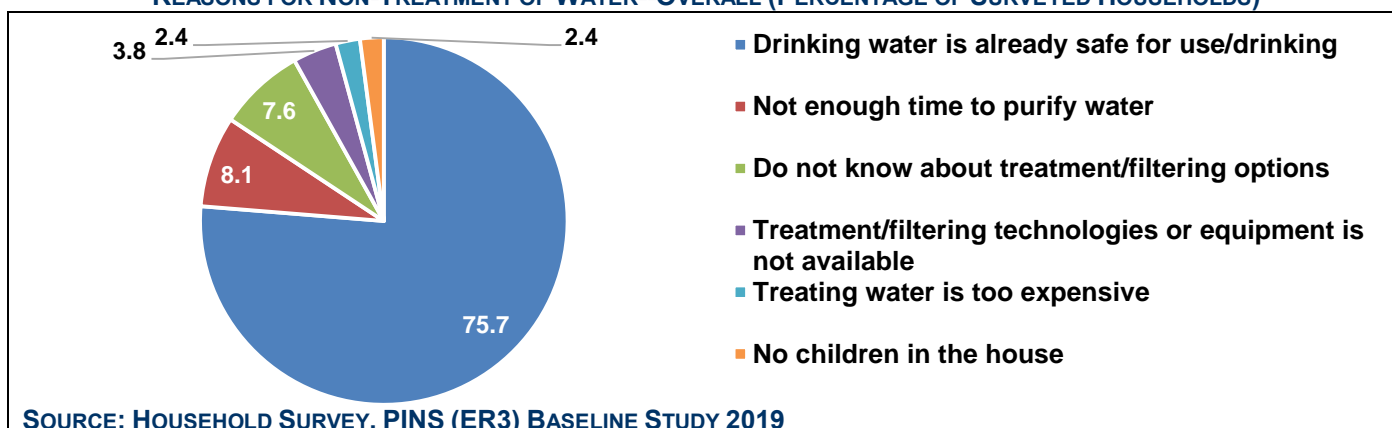
Slight percentage differences in the reasoning are however evident across treatment and control groups (Exhibit 3.34), but overall trend suggests similar rationality behind non-usage of treatment methods, i.e. water is already clean for drinking.

EXHIBIT 3.34
REASONS FOR NON-TREATMENT OF WATER- BY GROUP (PERCENTAGE OF SURVEYED HOUSEHOLDS)

	Group	
	Treatment	Control
Drinking water is already safe for use/drinking	75.7	75.6
Not enough time to purify water	9.2	7.1
Do not know about treatment/ filtering options	7.2	8.0
Treatment/ filtering technologies or equipment is not available	4	3.5
Treating water is too expensive	1.9	2.9
No children in the house	2.0	2.8
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019		

However, this is not as prevalent an attitude in Thatta and Jamshoro (where the most complaints regarding water quality were made), where a little less than half of all respondent households believe so. Around 8% of respondent households believe that water purification is a time-consuming activity and they are not aware of suitable treatment/filtering options. (Refer to Volume 2, Section 2 and 10, Table 1.26)

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[56] Safely managed drinking water-thematic report on drinking water (2017) – World Health Organization (WHO) and the United Nations Children's Fund (UNICEF)

3.3.4 AVAILABILITY OF TOILET/LATRINES FACILITIES

The baseline survey illustrates that approximately 64% of respondent households have access to toilet or latrines facilities, whether inside the household or outside it (such as via similar facilities at communal latrines, neighbors, or nearby mosques (Exhibit 3.35).

EXHIBIT 3.35
AVAILABILITY OF LATRINE/TOILET FACILITIES AMONG SURVEYED HOUSEHOLDS (IN PERCENTAGE)

	Overall	Group	
		Treatment	Control
Inside the household	54.6	51.3	56.8
Attached to a bedroom or other room	1.4	1.1	1.7
Outside the household (communal latrine, neighbors, nearby mosque)	7.7	8.2	7.4
No Latrine Facility T-Test, t-value=3.973, p-value=0.000	36.3	39.4	34.1
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

It is essential to note that close to 36% of the households in the target areas do not have access to latrine. The percentage is significantly high (39%) in the treatment group as compared with the control group where the relevant figure is 34%. The difference is statistically significant with a t-value equals to 3.97.

Significant inter-district variations are also observed regarding the availability of latrine facility. At least more than half of the surveyed households in Sujawal, Tando Muhammad Khan, Thatta and Tando Allah Yar do not have access to toilets/latrine facilities. (Refer to Volume 2, Section 7-10, Table 1.27) Participants in the FGDs informed that people in these districts, including women and children, are prone to openly defecate in agriculture farm fields, bushes, spaces near mountains, and likewise. Young children are mainly made to defecate on the ground near garbage dump areas outside the houses. Unsafe defecation practice primarily among children subjects them to increased risk of diarrheal disease.

3.3.5 ACCESS TO IMPROVED SANITATION

Access to sanitation is estimated by the percentage of households using an improved sanitation facility that "is not shared with other households, and where excreta are disposed of in situ or transported and treated off site so it is prevented from human contact"[57]. The sources mainly include sewerage system connection, septic tank system connection, and likewise[58].

The Survey reveals that only ~18% of households are using an improved sanitation facility. The estimate is calculated through combining the instances of households reported of using latrines with a sewerage system or septic tank. Closed drainage systems and septic tanks are not dominantly prevalent in sample areas. The incidence is high in control areas as compared with the treatment areas. The results are recorded in Exhibit 3.36.

EXHIBIT 3.36
TYPE OF DRAINAGE REPORTED BY SURVEYED HOUSEHOLDS (IN PERCENTAGE)

	Overall	Group	
		Treatment	Control
Open Drainage	46.1	43.8	48.1
No Drainage	36.3	40.1	32.8
Closed Drainage/Sewer pipes or Septic Tank (Improved Sanitation Facility) **T-Test, t-value= -2.10, p-value=0.04**	17.7	16.2	19.1
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Inter-district variations however exist. The rate of latrines with a closed drainage system is significantly higher in Matiari, Jamshoro, and Tando Allah Yar districts. Other districts either have no latrine available facilities,

[57] Progress on drinking water, sanitation and hygiene: 2017 update and SDG baselines (2017). WHO and UNICEF.
[58] ibid

or have open draining systems, or no drainage systems at all. (Refer to Volume 2, Section 2, 5, 8, Table 1.27)

The open drainage system is most prevalent in Larkana, Dadu, and Thatta, where 69%, 66% and 57% of households have access to toilets connected to open drainage systems. (Refer to Volume 2, Section 1, 4 and 10, Table 1.27)

No drainage systems are seen in a majority of toilets available to households in Sujawal, Kamber Shahdadkot, and Jamshoro (approximately 75%, 52%, and 44% respectively). (Refer to Volume 2, Section 2, 4 and 7, Table 1.27)

In terms of structure, the available toilet/latrine facilities are almost equally divided between *pakka* and *kaccha* structures (~39-40% each), with the remaining 21.3% having *kaccha-pakka* structure. The results are recorded in Exhibit 3.38.

EXHIBIT 3.37
STRUCTURE OF AVAILABLE TOILET FACILITIES-OVERALL (IN PERCENTAGE)

Kaccha: 39.1
Pakka: 39.6
Kaccha-Pakka: 21.3

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE STUDY 2019
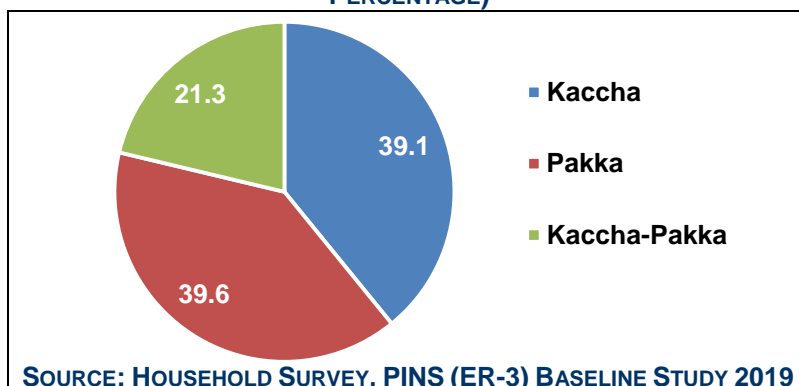
Exhibit 3.38 compares these statistics across treatment and control group. No significant differences are evident across the sampled groups.

EXHIBIT 3.38
STRUCTURE OF AVAILABLE TOILET FACILITIES-BY GROUP (IN PERCENTAGE)

	Group	
	Treatment	**Control**
Kacha	40.4	38.0
Pacca	39.9	39.3
Kacha-Pacca	19.8	22.7
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019		

3.3.6 HAND WASHING SPACE, WATER AND SOAP AVAILABLE FOR LATRINE USE

The household who reported the availability of latrines inside the household premise, they were inquired about the hand washing facilities available inside the toilet. Results are recorded in Exhibit 3.39. ~33% of the households reported having only water inside the latrine, whereas ~19% reported having both soap and water. Related to the presence of hand washing space, ~23% of households stated of having it outside the latrine. ~4% of households were also such who said of having the area inside the toilet as well.

On the whole, only ~7% of the surveyed households were augmented of having both hand washing space with soap and water.

EXHIBIT 3.39
REPORTED FACILITIES AVAILABLE IN INSIDE-HOUSE LATRINE OVERALL (IN PERCENTAGE)

Only Water (inside the latrine)	Water and Soap (inside the latrine)	Hand Washing Space (inside the latrine)	Hand Washing Space (outside the latrine)	Hand Washing Space with Soap and Water
32.6	18.6	3.5	23.2	7.2

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
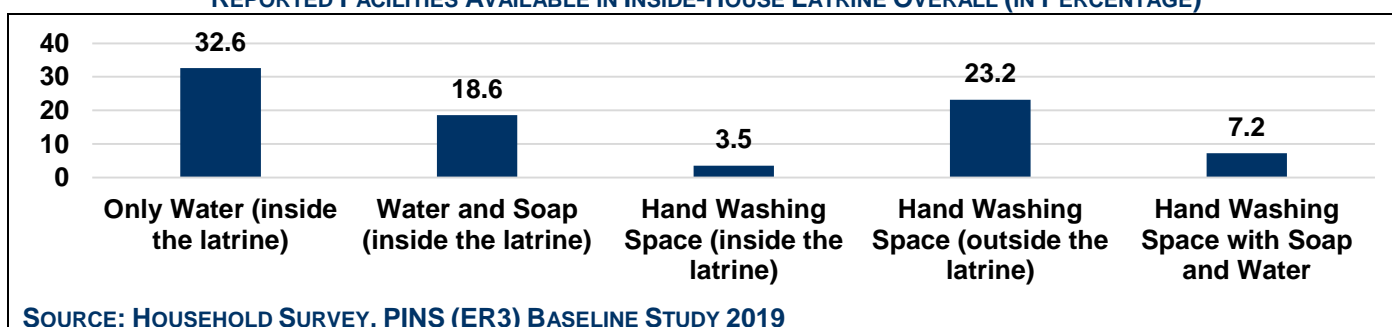
No significant differences are evident across the sampled groups (treatment areas in comparison with control areas) as highlighted in the Exhibit 3.40. However, it may be essential to note that the proportion of households with access to the mentioned facilities is relatively greater in control areas than the treatment. District specific findings are provided in Volume 2, Section 1-10, Table 1.27)

EXHIBIT 3.40
REPORTED FACILITIES AVAILABLE IN INSIDE-HOUSE LATRINE BY GROUP (IN PERCENTAGE)

	Group	
	Treatment	Control
Only Water	31.3	34.7
Water and Soap	18.1	19.6
Wash Basin/Washing Space (inside the Latrine)	3.4	3.6
Wash Basin/Washing Space (outside the Latrine)	22.1	24.9
Hand Washing Space with Water and Soap T-test, t value=1.09, p-value=0.42	6.9	7.6
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019		

The stated findings were validated by the data collection field team's observation. The incidence noted in the observation about the presence of facilities corroborates with the findings reported by the survey respondents.   22.5% of field staff/enumerators noted the presence of water inside the latrine and 16% about the existence of water and soap.

On the overall cleanliness of the latrine, majority of the enumerators found the area as clean, but 18.5% of them witnessed feces in the latrine pit. Such instances were relatively higher reported in the households of the treatment group.

3.3.7 HYGIENE AND CLEANLINESS-HAND WASHING PRACTICES

Exhibit 3.41 shows that close to 73% of the survey respondents reported of its members practicing hand washing. Although no significant difference is evident among the treatment and control group, inter-district slight variations are noted. More than 80% of the respondents (i.e., above overall average percentage) in the districts of Dadu,

EXHIBIT 3.41
PERCENTAGE OF HOUSEHOLDS WITH MEMBERS PRACTICING HANDS WASHING

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019

Jamshoro, and Shikarpur were practicing hand washing. However, it is found below average in the districts of Sujawal, Tando Allah Yar, Larkana, and Kambar Shahdadkot. (Refer to Volume 2, Section 1-10, Table 1.28)
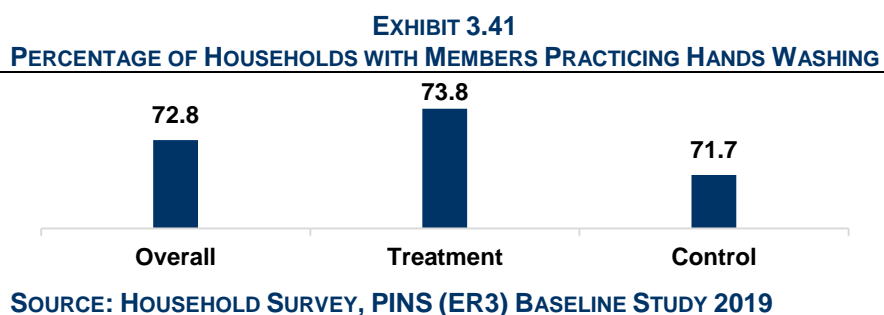
Given the presence of hand washing practice among households, Exhibit 3.42 records the use of fundamentally four substances/material for hand washing at overall level: Water with soap (~75%), only water (~20%), water with ash (2%) and water with mud/matti (~2%). Other materials like only dry ash/mud/matti were seldom reported. Slight differences are noted across treatment and control groups concerning to the categories 'water with soap' and 'only water'.

EXHIBIT 3.42
SURVEYED HOUSEHOLDS REPORTED OF MATERIAL USED FOR HAND WASHING (IN PERCENTAGE)

	Water with soap	Only with water	Water with ash	Water with mud/matti
■ Control	76.7	17.9	1.9	2.2
■ Treatment	72.8	21.9	2.1	2.5
■ Overall	74.7	19.9	2.0	2.3

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
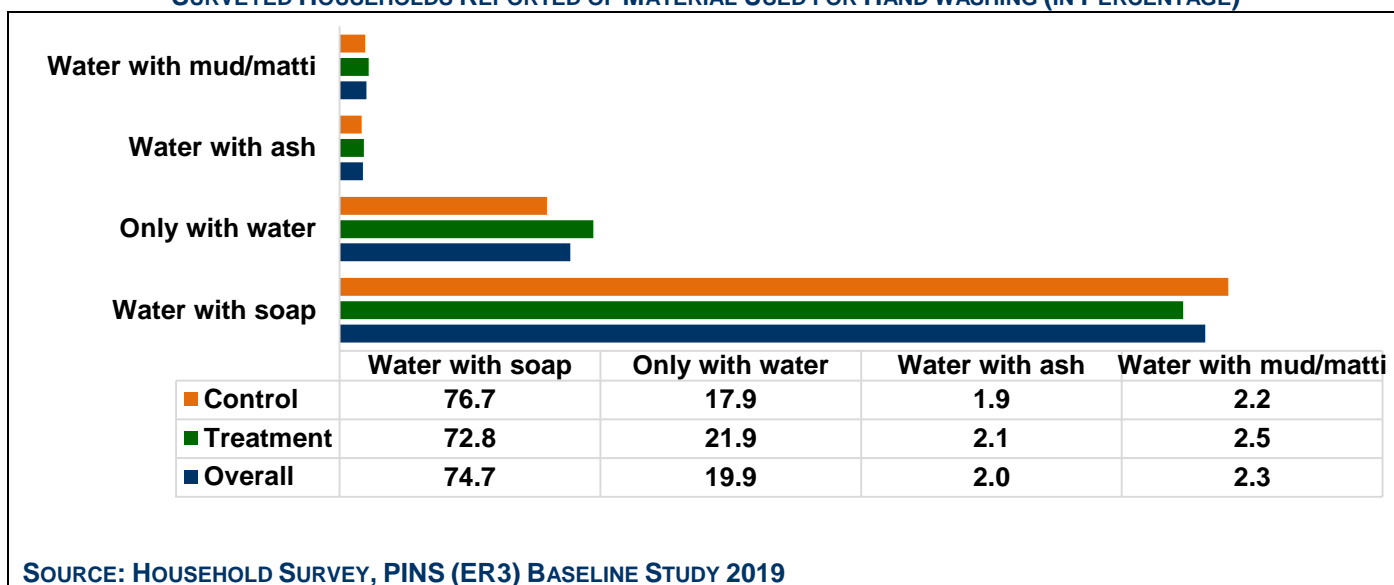
Disaggregating on district level, combined use of water and soap relatively decreases in the districts of Tando Muhammad Khan, Tando Allah Yar and Sujawal, while the incidences of using only water for hand washing are comparatively higher in the districts Matiari and Tando Muhammad Khan. (Refer to Volume 2, Section 5, 7, 8, and 9 Table 1.28)

Hand washing practices among Female Respondents

Related to Programme's emphasis on usage of soap, Exhibit 3.43 records instances when female respondents reported of washing their hands with soap. The highest incidence (~25%) of hand washing was stated for after the usage of latrine. However, lowest (~2%) was stated for the time before feeding children. The latter is important to note given the emphasis on ensuring children health. Not washing hands with soap before feeding children can lead to spread of infection/disease to the child.

EXHIBIT 3.43
PERCENTAGE OF FEMALE RESPONDENTS PRACTICING HAND WASHING WITH SOAP-OVERALL

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
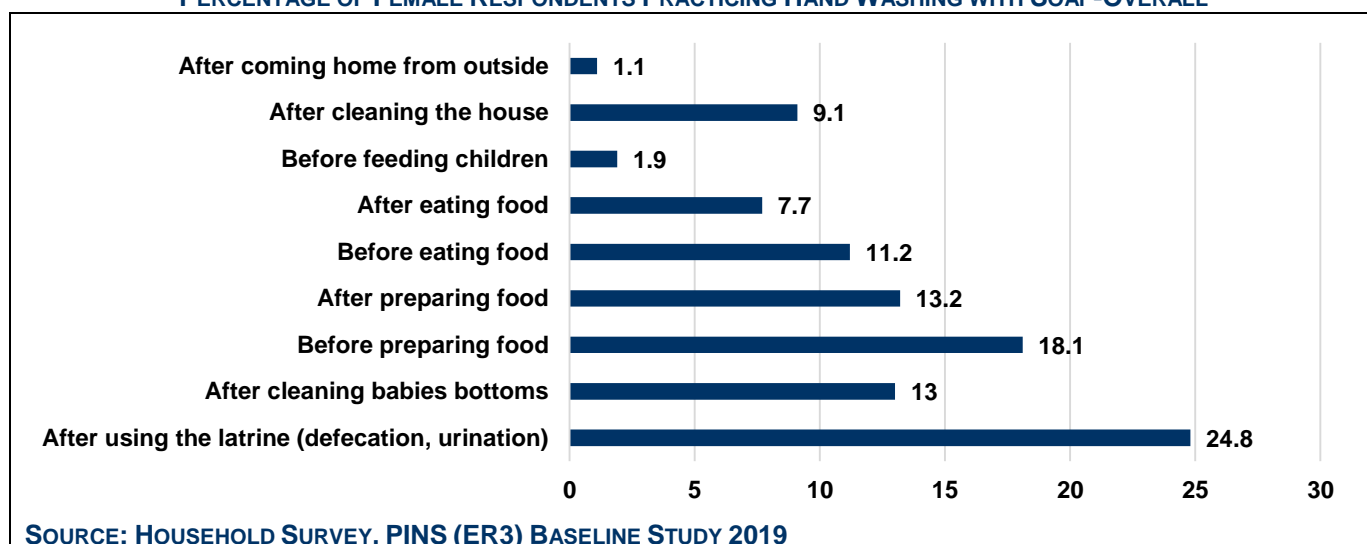
No significant differences are observed in the prevalence of hand washing across the treatment and control group as illustrated in Exhibit 3.44.

EXHIBIT 3.44
PERCENTAGE OF FEMALE RESPONDENTS PRACTICING HAND WASHING WITH SOAP -BY GROUP

	Group	
	Treatment	Control
After using the latrine (defecation, urination)	24.5	25.0
After cleaning babies bottoms	13.0	13.0
Before preparing food	18.5	17.7
After preparing food	12.9	13.5
Before eating food	10.9	11.5
After eating food	7.5	7.8
Before feeding children	2.1	1.7
After cleaning the house	9.3	8.8
After coming home from outside	1.1	1.1
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019		

District-wise information regarding respondents practicing hand washing with soap are collated in the Exhibit 3.45. Notable differences are observed across districts. For instance, 7.3% households reported that mothers do not wash hand with soap in the district Sujawal, while the comparative figure is 0.1% in Larkana. (Refer to Volume 2, Section 4 and 7, Table 1.29)

The handwashing prevalence was cross-validated by enumerators' observation if they find respondents' hands clean, dirty, or somewhere in between (neither clean nor dirty). Around 91% of the enumerators noted interviewees' hands as adequately or moderately cleaned, whereas only 9% found them to be dirty/unhygienic.

Hand washing practices among Children

According to Exhibit 3.45, ~35% of surveyed respondents stated of children washing their hands after using the latrine, which was relatively the highest incidence reported. However, it is essential to highlight that there is still 65% of the responses that did not account for hand washing after using the latrine. This can lead to the spread of fecal contamination among children resulting into gastrointestinal infection and typhoid.

Furthermore, only 10% of responses reported of washing hand after playing and ~11% of responses after coming from outside.

EXHIBIT 3.45
PERCENTAGE OF SURVEYED RESPONDENTS REPORTED CHILDREN PRACTICING HAND WASHING WITH SOAP-OVERALL

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019
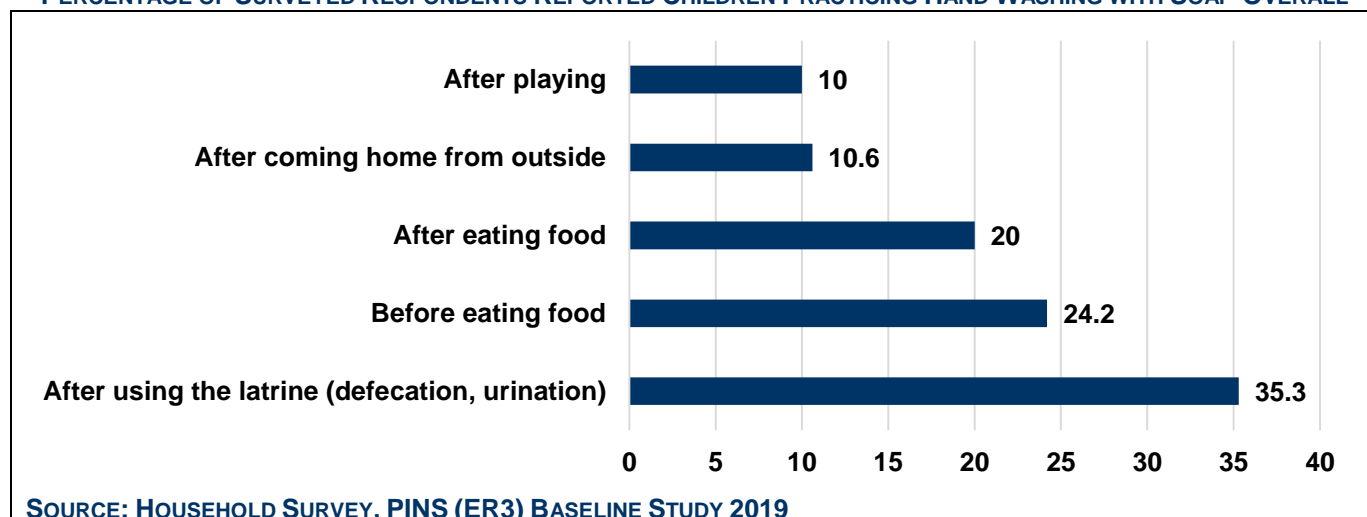
Exhibit 3.46 reports that incidences of hand washing with soap among children in many categories are relatively higher in the control group. (Refer to Volume 2, Section 1-10, Table 1.29)

EXHIBIT 3.46
PERCENTAGE OF SURVEYED RESPONDENTS REPORTED CHILDREN PRACTICING HAND WASHING-BY GROUP

	Group	
	Treatment	Control
After using the latrine (defecation, urination)	35.4	35.2
Before eating food	25.0	23.4
After eating food	20.1	19.8
After coming home from outside	9.8	11.3
After playing	9.8	10.3
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019		

3.3.8 DIARRHEA: AWARENESS OF SYMPTOMS AND TREATMENTS

Recorded in Exhibit 3.47, the baseline survey illustrates that of all the surveyed respondents, approximately 35% correctly identified the main symptom of diarrhea in children—watery stools. 18% of respondents identified stomach pains, while 11% of the respondent (incorrectly) believed that diarrhea involves vomiting.

In terms of treatment to relieve symptoms of diarrhea in children, approximately 70% of respondents identified providing *nimcol* (a combination of water, sugar, and salts—a popular home remedy for dehydration) and oral rehydration solution (ORS) to such children.

EXHIBIT 3.47
SURVEYED RESPONDENTS REPORTED AWARENESS REGARDING SYMPTOMS OF DIARRHEA-OVERALL (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE STUDY 2019
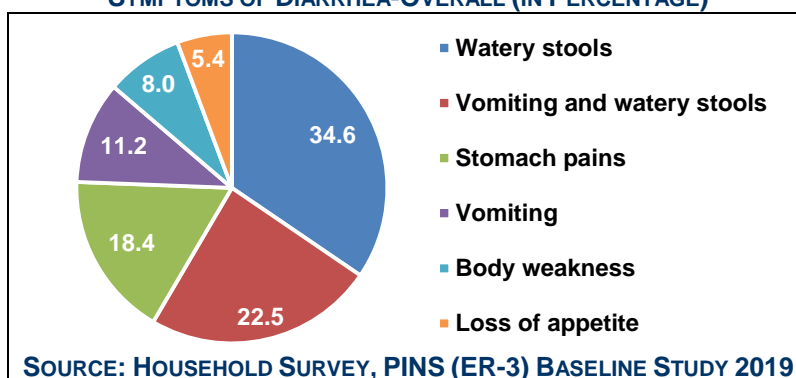
14% of respondents opined that nothing should be given to a child in cases of diarrhea, as the condition alleviates itself. Most importantly, the survey found that only close to 3% of respondents were aware of the importance of zinc to relieve pediatric diarrhea. The findings are aggregated in Exhibit 3.48.

EXHIBIT 3.48
SURVEYED RESPONDENTS REPORTED AWARENESS REGARDING TREATMENT OF DIARRHEA-OVERALL (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE STUDY 2019
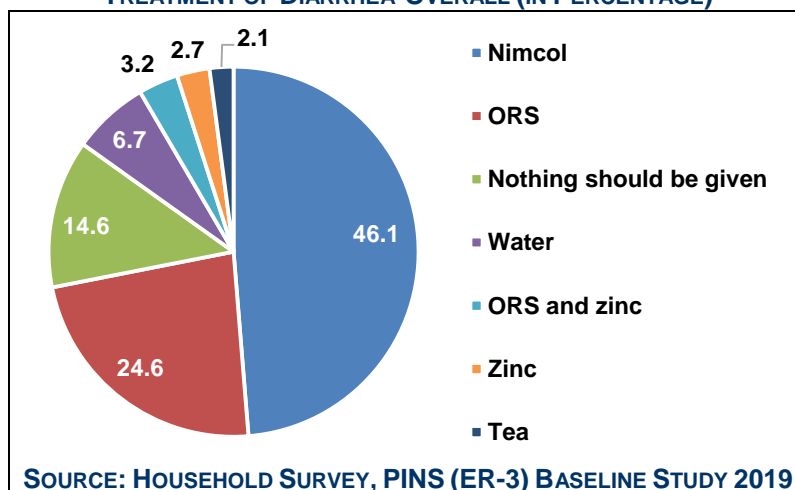
Exhibit 3.49 reveals that notable differences exist in terms of awareness regarding the symptoms, while generally the responses are same in terms of the treatment across the sampled groups.

EXHIBIT 3.49
SURVEYED RESPONDENTS REPORTED AWARENESS ABOUT DIARRHEA AND TREATMENT-BY GROUP (IN PERCENTAGE)

	Group	
	Treatment	Control
Diarrhea Symptoms		
Watery stools	36.1	33.1
Vomiting and watery stools	21.6	23.4
Stomach pains	19.5	17.3
Vomiting	10.6	11.7
Body weakness	7.6	8.3
Loss of appetite	4.7	6.2
Treatment of diarrhea through		
Nimcol	45.4	46.9
ORS	26.0	23.2
Nothing should be given	15.1	14.2
Water	5.7	7.6
ORS and Zinc	3.2	3.1
Zinc	2.6	2.9
Tea	1.9	2.2
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019		

Nonetheless, wide ranges of responses are obtained across each of the samples districts. Only in Larkana and Thatta did respondents correctly identify the main symptom of diarrhea (~70% and 52% respectively).

Knowledge regarding *nimcol* was most prevalent in Dadu (65%), Kamber Shahdadkot (69%), and Matiari (59%), whereas knowledge regarding ORS was only seen in Larkana (51%). (Refer to Volume, Section 1, 3, 4 and 5, Table 1.33)

Respondents were unaware regarding the importance of zinc across all districts except Shikarpur and Sujawal, where a relatively high percentage (~11% and ~16%, respectively) of respondents indicated that both zinc and ORS should be provided to a child suffering from diarrhea. This suggests that there is a lack of information regarding the treatment of pediatric diarrhea. (Refer to Volume 2, Section 1-10, Table 1.33)

Exhibit 3.50 indicates that overall, a little more than half of all surveyed respondents aware about how to prepare *nimcol* at home. The incidence of this knowledge is slightly higher (58 percent) in the control group.

EXHIBIT 3.50
SURVEYED RESPONDENTS REPORTED AWARENESS REGARDING NIMCOL PREPARATION-OVERALL (IN PERCENTAGE)

Overall	Treatment	Control
55.4	53.3	57.4

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE STUDY 2019

Nonetheless, district-wise differences are observed. The incidences are most prevalent in Matiari (76%), Thatta (74%) and Kamber Shahdadkot (68%), and least prevalent in Larkana (34%) and Dadu (43%). However, in Larkana, this low prevalence of knowledge of making *nimcol* could be due to a higher prevalence of the understanding of ORS (57%) (Refer to Volume 2, Section 3, 4, 5 and 10, Table 1.33)

Exhibit 3.51 indicates that although respondents may be aware of the use of *nimcol* during instances of pediatric diarrhea, only ~16% of respondents are (correctly) informed that it helps in replacing salts and minerals lost due to dehydration, whereas ~47% believe that *nimcol* helps in relieving watery stools. Approximately 19% of respondents are entirely unaware of the use/purpose of *nimcol.*

EXHIBIT 3.51
SURVEYED RESPONDENTS REPORTED AWARENESS REGARDING USE/PURPOSE OF NIMCOL-OVERALL (IN PERCENTAGE)

- Helps to relieve watery stools
- Do not know
- Helps in replacing body salts and minerals
- Helps to reduce body weakness
- Helps to relieve stomach pains
- Helps to reduce vomiting

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE STUDY 2019
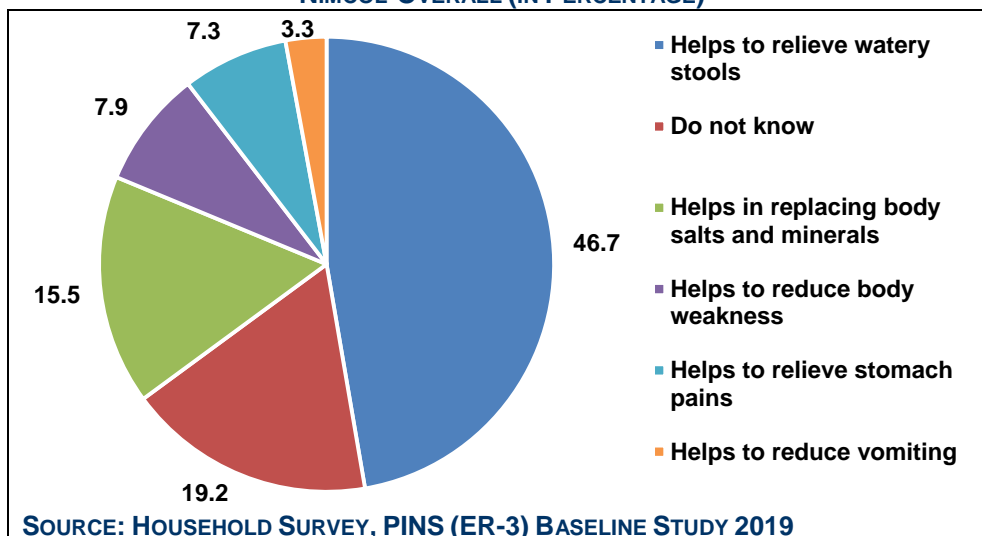
Data regarding the awareness of the use of zinc can be seen in Exhibit 3.52. It indicates that a vast majority (~65%) of respondents are entirely unaware of its purpose, whereas ~20% correctly identify its use in alleviating symptoms of diarrhea.

EXHIBIT 3.52
SURVEYED RESPONDENTS REPORTED AWARENESS REGARDING USE/PURPOSE OF ZINC-OVERALL (IN PERCENTAGE)

- Do not know
- Helps to relieve watery stools
- Helps to relieve stomach pains
- Helps to reduce body weakness
- Helps to reduce vomiting
- Helps in replacing body salts and minerals

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE STUDY 2019
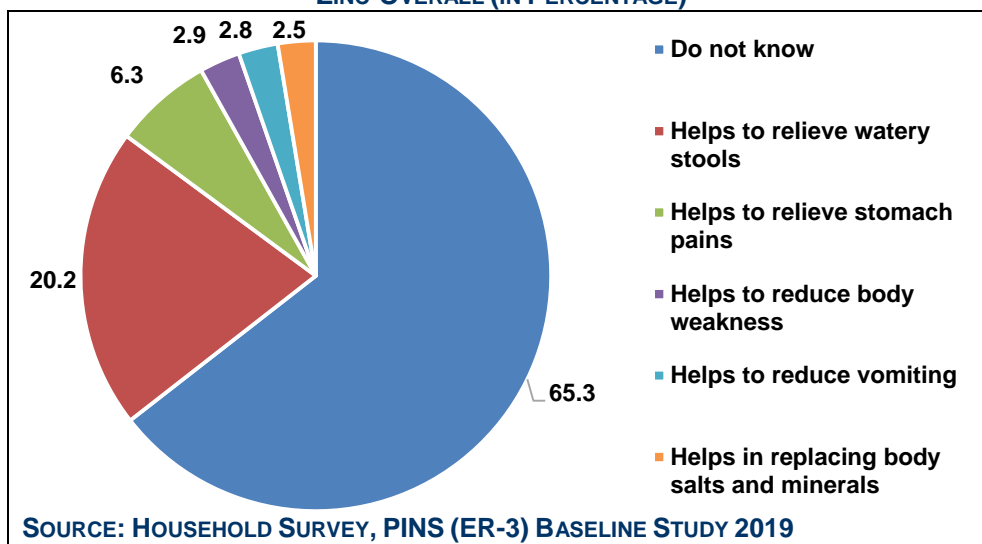
Knowledge on the correct use/purpose of *nimcol* is relatively most prevalent in Kamber Shahdadkot and Sujawal (~25%), and that of zinc is relatively most prevalent in Larkana (~42%) and Matiari (40%).(Refer to Volume 2, Section 3, 4, 5 and 10, Table 1.33)

The comparative figures for the treatment and control groups are collated in the Exhibit 3.53. Marginal differences are evident across the sample groups are evident.

3.3.9   DIARRHEA: INCIDENCE AND TREATMENT

According to Exhibit 3.53, almost one-third of all respondents reported the incidence of diarrhea in children under five years of age in the past two weeks, irrespective of sampled groups (treatment versus control). District-wise variations however noted. The Highest incidence of diarrhea cases seen in Thatta (~52%), and the lowest in Sujawal (16%) and Shikarpur (22%). (Refer to Volume 2, Section 6, 7 and 10, Table 1.34)

Generally, such children were taken to a health facility as reported by 87% of surveyed respondents, and at least by 75% if the data is reviewed at the district level. This indicates that respondents (i.e., parents) are mindful of their children's health in cases of diarrhea, and usually visit the health facility in such cases.

EXHIBIT 3.53
SURVEYED RESPONDENTS REPORTED INCIDENCE OF DIARRHEA IN CHILDREN UNDER 5 YEARS, AND VISIT TO HEALTH FACILITY (IN PERCENTAGE)

T-TEST, T-VALUE=1.09, P-VALUE=0.27
SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE STUDY 2019
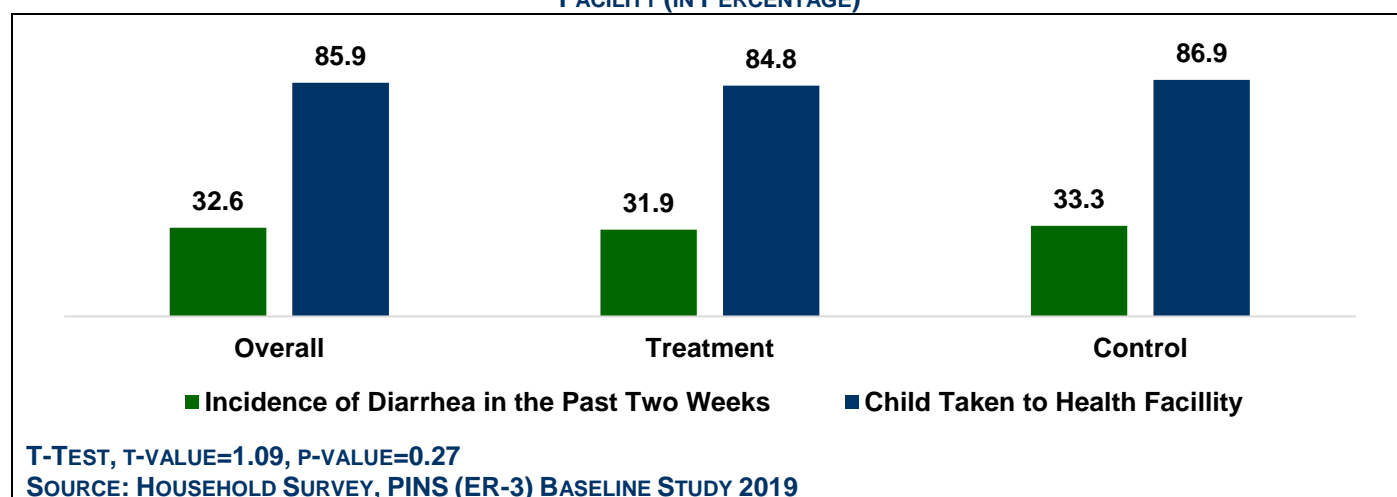
However, the survey findings as noted in Exhibit 3.54 reveal that in such cases of pediatric diarrhea, only zinc syrup or ORS was administered by only ~7% and ~23% of all respondents (respectively). Other prevalent medication included herbal medicines (used by ~11% of respondents), home remedies (administered by ~7% of respondents), or some other medication (administered by ~31%).

EXHIBIT 3.54
MEDICATION ADMINISTERED TO THE CHILD IN INCIDENCE OF DIARRHEA (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE STUDY 2019
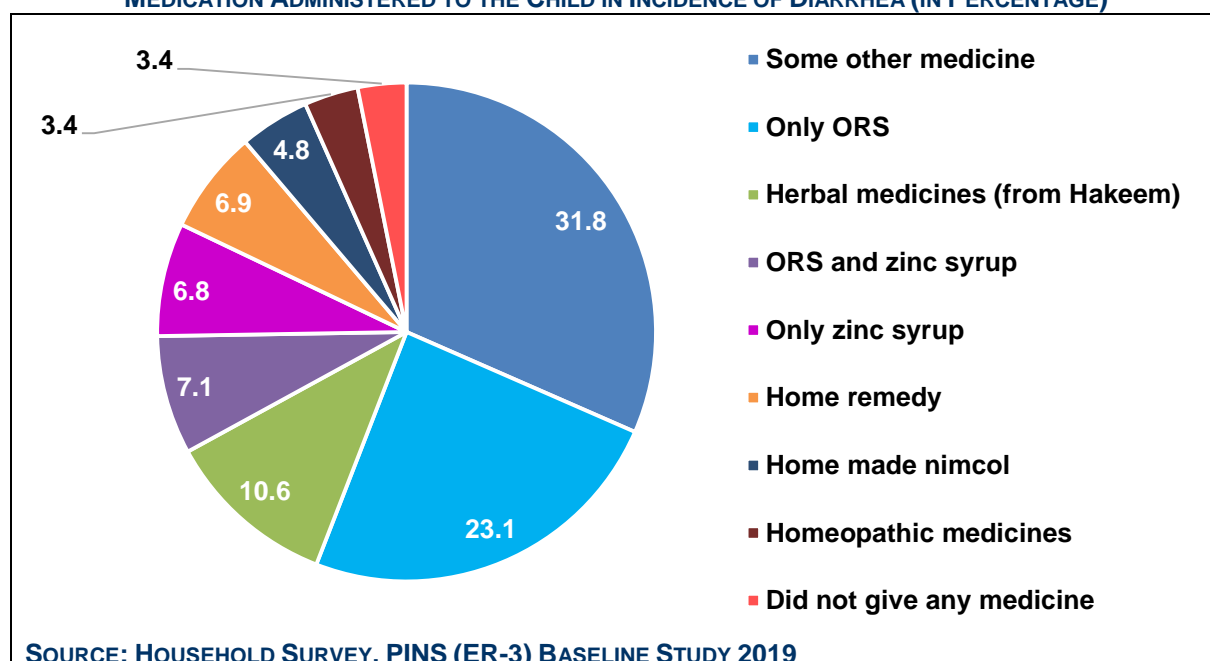
Disaggregated at the district level, Zinc was administered in combination with ORS (the preferred treatment for pediatric diarrhea) most often in Sujawal (by ~39% of respondents) and Larkana (~23%). Only Zinc was administered most often in Sujawal (by ~25% of respondents), and the use of ORS only was most widespread in Kamber Shahdadkot (32.6%), Larkana (35.5) and Shikarpur (34.2%). The use of homeopathic medicines was most pervasive in Matiari (by ~24% of respondents), and that of other home remedies in Tando Muhammad Khan (20%). (Refer to Volume 2, Section 3, 4, 5 and 7, Table 1.34). In cases where ORS-Zinc was administered, it was mostly acquired from either from a medical store (47%), or the doctor him/herself (43%). Receiving of Zinc from some other health facility, Outpatient Therapeutic Programme (OTP) Unit, or health workers were low (approximately 4%, 3%, and 2% respectively).

Exhibit 3.55 illustrates that a relatively higher proportion of responses on administrating children with nimcol/ORS were recorded in the control group than the treatment group.

EXHIBIT 3.55
SURVEYED RESPONDENTS REPORTED AWARENESS REGARDING USE/PURPOSE OF NIMCOL AND ZINC (IN PERCENTAGE)

	Overall	Group	
		Treatment	Control
Medication Administrated			
Some other medicine	-	31.2	31.1
Only ORS	-	21.0	25.3
Herbal medicines (from Hakeem)	-	10.9	10.4
ORS and Zinc syrup	-	6.5	7.8
Only Zinc syrup	-	7.5	6.0
Home remedy	-	5.6	8.3
Homemade nimcol	-	5.7	3.8
Homeopathic medicines	-	3.9	2.9
Did not give any medicine	-	3.8	2.9
Source of ORS-ZINC			
Medical Store	46.6	44.9	48.0
Doctor	43.2	49.2	37.7
Some other health facility	3.8	0.6	6.7
Outpatient Therapeutic Program (OTP)	3.1	3.1	3.1
Health workers (LHWs, CHWs, CMWs)	2.2	1.5	2.8
Average Days of ORS-ZINC Usage	4	4	4
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

3.4   FOOD PRODUCTION SYSTEMS (ADAPTED TO CLIMATE CHANGE)

The section aims to explore infrastructure and processes of food production systems employed at the household and community/village level. It is to understand the conditions of availability, access, and utilization of food obtained from agriculture/crops and livestock within the PINS target population in Sindh. The analysis also includes the factor of recent environmental/ climate change on food production systems in PINS target areas about the prevalence of droughts and floods to gain insight about the overall condition of food security within the districts' population. This section reports mainly on the indicators of the PINS (ER3) log-frame; the detail on other food production sensitive indicators are documented in Annexure 9 of the report.

3.4.1 AGRICULTURE

3.4.1.1 AGRICULTURAL LAND OWNERSHIP

The baseline household survey reveals that majority of the sample population in the districts do not own cultivable agricultural land. Exhibit 3.56 illustrates that only ~18% of the sample households owned cultivable land with an average holding of only 6 acres. A notable difference exists in treatment and control groups (19% versus 17%).

Majority of the landowning households (~49%) were found in

EXHIBIT 3.56
SURVEYED HOUSEHOLDS OWNING CULTIVABLE LAND (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE SURVEY 2019

Shikarpur with an average land holding of 3.6 acres. Whereas only ~8% of landholding households were found in Matiari with an average holding of 4.6 acres. (Refer to Volumen 2, Section 5 and 6, Table 1.35)
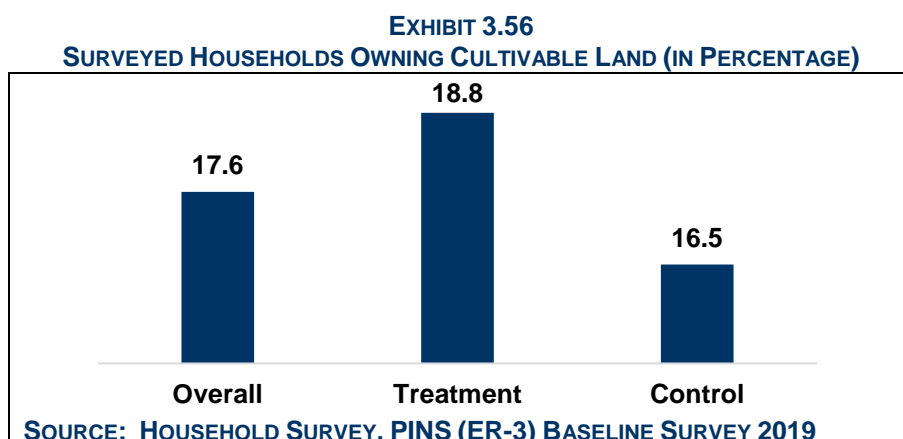
On average, the cultivable land owned area across districts ranges from 3.3 acres to 11 acres. Four of the target districts, namely Dadu, Matiari, Shikarpur and Sujawal comprised majority of the small farmer households owning an average of under 5 acres of land. Districts of Kamber Shahdadkot, Tando Allah Yar, Tando Muhammad Khan and Thatta comprised households with owning an average of between 5 and 10 acres of land. Only the district of Larkana constituted households which held above 10 acres (of about 11 acres) of land. (Refer to Volume 2, Section 1-10, Table 1.35)

3.4.1.2 HOUSEHOLDS CULTIVATING CROPS

Exhibit 3.57 illustrates that the surveyed households owning agricultural land majorly cultivate rice and wheat. 36.4% produced rice and 34.4% produced wheat. No notable differences are evident across the treatment and control group.

EXHIBIT 3.57
SURVEYED HOUSEHOLDS CULTIVATING CROPS (IN PERCENTAGE)

	Overall	Group	
		Treatment	Control
Wheat	34.4	34.6	34.2
Rice	36.4	35.2	37.6
Vegetables	11.3	13.8	8.5
Fruits	1.6	1.7	1.4
Corn	5.3	4.3	6.3
Sugarcane	4.1	3.7	4.5
Lentils	1.6	0.9	2.4
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Disaggregating the findings at the district level, Tando Allah Yar and Matiari noted to have majority proportion of the households (58% and ~53% respectively) producing wheat. Whereas, Shikarpur and Kambar Shahdadkot noted to have a majority proportion of the households (51%) producing rice. (Refer to Volume 2, Section 3, 5, 6, and 7, Table 1.35).

3.4.1.3 UTILIZATION OF AGRICULTURAL PRODUCE

The agricultural produce is reportedly used for both household consumption and commercial purposes. Exhibit 3.58 shows that close to 32% of the sampled households are utilizing at least some proportion of the

produce for the household consumption and selling the remaining in the market. Whereas, 28.6% of the households use the produce primarily for the household consumption, but sell the remaining in the market. The phenomenon is not different across the sample group.

There are only 21.5% and 17.5% of the households who solely utilize the produce for either household consumption or earning purposes, respectively. Of the households utilizing the produce for their consumption needs, only 49.8% recorded the output to be enough for them.

EXHIBIT 3.58
WAYS OF UTILIZING AGRICULTURE PRODUCE BY SURVEYED HOUSEHOLD PERCENTAGE

	Overall	Group	
		Treatment	Control
Sell all the agricultural produce in the market	17.5	17.2	17.8
Utilize the entire agricultural produce in the household	21.5	20.5	22.6
Sell the produce that is in surplus after household consumption	28.6	30	27
Give away (free-of-cost) the produce that is in surplus	0.5	0.5	0.5
Use some in the household, and sell the remaining	31.9	31.9	32
Households Reported "agriculture crop enough for household consumption"			
Percentage of Household	49.8	51.7	47.6
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

3.4.1.4   CROPPING PATTERN IN VILLAGES AT UC LEVEL

During FGDs, participants were inquired of the rabi and kharif crops that are cultivated in their villages. The purpose was to explore variation in food crops production in the target areas which forms an essential factor aiding to food diversity of the population that needs to be mindful of during the circumstances of recent climatic adversity. The response (disaggregated by treatment status of UCs) are recorded in Table 8, Annexure 9 of the report. Wheat and rice continues to be the primary food crops grown in the villages, across the districts, except for Sujawal.

In the rabi season, wheat is the only major staple crop reported to be cultivated in all of the target areas, across treatment and control UCs. In the case of Larkana, it is the only rabi crop grown in the sample area. Participants stated that due to the scarcity of water, farmers do not cultivate other varieties of crops on their lands.

"Rabi mein ziyada tar kuch nahi karte kiyon ke paani ka masla hota hai"
(Village Lal Bux Jatoi, UC Channa, Jamshoro)

(Not a lot of crops are cultivated during the rabi season due to lack of water)Cultivation of vegetables and fruits reportedly is not in abundance; neither is shared among all the sample areas. Vegetable cultivation is generally found in the districts of Kamber Shahdadkot, Dadu, Thatta, and Tando Allah Yar. Their cultivation is found relatively more in the UCs of treatment areas than in the control areas. In addition to the water scarcity, one of the significant factors contributing to lack of vegetable cultivation is reported to be the lack of awareness of methods of its vegetables among the farmers:

"Gandum hi ziyatar yehan hoti hai kio ke sabzi ka shaoor nahi ha logon ko is leye sabzi nahi hoti yahan per, thore bohat temater hote hian"
(Village Jumo Jhakro Chandia, UC Jamal Din Lashari, Tando Muhammad Khan)

(Majorly wheat is cultivated in the areas because people here are not aware about vegetables cultivation that is why not variety of vegetables are found, fewer yield of tomatoes are however present).

Therefore, limited variety in vegetable farming in noted. It mostly constitutes tomatoes, ridge gourd (*tori*) and bitter gourd (*karela*). Okra is also grown but reported to be present majorly in the districts of Dadu and Kamber Shadadkot. Furthermore, lentils and peas are also stated to be cultivated, however, primarily in the districts of Shikarpur and seldom in Kamber Shahdadkot and Dadu.

Similar to the pattern of vegetable cultivation, fruits cultivation is also limited. It is prevalent in the districts of Shikarpur, Tando Muhammad Khan, Jamshoro and Thatta. It constitutes of mainly melons majorly grown in Shikarpur, Kamber Shahdadkot, followed by Jamshoro; and sugarcane in Tando Muhammad Khan, Jamshoro, and seldom in Thatta. Melons are common in the treatment UCs as well, but sugar cane is generally reported to be present in control UCs only.

During the kharif season, rice is the primary staple crop reported to be cultivated in all of the target districts, across treatment and control UCs, followed by corns. The exception is noted in the districts of Larkana, Shikarpur and Kamber Shahdadkot, where wheat is the only kharif crop cultivated in the sample areas:

"*Jitni zameen abad hai unmein sirf chawal ki fasl hoti hai warna zameen khali pari hoti hai*"
(Village Nang Dero, UC Mirpur, Kamber Shahdadkot)

(Only rice crop is cultivated on the proportion of cultivable land available, otherwise no crop is sown).

"*Chawal ke ilawa aur koi fasl nahi hoti*"
(Village Kalo Odhano UC Pir Bux Shijrah, Shikarpur)
(No crop is cultivated other than rice).

Participants informed that the land type in the sample areas in districts of Larkana and Shikarpur particularly is not favorable to other type of crop cultivation such as of vegetable that inhibits the possibility of growing other variety of crops:

"*Yehan per sirf chawal ki fasl hoti hai is ke ilawa agar kanhi zameen upper hai, toh wahan per sabzi bhi hoti hai*"
(Village Gaji Khuhawar, UC Junani, Kamber Shahdadkot)

(Only rice crop is cultivated in our areas. However, in the condition where the cultivable land is bit lifted, vegetable cultivation is done.)

Vegetable and fruit cultivation is however limited, similar to the rabi season, and varies across the sample areas in the districts. Again, vegetable cultivation is relatively dominant in the treatment UCs over the control UCs. It constitutes mainly of tomatoes, found majorly in Sujawal, ridge gourd and okra in Tando Muhammad Khan, *guwaar* in Dadu and Jamshoro, and onions in Thatta.

Furthermore, sugar cane is the only primary fruit type cultivated, however, found predominantly in the district of Tando Muhammad Khan only. Rare instances were recorded of melons and mangoes cultivation, but only in the district of Tando Allah Yar (in the UC of Shah Inayat Rizvi). Moreover, no off-season cultivation is reported to be practiced in any of the target districts.

3.4.1.5 MEASURES TO PROTECT CROPS FROM ADVERSE EFFECTS OF CLIMATE

The FGDs conducted also aimed at exploring agricultural practices, particularly among small farmers (i.e., those who hold land of 5 acres or less). Given the farming practices, the discussions focused on finding out about the challenges to the local farmers in view of the recent climate change and if they have adapted techniques/measures specifically to counter it.

About agriculture practices, a mix of modern (mechanized) and traditional techniques were reported to be in use among the farmers across different stages of cultivation. For ploughing, the use of leveling blades was more commonly stated than the use of laser levelers. However, for harvesting, both manual and technical means were used, depending on the type of crop.

Small farmers reported using multi-crop thresher for various types of crops such as wheat, barley and rice. Threshing is done entirely by using threshers now in the fields. Crop harvesting is still done manually by male and females. Role of females is important to note as they are responsible for picking of vegetables and cotton.

Following are the challenges that the FGD participants informed of being faced by the farmers in cultivation and the respective measures adopted to respond to it:

Challenge of Water Scarcity and Installation of Tube Wells

Participants have informed that in the matter of past few years water shortage has become a major challenge in crop cultivation. Most of the sample areas source irrigation water from non-perennial canals, of which receipt frequency and abundance have reduced substantially. Canal remains dry for at least 4-6 months in a year. To counter water paucity, wealthier farmers have initiated installing tube wells to compensate for their water needs, but dependence on the canal irrigation and rain fall continues among small and relatively poor farmers across all the district. They still struggle to fulfill their lands' water requirement. As a consequence, they purchase water on rent from the farmers owning tube wells:

"Paani ek buhat mara masla ban chukka hai, aumoman toh canal se hi sairab kartey hain per canal se itna pani nahi ata ka zarorat puri hojage isiliye apney liye rent pe tube well walo se paani lete hain"

(Village Peerzada, UC Makhdum Bilawal, Dadu)

(Water has become a major problem, we used to irrigate lands through canal water only, but not enough water is received that is required to fulfill our needs. Therefore, we purchase water on rent from the ones owning tube wells).

Noted in Table 9 of Annexure 9, tube wells have not become common across all the target areas, particularly in the districts of Larkana, Kamber Shahdadkot, Tando Muhammad Khan and Dadu. It is only in Sujawal where tube wells are prevalent. However, water from tube well can only be aided for vegetable cultivation, as informed by the participants, but rice and wheat production still require water from canal or rain:

"Chawal k season mein hamain zarurat May ke mahane se hoti ha aur pani June ya July mein ata ha jis ki waja se fasal ki pedawar pechle kuch saalo se kam hogae hai"
Village Angrio Borhi, UC Sijawal Juenjo, Kamber Shahdadkot)

"During the season of rice (cultivation), we require water from the month of May, but we receive it from June or July because of which the rice yield has reduced since the past few years.)

"Nehri pani se hi pani dete hain. Thore bohat tube well bhi hain per woh zyda tar un k pass hain jo sabzi karte hain. Gandum aur chawal ki kasht nehri pani par hi hote hain"
(Village Tarai, UC Mehrabpur, Larkana)

(Provide water through canals. Tube wells are also here, but it is majorly present with the ones who cultivate vegetables. Wheat and rice are cultivated through canal water only).

Important to note is also the case of treatment UCs in Dadu, where rain water constitutes the major source of irrigation. Use of tube well and canal is not predominant unlike other areas among districts. It is problematic because recorded in drought assessment reports for Sindh, recently, proportion of rain received has reduced substantially in the district.

Furthermore, boring is stated to be another measure of countering water scarcity, found mainly in the sample UCs of Tando Allah Yar and Shikarpur. It is seemed as a viable solution only in the areas where ground water is sweet.

Besides, boring and tube wells, no other way is reported of responding to water shortage.

Adverse Climate (Increased Heat Intensity) and Related Countering Measure

Participants discussed increase in temperature in the recent years as another challenge to crop cultivation, particularly during the kharif season. However, most of the participants recorded no knowledge or awareness for protecting the crops from heat. Only a few explained of covering vegetables crop with a plastic sheet or spraying of water over them.

3.4.1.6   PRESENCE OF AGRICULTURAL DEPARTMENT OFFICES IN TARGET DISTRICTS:

The government agriculture department offices were stated to be present only in the districts of Dadu (in the UCs of Butt Serai, Kolachi and Kandichuki) and Tando Allah Yar (in the UC of Mail Mori). This indicates lack of access of farmers to the state agricultural institutions whom they can contact in wake of any challenge.

3.4.2 LIVESTOCK

3.4.2.1   LIVESTOCK OWNERSHIP

The household survey noted that a significant proportion of households do not have any livestock animal. Illustrated in Exhibit 3.59, only 48% of sample households held its ownership. Buffalos and goats were reported to be the commonly held animals among families. Of the sample, ~30% of the households had buffaloes followed by ~23% having goats. Ownership of cows and chickens were also reported with 15% and 16% of households respectively. Presence of ducks, sheep, and camels was seldom recorded. Furthermore, the animals were predominantly used for household needs, but around 32% of households also used it for selling purposes, as illustrated in Exhibit 3.60.

<table>
<tr>
<td align="center">EXHIBIT 3.59
SURVEYED HOUSEHOLDS OWNING LIVESTOCK-OVERALL (IN PERCENTAGE)</td>
<td align="center">EXHIBIT 3.60
SURVEYED HOUSEHOLDS REPORTED SELLING OF LIVESTOCK-OVERALL (IN PERCENTAGE)</td>
</tr>
</table>

SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE SURVEY 2019
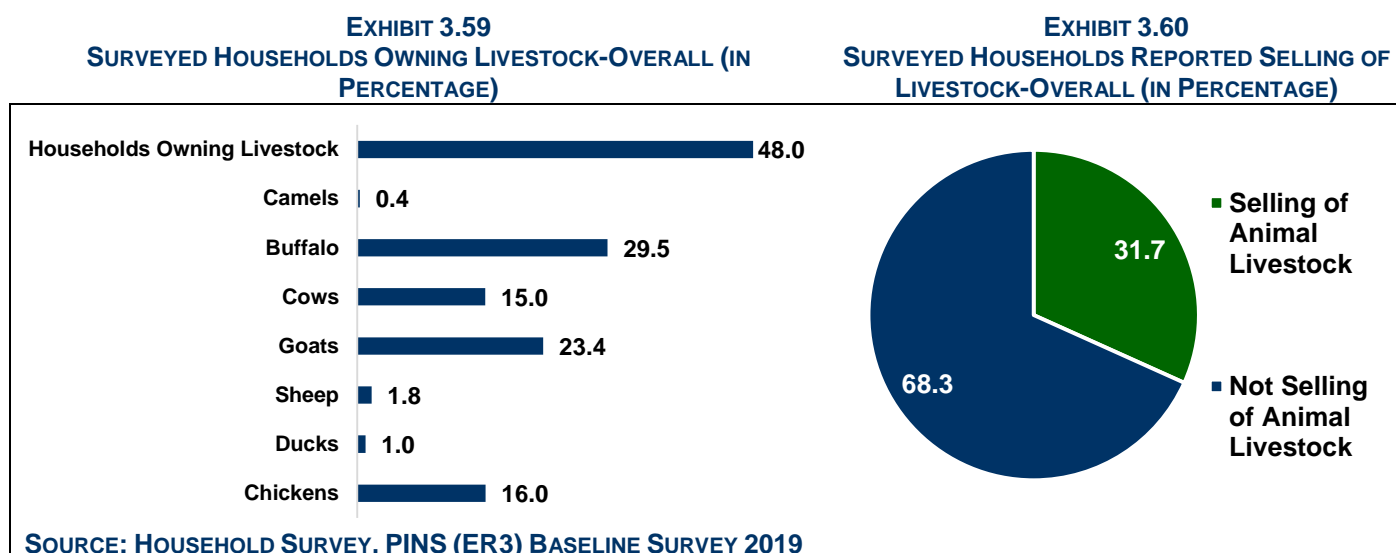
Exhibit 3.61 provides information regarding livestock ownership and selling trend disaggregated at the sampled group. Generally, the ownership incidences are higher in the treatment group as compared with the control group.

However, inter-district variations are noted. Districts of Thatta, Sujawal, and Tando Muhammad Khan constituted of relatively lesser proportion of livestock owning households particularly in comparison with households in the districts of Kamber Shahdadkot, Tando Allah Yar, and Shikarpur. (Refer to Volume 2, Section 3, 7, 8 9, and 10, Table 1.36)

EXHIBIT 3.61
SURVEYED HOUSEHOLDS WITH LIVESTOCK OWNERSHIP AND REPORTED SELLING-BY GROUP (IN PERCENTAGE)

	Group	
	Treatment	**Control**
Households Owning Livestock	50.7	46.4
Livestock Animals Owned		
Chickens	18.1	14.4
Ducks	1.3	0.7
Sheep	1.8	1.8
Goats	26.2	21.3
Cows	17.3	13.1
Buffalo	29.1	30.6
Camels	0.5	0.2
Households Reported Selling of Animal Livestock	34.4	28.9
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019		

3.4.2.2   UTILIZATION OF LIVESTOCK PRODUCE

Unlike agricultural produce, livestock produce is fundamentally used for fulfilling household consumption needs. As recorded in Exhibit 3.62, ~49% (almost half of the sample population) were using all of the animal food output only for household diet. However, ~11% of households also reported of selling livestock products in the market but only when household needs are met. Only 5% of the households were such who would all the entire products in the market. It is important to note there were also ~18% of households who had no produce from their livestock. Often livestock animals are reared for additional income that they earn by selling off the animals during national cultural festivals like Eid-ul Azha. No notable differences are observed across the treatment and control groups.

EXHIBIT 3.62
UTILIZATION OF LIVESTOCK PRODUCE BY SURVEYED HOUSEHOLD PERCENTAGE

	Overall	Group	
		Treatment	**Control**
Sell all in the market	5.0	5.5	4.4
Utilize the entire in the household	48.8	47.2	50.4
Sell that are in surplus after household consumption	10.6	11.1	10.2
Use some in the household, and sell the remaining	0.3	0.4	0.2
We give away (free of cost) the produce that is in surplus after household consumption	17.6	17.3	18.0
There is no livestock produce	17.7	18.6	16.8
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Animal dung is also a vital produce that can be used for various purposes that includes as a fertilizer, making dung cakes/*oplay* for household use and income source. Illustrated in Exhibit 3.63, ~58% of the households use animal dung to prepare *oplay* from it whereas 15.9% of the households use it as fertilizer. There is significant proportion of sample population (38%) who were reported to be just discarding the dung whereas it could be used for varied purposes.

Making *oplays* is quite prevalent in the districts of Shikarpur, Larkana, and Kamber Shahdadkot, whereas minimally present in Thatta and Matirari. In districts of Thatta, and Sujawal the practice of usage of dung as fertilizer is more common. In remaining districts like Dadu, Jamshoro, Tando Muhammad Khan and Tando Allah Yar, dung is reported to be just discarded. (Refer to Volume 2, Section 1-10, Table 1.38)

EXHIBIT 3.63
UTILIZATION OF ANIMAL DUNG BY SURVEYED HOUSEHOLDS

	Overall	Group	
		Treatment	Control
Use it as fertilizer	15.9	16.7	15.0
Sell it	7.8	7.0	8.6
Make dung cakes/*oplay* and use them	57.6	55.3	60.3
Discard it	38.2	39.6	36.8
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Institutions teaching rearing livestock and farming could be beneficial in informing people about how animals can be looked after, and their products can be optimized for household benefits. However, the presence of such an institution is negligible in the target areas. Only close to 2% of households overall across the districts reported of having institutions for teaching skills for animal husbandry or poultry farming, respectively. Noted in Exhibit 3.64, the higher incidence is observed across the sampled group; 2.2% in the treatment in comparison with 1.5% in the control group.

EXHIBIT 3.64
PRESENCE OF INSTITUTIONS REPORTED IN SAMPLE AREAS REPORTED SURVEYED HOUSEHOLDS

	Overall	Group	
		Treatment	Control
For teaching skills for rearing livestock/animal husbandry	1.9	2.2	1.5
For teaching skills for poultry farming	1.9	2.3	1.5
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Of the treatment group, it was noted during the FGDs that SRSO has started providing services in teaching animal husbandry and poultry farming in a few of areas mainly in Kamber Shahdadkot.

3.4.3   OCCURRENCE AND MEASURES ADOPTED FOR MITIGATING FLOODS IMPACT

3.4.3.1.   FLOODS OCCURRENCE

Table 13 documented in Annexure 9 of the report records the last incidence of floods in the target villages of the study sample as informed in the FGDs. The responses are grouped at the UC level (disaggregated by treatment status) for analysis. The Exhibit illustrates that most of the UCs in control and treatment areas were last affected by floods in 2010-2011. Floods are not a prevalent condition in UCs as such.

An exception exists in some of the areas in the control areas which were again hit by floods in 2015 after 2010/11. Those areas include villages in UC Magsi in Dadu district and UC Kothi in Larkana district. Similarly, in the treatment areas, floods were reported to occur every year after rainfall in the UC Sawro and Wanhi Pandi in Dadu and Keti Bunder in Thatta. The major reason for regular overflowing is not cleaning of minor distributaries required to channel excess water. Therefore, when households are constructed at low heights, which is the case in these areas as informed during FGDs, they are immediately flooded with excess rain water.

3.4.3.2.   MEASURES TO COUNTER FLOODS

Recorded in FGDs, floods were reported to be widely conceived as a natural disaster, *qudrati afat,* against which participants believed that they are not capable of protecting their lives:

"(Selab) qudrati afaat hai log kuch nahi karsakhte"

(Village Raza Mohammad, UC Thalo, Dadu)

(It is a natural disaster, people cannot really do anything about it.)

"Sailaab quadrati afat hai logo ko kuch pata nahi hota ke kiya hone waala hai. Hakumat bhi theek tarha se nahi batati warna ilaqey ko chor sakhte hain. Sailaab se nimatne ke liye log kuch nahi kar sakhte"
<p style="text-align:right">*(Village Malook Thebo, UC Darya Khan Mari, Tando Allah Yar)*</p>

(Floods are a natural disaster, we cannot be aware of what it can really lead do. Also, government does not inform us prior about its occurrence so that we can leave from the area. People cannot really do to counter floods.)

Migration was the only widely recorded tactic in the FGDs practiced both as a way to save people lives:

"Ilaqe ke log sehlab se nipatne ke liye koi tyaari nahi karte bas arzi taur per naqal maqani karte hain aur apne saath khane peene ka saman lete hain"
<p style="text-align:right">*(Village Dhani Bux, UC Kandichuki, Dadu)*</p>

(People do not undertake any preparation as such to counter floods. However, the leave from the area temporarily).

"Koi tyar nahi karte, (hum apna) Ilaqa chor kar buland muaqamat ki taraf hijrat karte hain"
<p style="text-align:right">*(Village Tikhar, UC Khokar, Tando Muhammad Khan)*</p>

(No preparation is done, (we) leave our area and migrate to places at height.)

An alternate practice of building small barriers was however noted in a few villages of UC Sukhpur in Thatta and UC Magsi and Kolachi in Dadu to manage the flow of water:

"Pani ke bahao ko kum karne ke liye band lagae hain, iske ilawa log toofan se nipatne ke liye kcuh din ilaqa chor kar upper waale mehfooz ilaqe mein ja kar rehte hain""
<p style="text-align:right">*(Village Ahmed Khan, UC Sukhpur, Thatta).*</p>

(Barriers are built to slow down the flow of water. Other than this, (people) leave the area and move to safe places at height to counter the water storm).

"Seilab se nipatne ke liye hum gaon ke gird band, ring band, banate hain. Liken phir bhi hum Faslo ko bacha nahi sakhte".
<p style="text-align:right">*(Village Anb Magsi, UC Magsi, Dadu)*</p>

(To counter the floods, we build barriers, ring barriers, around the village. However, despite building the barriers, we cannot protect farm fields/crops from the floods).

"Hum chote chote band lagate hain (gaon ke gird)"   *(Village Sultan Bhatti, UC Kolachi, Dadu)*
(We build small barriers (around the village)).
Practice of protecting household area surrounding was also noted:

"Miti daal kar gharo ko mehfoz karte hain ya kisi jaga hijrat karni hai toh karlete hain"
<p style="text-align:right">*(Village Khahi Mehnoon, UC Panhwaro, Kamber Shahadkot)*</p>

(Protect our houses through adding sand or migrate to somewhere if required)

It is essential to note that no alternate/innovative practice was eminent in the villages where floods occur often and are moreover a recurrent yearly condition (such as in the UCs of Wahi Pandi and Sawro in Dadu and Keti Bunder in Thatta).

3.4.3.3.   MEASURES TO MITIGATE FLOODS IMPACT

A few practices are described in the FGDs that participants believed locals should adopt to protect themselves from future floods:

"Seilab se bachne ke liye logo ko gharo main miti daal kar upper karna chahiye hai, aur jab tak paani in ke gaon ke taraf se mur nahi ho jata ine gaon ke gird stone pitched bricks band bana chahiye take gaon ki saari imlak mehfoz rahe"

(Village Anb Magsi, UC Magsi, Dadu)

(To be protected against the floods, people should raise the heights of their houses through adding the sand. Till water flow is not diverted from the village, stones and bricks should be placed in the surrounding to protect village's assets and resources).

"Ghar ounchi jaga banana chahiye aur band banana chahiye"

(Village Wathiyon, UC Keti Bunder, Thatta)

(Houses should be built on height, and barriers should be built).

"Ghar onche teleon per ya miti k zaree ooper karke banae aur jab selab ki khabar pare to foran nikal jana chahye"   *(Village Angrio Borhi, UC Sijawal Junejo, Kamber Shahdadkot)*

(Houses should be made on small hills or raise its height through adding sand, and when information for floods is received, must leave the areas immediately).

"Paani ke bahao ke liye naale banae"

(Village Wahid Jo, Mehrabpur, Larkana)

(Canals should be made to manage the flow of water)

Alternatively, there were also several responses noted which presented that participants instead believed that there is no approach or method through floods can be prevented, or they can guard themselves against them. The only way to save their lives is to migrate from the places where floods occur:

"Seilab ka koi hal nahi, sab logo ko chahiye ke ilaqa chor jae liken sab ke liye yeh mumkin nahi, isiliye oonchi jaga talash karni chahiye aur deira karleina chahiye hain"

(Village Fateh Muhammad Brohi, UC Sawro)

(There is no solution to (prevent) floods, people should move from their areas, but it is not possible for everyone. That is why people should find out places on height and stay there.)

In other cases, participants believed there it is instead the responsibility of the government to take measures to save people from worsening impact of floods:

"Nahi, kuch bhi nahi kar rahe, yeh kaam hukumat ko karna aur sochna chahiye"

(Village Amri, UC Shah Inayat Rizvi, Tando Allah Yar)

(No, nothing is done, this is the responsibility of the government to think and take (measures)).

3.4.3.4.   DEVELOPMENT OF LOCAL PLANS TO PROTECT AND IMPROVE QUALITY OF DRINKING WATER DURING FLOODS

Majority of the participants stated of no such plans in place at the village/local level to protect and improve the quality of drinking water during or post floods. Participants mentioned that neither there are enough resources nor awareness among locals that such a plan could be devised or implemented upon:

"Koi plan nahi, (hum ne) aesa khabhi kuch socha nahi. Aur itne logo mein shahoor aur wasayel bhi nahi hai"

(Village Amri, UC Shah Inayat Rizvi, Tando Allah Yar)

(There is no plan, (we have) never thought of such initiative. Neither there is awareness and enough resources among people for taking such initiative)

"Kuch nahi karte yahan per, zamini pani jo ha yehi koi check karena nahi aya pani kesa ha bas hum bhi peete hain aur koi zarae bhi nahi ha is k elawa"

(Village Nang Daro, UC Mirpur, Kamber Shahdadkot)

(Do not exercise any such action here. No one has even come to check the ground water source that we use in routine, and so we continue utilizing it during the floods as well. There are no other water source as well.)

"Humare pass koi hal nahi hai, aesa koi plan nahi hai ke paani ke zariye ko mehfoz kar sakhe. Hum gareebo ko kia maloom ke kese paani ko mehfooz Karen, wese he bohat masail hain"
(Village Fateh Brohi, UC Sawro, Dadu)

(We do not have any solution or plan through which we can protect the drinking water source. How do we poor people know of ways to protect drinking water? There are several other problems otherwise as well).

Alternatively, a few instances in Thatta district were only recorded where participants mentioned of practicing water storage mechanisms. They stated of building water tanks in the household or using plastic drums for water storage.

3.4.4 OCCURRENCE AND MEASURES ADOPTED FOR MITIGATING DROUGHTS IMPACT

3.4.4.1 DROUGHT OCCURRENCE

In October 2018, the Government of Pakistan issued drought alert for in the districts in Sindh and Balochistan. Four of the PINS target districts of Thatta, Dadu, Jamshoro and Kamber Shahdadkot were included in the list of eight of the worst drought-affected areas in the province declared by the provincial government of Sindh[59]. These districts suffered from an abrupt decline in the monsoon rainfall in May and August 2018 causing a decrease in water resources. These districts have been witnessing water shortages and recorded low rainfall with minimal or no precipitation at times in recent years. This prolonged period of dryness has been reported to affect food productions systems in the province[60].

In 2019, the severity of drought conditions in the districts improved with the up to 2 spells of winter rainfall, as issued by Pakistan Meteorological Department (PMD). Despite improvement, PMD declared moderate drought conditions to prevailing in the province which along with other districts included 4 of PINS regions: Matiari, Kamber Shahdadkot, Sujawal, and Thatta[61].
Pakistan National Drought Monitoring Centre has reported that severe to moderate drought conditions have begun to prevail in the parts of Sindh. The severity of the drought has however witnessed an overall increase across the country in other provinces as well due to increasing temperature and occurrence of a heat wave, rising instances of El-Nino climate effect, reduction in a number of rainfall days62.

To be able to gauge prevalence of drought conditions in PINS target districts, Table 14 (in Anneuxre 9) records occurrence of droughts to date as reported during FGDs both in control and treatment areas of the PINS project.

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[59] Pakistan: Drought Information Bulletin (2019) by International Federation of Red Cross and Red Crescent Societies: https://www.ifrc.org/docs/Appeals/19/IBPKdr280119.pdf
[60] ibid
[61] Recorder report: Rains provide relief to drought-affected districts of Sindh (2019): https://fp.brecorder.com/2019/02/20190201443908/
[62] Report on Prevailing Drought like Situation in Sindh (November 2018) by Pakistan National Disaster Management Authority (2018): http://www.ndma.gov.pk/Advisory/2018/Drought%20Situation%20%20Report%20of%20Sindh%20Particularly%20in%20District%20Tharparkar-2018%20(12-11-2018).pdf

Drought-affected UCs are present both in control areas and treatment areas; however, district variations exist. Furthermore, information reported in the FGDs about instances of drought occurrence particularly the districts of Kamber Shadadkot and Dadu suggests otherwise to the PMD report that declared the districts were severely affected by droughts. The sample UCs under the study of the mentioned districts were recorded of not being suffered from droughts during the FGDs.

3.4.4.2 MEASURES UNDERTAKEN TO COUNTER DROUGHT

It was informed in the FGDs that locals have widely installed hand pumps to access groundwater primarily for drinking purposes, but it was reported that now sweet water is depleting in areas, such as Larkana. For agriculture, participants stated of using tube well in the recent past for irrigation purposes. This practice is mostly reported to be shared in the wealthier households in the villages:

"Jin logo ke pass paise hain woh tube well ya solar tube well lagwaein hain jinke zariye fasal karte hain"
(Village Bhall, UC Toung, Jamshoro)
(People who are relatively wealthy have got (usual) tube well or solar tube well through for irrigating crops).

Participants also mentioned undertaking boring in the villages, but, described that its water level is depreciating now. As a counter measure, a few instances also stated of using electric boring to be able to bore deeper, but reported that due to lack of electricity supply in the villages this mode has not been very useful either.

"Bijli ki boring karwai hai, liken bijli naa hone ke waja se woh kaam nahi ai"
(Village Pyaro Magsi, UC Kothi, Larkana)
(Have installed electric boring, but due to the absence of electricity this could not be utilized to its capacity).

The effectivity of deploying tube wells, hand pumps, or boring as a countering measure to recover from water scarcity caused by depreciating levels of rainfall needs to be thought upon. Reason for this is that the decline in the rain in the recent past has led to a decrease in the water table level and subsequent water output from springs and tube wells[63]. That is why the water needs that are being fulfilled as of now may not continue to happen soon if the proportion of rain fall remains in decline. Thus, the measures may not be effective in the long run.

Water storage practices were seldom reported across the districts except in the treatment UCs of Thatta where locals described that they have initiated constructing small ponds in the villages to counter water scarcity.

"Log pani ko mehfoz kartehain talaab bana kar ya hand pump lagate hain"
(Village Wathiyon, UC Keti Bunder, Thatta)
(People store water through building ponds, or install hand pumps).

These aforementioned practices are not uniformly implemented in the UCs (be it of treatment or control). There were instances recorded where participants reported undertaking no preparatory/countering measures to droughts. They were prone to migrate to urban centres of the province such as Karachi and look for labor work. In other circumstances, participants also described of selling off their livestock and taking private loans from banks to secure themselves economically:

"Koi tyari nahi karte, (hum) maal maveshi bech kar guzara karte hain"
(Village Beli Thap, UC Toung, Jamshoro)
(No preparations are done, (we) sell off the livestock to survive).
"Kushksali se nipatney ke liye koi soch nahi hai yehan per, log mazdoore kartay hain shehar jaa kar, maal maweshi wagera bej dete hain, bank se qarza lete hain"
(Village Anwar Khan Nizamani, UC Shah Inayat Rizvi, Tando Allah Yar)

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[63] Pakistan: Drought Information Bulletin (2019) by International Federation of Red Cross and Red Crescent Societies: https://www.ifrc.org/docs/Appeals/19/IBPKdr280119.pdf

(There is no planning to deal with droughts in our area. People do labor work in the cities, sell off the livestock, and take loans from banks)

the FGDs where participants stated of lack of awareness of the measures that can be taken to prevent or counter droughts:

"Khushksali ki waja se zaraat se rozgar ke zarae band hojate hain toh log Karachi ki taraf jaate hain, mazdori karte hain, ya private jobs karte hain. Kuch log samandar mein machli pakarte hain"

(Village Udhejan, UC Jar, Sujawal)

(Sources of income from agriculture during droughts are limited, that is why people move towards Karachi, do labor work or undertake private jobs. Some also start doing fishing).

3.4.4.3 MEASURES TO BE ADOPTED TO MITIGATE DROUGHT IMPACT

FGDs conveyed that participants commonly believe in that preventing and countering drought is the sole responsibility of the government, not of the citizens.

"Hakumat ka farz hai ke woh kuch behtar iqdamat karein, hum gareeb log khusksali ke sorat-e-haal say bachne ke liye kia karsakhte hain"   (Village Sonhari, Tando Allah Yar)
(It is the responsibility of the government to take better measures against drought, what can us poor people do protect ourselves against this situation?)

The participants felt that due to their economic vulnerabilities, they are unable to cope with the impact of the drought. As a consequence, they look towards to the government institutions not only to make arrangements for their needs but also provide them with measures to be protected against droughts:

"Hakoomat ko kuch karna chahiye jese ke logon ke liye khane peene ka bandubast aur aese tariqe batane chahiye jisse hum apne aap ko khushksali se mehfooz karsakte"   (Village Pir Bux Brohi, Larkana)
(Government should take measures for provision of food to the people, and should inform (us) of ways through which we can protect ourselves from droughts).

 "Government ko chahiye ke iss ilaqe mein dam banwaye, taake barsaat ke auqat mein paani jama zakhair ho sakhe aur paani se fasal ki jae. Ya phir tube well lag wa kar dein".

(Village Bhall, UC Toung, Jamshoro)

(Government should build dams in this area so that in the times of rain fall water can be stored and subsequently used for irrigating fields during droughts. Or, get us installed tube wells).

Building water storage ponds was another measure provided by the participants.

"Pani ko zakhair karne ke liye paani ke tailab banana chahiye".   (Village Panj Ladho, UC Jar, Sujawal)
(Ponds should be built to store water).

"Hand pump aur tailaab banwane chahiye"   (Village Ahmed Khan, UC Sukhpur, Thatta)
(Should install hand pump or build ponds)
No instances however were recorded to improve food storages among UCs.

3.4.4.4 OFF SEASON CULTIVATION

Off season cultivation was not common among UCs across the districts. Major reason was lack of awareness of this practice among participants:

"Iske baare mein hamein nahi pata aur naa kisi ne bataya"
(Village Khahi Meenhoon, UC Panhwaro, Kamber Shahdadkot)

(We do not know of such cultivation, and neither were we taught for it).

"Hamari nazar mein aese koi fasl nahi jo khushksali mein lage jae"

(Village Sonhari, UC Jhando Mari, Tando Allah Yar)

(In our knowledge, there are no crops that can be cultivated during droughts).

However there were instances where some participants did inform about the crops that can be grown in adverse climatic conditions. The crops include of coriander, melon and lentils in Kamber Shadadkot; lentils and gawwar in Jamshoro; mustards and sesame seeds in Larkana; melons, mustards, fenugreek *(methi)* in Sujawal; beans, okra, cotton, gawwar, peanuts in Tando Allah Yar; and sugar cane and corns in Thatta.

3.4.5   KITCHEN GARDENING

Kitchen gardening is a home/communal-based vegetables and fruits cultivation structure aimed at improving family food security by expanding family food production and income opportunities. In this context, FAO launched a programme to facilitate creation of communal kitchen gardens in Sindh and Balochistan to restore food security and agriculture based livelihoods of population affected by 2010 and 2012 floods in Pakistan.

This structure is now considered as a reliable measure to enhance family food security by obtaining a low cost healthy diet and food all around the year preventing them from food vulnerability during the situation of natural disasters or climatic uncertainty.

Therefore, in consideration to the recent climatic change in Sindh and its potential impact on food security of population, the household survey aimed to explore if the households practice or have the capacity to develop kitchen garden in their household area. It targets to improve both the availability and access to food and consequent utilization of it to enhance the quality of living of agriculture based livelihoods.

3.4.5.1   SPACE AVAILABLE FOR KITCHEN GARDENING

There is a small proportion of households in the Programme target areas of Sindh that has ownership to space for kitchen gardening. Across the sampled group, as illustrated in Exhibit 3.65 overall only ~7% of the sample households had space available (either inside or adjoined to their house for growing vegetables and fruits). The percentage of such households is almost twice in the treatment (9.5) as compared with the control group (4.8).

Moreover, proportion of such households was recorded to be highest (17%) in Tando Mohammad Khan and lowest in Matiari (1%). In districts of Dadu, Jamshoro, Larkana, Tando Allah Yar such proportion of households remained under 5%. (Volume 2, Section 1-10, Table 1.40.

EXHIBIT 3.65
SURVEYED HOUSEHOLDS WITH SEPARATE CULTIVABLE LAND AVAILABLE FOR KITCHEN GARDEN (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE SURVEY 2019
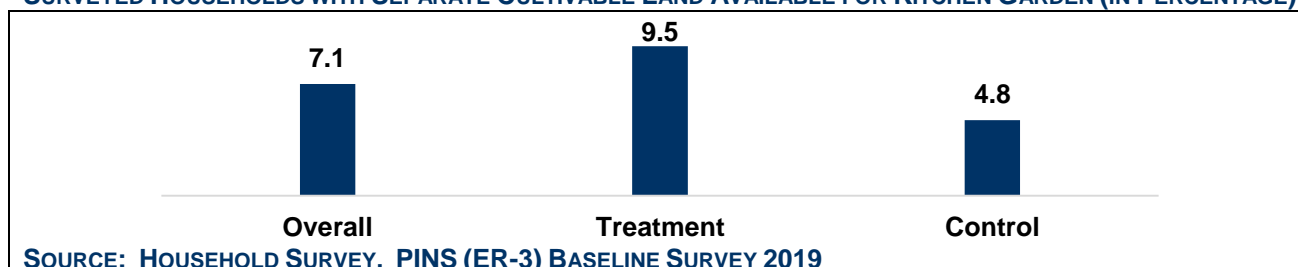
3.4.5.2   HOUSEHOLDS PRACTICING KITCHEN GARDENING

Kitchen gardening practice is not common among the households. As shown in Exhibit 3.66, of the households holding cultivable land inside or adjoined to the houses only 16.2% of the households cultivate fruits and vegetables. It is practiced largely by households in the districts of Kamber Shahdadkot, Tando Allah Yar and Thatta constituting up to the proportion of 38.7%, 35.7% and 37.1%, respectively. It is just not practiced in the district of Matiari. (Refer to Volume 2, Section 3, 5, 8, and 10, Table 1.40).

EXHIBIT 3.66
SURVEYED HOUSEHOLDS REPORTED CULTIVATION OF FRUITS AND VEGETABLES (IN PERCENTAGE)

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE SURVEY 2019
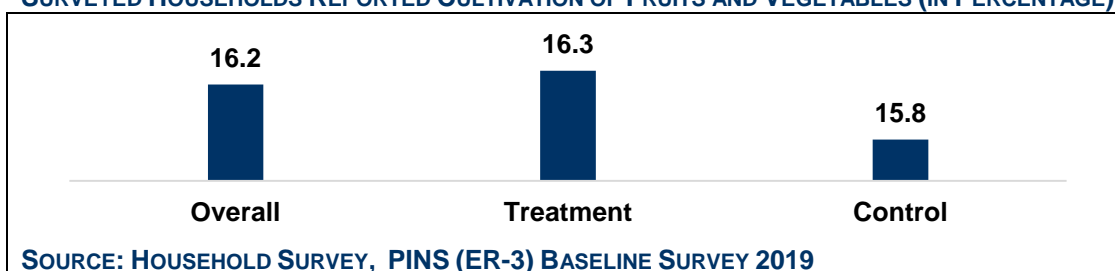
Furthermore, the method of cultivation adopted for kitchen gardening remains predominantly through in-ground sowing of seeds, as illustrated Exhibit 3.67. Households in the districts Dadu and Jamshoro only reported to be cultivating seeds in pots, but no such instances were found in other districts. It fundamentally implies lack of knowledge among households of various different ways of cultivating seeds in home for required produce. One of such methods is seeding in pots, which suggests that kitchen gardening do not always require presence of a horizontal cultivable space. It can easily be undertaken on vertical wall spaces.

EXHIBIT 3.67
METHODS OF KITCHEN GARDENING USED FOR CULTIVATION BY SURVEYED HOUSEHOLD PERCENTAGE

SOURCE: HOUSEHOLD SURVEY, PINS (ER-3) BASELINE SURVEY 2019
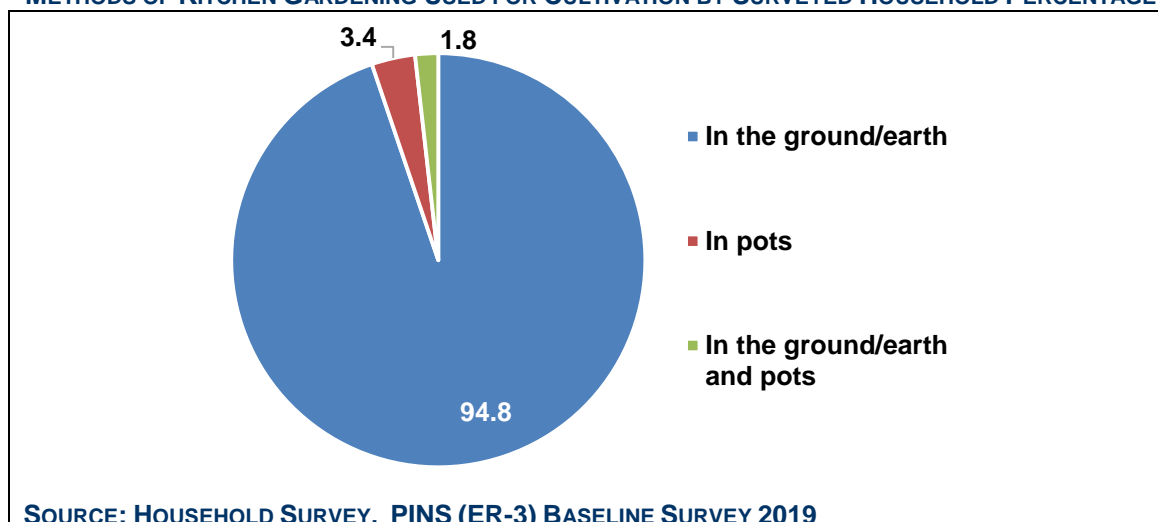
Lack of knowledge of house-based cultivation methods is a primary reason for why families do not practice kitchen gardening. Indicated in Exhibit 68, only 2% of the households reported of having institutions for teaching household based cultivation methods in their areas. FGDs informed that only in the district of Kamber Shahdadkot, local IP-SRSO has started teaching methods of kitchen gardening in the villages, but no such institution or organization was reported in other districts. This reflects that there is a dire need of resources in areas to teach ways of kitchen gardening to houseohlds in order to implement kitchen gadening as a model for improving food security.

EXHIBIT 3.68
PRESENCE OF KITCHEN GARDENING TEACHING INSTITUTIONS REPORTED IN SAMPLE AREAS BY SURVEYED HOUSEHOLDS

	Overall	Group	
		Treatment	Control
For teaching skills for household farming of vegetables and fruits	1.9	2.2	1.5
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

CHAPTER 4: Impact Assessment

4.1 ER3 PROGRAMMATIC RELEVANCE

Since the past decade, national programmatic and policy interventions focus on malnutrition as an immediate issue, particularly among under 5 years' old (U-5) children and pregnant and lactating mothers. In Sindh, the condition of malnutrition becomes serious as 48% and 24% of U-5 children suffer moderate and severe stunting, and 15% and 3.6% suffer from moderate and severe wasting (MICS 2014).

The relevance to the implementation of PINS (ER3) Programme in the severity of malnutrition condition in Sindh centers on the premise that argues for the necessity of nutrition-sensitive initiatives in addition to nutrition-specific service-related initiatives. The Programme introduces multi-sectoral measures that are focused on preventing malnutrition in the population in the long run. It moves beyond the approach that limits the provision of health services required to treat malnourished children and women instead. It emphasizes on the improvement of the overall household and village environment to enable healthy living.

Realization of Water, Sanitation and Hygiene (WASH) related interventions in the ER3 component in the targeted districts of Sindh is highly significant considering the poor condition of access to the improved drinking water sources and sanitation facilities, as noted in the baseline survey. 31% of the sampled households reported not having access to safe drinking water. Drinking water is fetched from unprotected water sources such as open hand pumps, open wells, and likewise. 36% of the sampled households reported being deprived of latrine facility, making them susceptible to open defecation. Furthermore, hygiene specific hand washing practices were also not being practiced regularly among mothers/caregivers. These conditions are the primary catalyst for the spread of water-borne diseases, such as diarrhea and cholera, particularly among young children, leading to the cases of malnourishment. ~33% of the respondents already stated of incidence of diarrhea in U-5 children. Therefore, interventions targeted at improving access to safe water and toilets are relevant as it furthers the prevention of diseases in the population that results in malnourishment.

Application to the interventions related to food production systems (adapted to climate change) is also central given the situation of harsh climate conditions in the targeted areas of the Programme. Water scarcity and heat intensity were two of the fundamental problems reported during the baseline survey. A significant proportion of the responses accounted that farmers are unaware of the measures and lack of resources that are required to counter the present challenges. This reportedly also limits farmers from growing variety of crops and constrain them to cultivate single or limited items. The Programme thereby guides farmers (and to the local population) about water storage measures through which water can be made available during the period of dryness. This enables farmers to sustain their crop yield in harsh conditions, and improve the condition of food availability and access.

The Programme also emphasizes the need for improving dietary intake of U-5 children and women (specifically pregnant and lactating). The need for this intervention pivots on the fact that there is a significantly low proportion of women and children who adequately consume a variety of food groups in their diet. The Programme encourages the local population to develop the capacity of food production so that variety and adequate quantity of food can be made available for household consumption. The measures include adoption to kitchen gardening and livestock ownership. These will not only expand the food production base but also provide access to food that is not susceptible to market and environmental fluctuations.

4.2   ER3 PROGRAMMATIC EFFECTIVENESS:

Effectiveness of the Programme in realizing its outcome level, key performance indicators demonstrates on two fundamental parameters: Community-based Behavior Change Communication (BCC) activities and Building of Community Supported Infrastructure, providing improved access to water, sanitation, and food. A comprehensive **BCC tool kit** is designed for raising awareness on WASH (at household and community level) and dietary practices. It also includes water storage measures in the wake of challenging climate conditions. Developing a tool kit ensures consistency of curriculum that is communicated across the board. It contains messages with pictures enabling the spread of awareness across the sections of the society irrespective of the literacy status. It uses pictures in the local setting to make the content relatable. Also, equal representation of women, men, and children are ensured based on the issue/message discussed so that it is inclusive of all and hinted at the relevant target audience of the Programme.

Construction of community supported infrastructure includes building toilets, kitchen gardens, and water storage structures. Consistent BCC interventions would be required to convince households of the need of the given infrastructure at the household and village level, so that households can willingly spend a portion of their income. In such cases, maintenance of the developed infrastructure will be the sole responsibility of the community, hence interventions' sustainability, in the long run, can also be guaranteed. Also it reduces independence on state institutions.

However, the adoption of the kitchen garden may encounter a significant challenge. This pertains to lack of space adjacent/adjoined to households. In this scenario, the intervention may focus on developing communal kitchen gardens in addition to individual households.

Furthermore, there is also a concern about the effectiveness of the water storage structure that is to store water from rain. It is contingent to the proportion of rainfall in every season, which has been uncertain in the recent past.

Nevertheless, in the wake of water scarcity, ways can also be taught to farmers for less water-intensive farming, which may add stability in production of food even during the time of dryness.

4.3   PROGRAMME EFFICIENCY

The Programme has successfully concluded various activities that have made ground for timely initiation of PINS (ER3) interventions. The activities include conducting poverty survey of the target districts (using poverty scorecard methodology). The survey provided necessary socio-economic and demographics information essential to gauge the population's capacity to absorb project interventions. Through EU-led WINS Programme, baseline findings of crucial PINS-related indicators have also been gathered to identify local needs and the relevance of the overall PINS interventions. However, now the PINS ER3 specific baseline survey also reaches its conclusion providing ER3 component sensitive insights to the Programme management.

Moving forward, based on our prior evaluation experience in the nutrition sector, following measures may be introduced to improve on the Efficiency of implementation of Programmatic interventions:

Monthly and quarterly Progress Review Meetings among all IPs and the RSPN should be adopted. The purpose of the meetings is to collectively discuss progress on the log frame KPIs and related challenges. Each IP must be able to present their **monthly and quarterly work plans** based on which their progress is measured and evaluated by the RSPN in each month and quarter. The meeting will also serve as the platform for IPs to share lessons learned and innovative practice that they may have adopted in implementation of various interventions. The sharing will provide IPs with the pool of innovative practices that they can use in their respective district to improve their experience.

Setting of a Proper Reporting Mechanism between the IPs and the RSPN is also integral. The mechanism includes decision on the mode and frequency of reporting. Given the practice in other nutrition programs, monthly and quarterly submission and review of reports furthers the efficiency and accountability among various stakeholders. The report mode should comprise both qualitative (narrative-based) and quantitative components. The components will be determined based on the **monitoring and evaluation indicators** as set by the Programme management at the RSPN and C4ED. The indicators must be prior shard and discussed with the IPs so that required data is effectively gathered and progress is tracked. To introduce the consistency in reporting, it is also recommended that reporting formats are earlier shared and discussed with the IPs.

Based on the review of reports submitted, **regular and timely feedback** must be provided to the IPs by the RSPN, C4ED and other technical partners for improvement.

Furthermore, to record the monitoring indicators, developing **an online dash board**, may also be considered. The dashboard will provide facility of real time update and tracking progress on key areas that require immediate attention and rectification. It will be only effective if all IPs consider its usage and regularly practice it.

4.4 PROGRAMME SUSTAINABILITY

For the Programme to have an effective exit, it is substantial that the local IPs (NRSP, SRSO and TRDP) are made custodians of the interventions. IPs stays at the grass root level and constitutes close connection with the communities. The engagement continues for long-term even interventions conclude. Therefore, IPs' role is integral in sustainability of the Programmatic initiatives. In this perspective, the Programme should ensure capacity building exercises of IPs' project staff. They should conduct continuous/regular training covering both managerial and technical aspects of the interventions. Furthermore, regular consultative sessions with IPs during the project execution should also arranged, as they are substantial to enable IPs to gain ownership in the very project.

CHAPTER 5: RECOMMENDATIONS

Some of the recommendation proposed for the program are shared below:

5.1 SAFE AND CLEAN DRINKING WATER AND SANITATION

5.1.1 There is a dire need to take serious **measures to provide access to improved water sources** to the people in the targeted areas. In addition to the rainwater harvesting/storage structure, the measures may also include providing piped household water connections, public standpipes/tap, and borehole to the villages. However, the former two may require **collaboration and lobbying with the Relevant Government Departments**. Priority target districts in this domain include Thatta, Sujawal and Tando Allah Yar.

5.1.2 The Programme may also deliberate upon taking **actions to protect surface water sources like rivers, streams, ponds, and groundwater** from where a significant proportion of the population still fetch their drinking water. It requires lobbying with the government institutions and other stakeholders like private industries to take considerable **measures to avoid water pollution**.

5.1.3 Taking into consideration that even improved water sources can be guaranteed to providing clean and safe water, the Programme may also focus on **the development and implementation of a holistic water safety plan** for the target districts.

5.1.4 As part of the water safety plan, the Programme can undertake **a water quality test of the available drinking water** to be aware of the quality of the drinking water present for households' intake. The results provide detailed statistics to determine the proportion of the population having access to improved water.

5.1.5 Also, **safe water storage practices** may be introduced in the Programme through BCC. These may include **BCC sessions** raising awareness on methods focusing on cleaning of water storage spaces/containers, protection/covering of water storage containers, and methods of water storage.

5.1.6 BCC should also raise awareness among community about general usage of "ice" in drinking water. In a number of cases ice is purchased from outside and even if the water was safe for drinking at home the water used for ice is contaminated. Additionally, children's drinking water practices outside the household should also be included in the BCC sessions.

5.1.7. Furthermore, the ER3 interventions may also deliberate on providing community financed **low-cost sanitation solution to the villages/households**, which includes both latrine construction at the household level and connection to sewer lines at the village level. Given the possibility of installing sewer lines in the target areas, lobbying with relevant government departments may also be considered. The government will be responsible for providing main sewer lines in the area into which secondary area sewer lines get connected. Priority districts for this domain include Tando Allah Yar, Thatta and Sujawal.

5.2 NUTRITION STATUS

5.2.1 About improving dietary diversity of the population, the interventions should emphasize on rationalization of food expenditure. Females in the villages may be provided with **teaching lessons on how to proportion their spending on food items** in a manner that enable them to purchase/consume food items across all essential food groups. The rationale behind conducting female-targeted sessions is because of the social roles of females in the villages that give authority to take food-related expenditure decisions for the households.

5.2.2   Importance should also be laid on raising awareness about consuming vegetables, fruits, and pulses, particularly among women (pregnant and lactating) and U-5 children. One of the practical BCC activities that can be arranged for this purpose is holding of **food mela/exhibition** at the village level. The objective of the exhibition is to display food items, mainly fruits, vegetables, and pulses that are locally produced or available. This provides widespread awareness of the essential food items available for the locals for their consumption.

5.2.3   **The initiative on kitchen gardening** may prove to become an essential strategy in ensuring vegetable cultivation at the household level. However, its effectivity can be augmented if **they are also introduced at the communal level**. More space and resources are then available for cultivating a variety of crops.

5.2.4   Besides, farmers may also be **taught of practicing normal and off-season vegetable cultivation**. Fresh vegetables are then available throughout the year, both for consumption and commercial purposes.

5.2.5   Furthermore, related to recent changes in climatic conditions, Programme interventions may consider **introducing hygienic food storage practices** in addition to water storage practices. Food storage is a necessity both during the times of drought and floods. This improves the sense of food security among households.

5.3   CLIMATE CHANGE & AGRICULTURE

5.3.1   Related to agricultural practices, farmers should be educated about the **tunnel farming to protect their crops from intense heat.** This is one of the main challenges that farmers encounter while cultivating crops in addition to water scarcity.

5.3.2   Drip irrigation is also a new farming technique and can be introduced for areas facing scarcity of water and drought. Water application is quite efficient in this method. It reduces the weed growth and also prevent soil erosion.

5.4   AWARENESS RAISING ON PROGRAM AREAS

5.4.1   **Capacity building of BCC trainers, and coordinators or social mobilizers** is essential. It is recommended for rolling out of BCC content related training; each IP should nominate a master trainer to the RSPN for training their respective districts' social mobilizers. The RSPN should lead the training of master trainers, which should be cascaded at the grassroots level in the supervision of IPs. RSPN and the IPs must arrange refresher training throughout the Project life for both the trainers and mobilizers.

It is recommended that training should be provided every quarter. It aims to ensure capacity building of new inductees if any. Furthermore, trainers and mobilizers should comprise of both males and females so that both sections of the population are equally targeted.

CHAPTER 6: CONCLUSIONS

This chapter disaggregates the baseline study findings by KPIs of PINS (ER-3) indicative log frame to summarize the current health and nutrition conditions in all target districts in comparison with the existing baseline values (as mentioned in the log frame). For most of the indicators, the baseline value is derived from MICS 2014 that are representative of the overall provincial level health condition rather than district-specific health conditions, and EU commissioned PINS districts profile 2017. This study however provides findings of the target districts disaggregated by treatment and control groups.IT is summarized in form of a matrix in Exhibit 6.1. It is to give an opportunity to compare the overall provincial health situation with Programme-specific treatment areas where interventions are to occur.

The reported baseline statistics cannot be directly compared to either MICS 2014 or PINS district profiles of 2017. Firstly, MICS survey is holistic representation of the province of Sindh, inclusive of urban and rural areas. However, the ER3 baseline survey is representative of only ten districts in Sindh comprising of rural areas mainly. Also, PINS district profiles are based on a census conducted in the target districts, however, the baseline findings are sample-based.

EXHIBIT 6.1
INDICATIVE LOG-FRAME OF PINS (ER3)

Indicators	Baseline (incl. Reference Year)	Current Value (AASA-2019)		
		Overall	Treatment	Control
Percentage of expenditure dedicated to a minimum of four food groups (outside staples) by target households*	TBD	PKR 10,510	PKR 11,316	PKR 9,657
Percentage of women, age 15-49 years from targeted population, who consume at least 5 out of 10 defined food groups of Minimum Dietary Diversity-W	27% (district nutrition profiles report for PINS 2017)	19.2%	19.6%	19.3%
Percentage of children (age 6-23 months) that consume a minimum acceptable diet	13% (district nutrition profiles report for PINS 2017)	15.8%	15.3%	16.7%
Percentage of incidence of diarrhoea in U-5 children in programme target areas	28% (diarrhoea prevalence in Sindh-MICS-Sindh 2014)	32.6%	31.9%	33.3%
Percentage of target population using safely managed drinking water sources (Access to improved water sources)	90.5% (MICS-Sindh 2014)	68.9%	69.2%	68.5%
Percentage of programme-targeted population who use an appropriate water treatment method	12.8% (MICS-Sindh 2014)	1.8%	1.7%	1.9%
Percentage of programme target of population using an improved sanitation facility	72.8% (MICS-Sindh 2014)	17.7%	16.2%	19.1%
Percentage of program target households with a specific place for hand washing with water and soap	41% (MICS-Sindh 2014)	7.2%	6.9%	7.6%
Percentage of mothers/care-givers in targeted villages who practice hand washing before feeding children	TBD	1.9%	2.1%	1.7%
Number of Villages with at least one integrated farmer field school and/or community-managed demonstration sites for poultry, livestock or/ aquaculture**	0	6.6%	8.2%	5.0%

EXHIBIT 6.1
INDICATIVE LOG-FRAME OF PINS (ER3)

Indicators	Baseline (incl. Reference Year)	Current Value (AASA-2019)		
		Overall	Treatment	Control
Number of target households (0-23 on PSC) who have established kitchen garden in programme villages	0	16.2%	16.3%	15.8%
Proportion of targeted small farmers (disaggregated data by gender) implementing new agriculture techniques adapted to climate change	0	Water scarcity and increase in temperature are two major challenges reported that affect small farmers. In addition to canal water, farmers manage to compensate for their water needs through tube wells. However, they continue to depend largely on canal irrigation and rain water. Moreover, for the increase in heat, farmers practice tunnel farming mainly for vegetables cultivation, but this method is not widely known among farmers across the districts.		
Number and type of climate resilient measures for mitigating floods and drought impacts at local level	285 VOs taken 3 type of measures in Thatta/Sujawal	No specific measures are widespread among districts to mitigate droughts and floods' impact. However, practices that were seldom reported include: constructing of small barriers around villages to prevent floods; and undertaking boring and installing tube well to be able to fulfil water needs during the times of dryness		
**It constitutes as the percentage of households reported of the presence of such demonstrated sites in their localities.				

ANNEXURES

ANNEXURE 1: LOG-FRAME OF PROGRAMME'S ER3 COMPONENT

		Intervention logic	Indicators[64]	Baseline (incl. Ref. year)	Current value (incl. Ref. year)	Targets (2021)	Sources and means of verification	Assumptions
Overall objective:	Impact	To sustainably improve the nutritional status of children under five (U-5) and of Pregnant and Lactating Women (PLW) in Sindh in line with the second target indicator of the SDG Goal No. 2.	Prevalence of stunting of children aged below five years in Sindh;**&*** Proportion of children U-5 with Severe Acute Malnutrition (Wasting);*** Proportion of pregnant women who are anaemic (Hb<12g/dL);*****	50% Sindh (2014); 63% in rural Sindh (DHS-2013); 18% in rural Sindh (2014); 60% in rural Sindh(2014);		45%*** TBD 13% 50%	SUN Secretariat & DoH reports; DoH reports; NNS;	Nutrition remains priority agenda of GoP, GoS and donors during the programme life;
Specific objective(s): Outcome(s)		To contribute in efforts of Government of Sindh (GoS) in improving food diversity and reducing water borne diseases while implementing climate resilient nutrition sensitive interventions in programme target areas of Sindh.	Percentage increase of expenditure dedicated to a minimum of four food groups (outside staples) by target households; ***** Percentage of women, age 15-49 years from targeted population, who consume at least 5 out of 10 defined food groups of Minimum Dietary Diversity-W[65];***** Percentage of children (age 6-23 months) that consume a minimum acceptable diet[66]; **** Percentage decrease in incidence of diarrhoea in U-5 children in programme target areas[67];	TBD; 27% (district nutrition profiles report for PINS 2017); 13% (district nutrition profiles report for PINS 2017); 28% diarrhoea prevalence in Sindh (MICS-Sindh 2014);		20% increase over baseline; 40% 30% 18% diarrhoea prevalence	Baseline, midline, end line project surveys; DOH reports; MICS reports;	Supportive GoPak and GoS policy framework for implementing climate resilient nutrition sensitive interventions; Food prices remains stable during the programme life; No major natural disaster occurs in targeted districts during the programme life; Other nutrition related projects remain committed to focus on key messages for improved social and behaviour change;

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[64] Indicators aligned with the relevant programming document mark with '*', indicators aligned to the EU Results Framework with '**' and indicators aligned with the GoS DoH Nutrition Support Programme for Sindh with '***', indicators aligned with GoS AAP '****' indicator aligned PINS overall logframe '*****', indicators aligned with d SDG '******' indicators without * are additional indicators.

[65] MDD-W is defined as: Women 15-49 years of age that have consumed at least five out of ten defined food groups the previous day or night

[66] Minimum acceptable diet: Proportion of children 6–23 months of age who receive a minimum acceptable diet (apart from breast milk).

[67] For the time being this indicator is fine later on indicator related to other diseases caused due to drinking of arsenic and other chemical contaminated water can be included.

	Intervention logic	Indicators[64]	Baseline (incl. Ref. year)	Current value (incl. Ref. year)	Targets (2021)	Sources and means of verification	Assumptions
Expected Results/ Outputs	ER1: Improved community-level climate resilient WASH infrastructures including behaviour change in programme target areas of Sindh.	% of target population using safely managed drinking water sources;******	TBD;		50% over baseline;	Baseline, midline and end line surveys;	No major natural disaster occurs;
		% of programme-targeted population who use an appropriate water treatment method;****	13% (MICS-Sindh 2014);		30%	Programme Data including Water Quality data;	GoS remains committed in implementing 50% areas of target districts and extend support to PINS for provision of drainage systems in targeted villages under the Saf-Suthro Sindh Programme;
		% of programme target of population using an improved sanitation facility;**	38% (MICS-Sindh 2014);		60%	Periodic progress reports; Pilot innovation assessment reports;	
		% of program target households with a specific place for hand washing with water and soap;****	41% (MICS-Sindh 2014);		60%	Training records and post training KAP assessment;	Communities remain willing to adopt positive BCC messages;
		% of mothers/care-givers in targeted villages who practice hand washing before feeding children;	TBD;		50% over baseline;		
		Number and type of innovative approaches on water designed, tested and adopted in programme districts;	0		2 tested and one adopted for scale-up;		
		Number of staff from concerned local authorities[68] and CRPs with acquired skills involved in implementation of WASH intervention in programme target districts;	0		100 staff from local authorities and 3,876 CRPs (50% women);		

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[68] Staff from PHED and Local Government

Intervention logic	Indicators[64]	Baseline (incl. Ref. year)	Current value (incl. Ref. year)	Targets (2021)	Sources and means of verification	Assumptions
ER2: Improved community-level nutrition sensitive food production systems adapted to climate change in in programme target areas of Sindh.	No of Villages with at least one integrated farmer field school[69] and/or community-managed demonstration sites for poultry, livestock or aquaculture; ****&*****	0		1,938	Baseline, midline and end line surveys; Project records; Community records;	GoS implements its Agriculture, Livestock and Fisheries projects (A4N) under AAP as per agreed framework to cover 50% areas in target districts and also complement PINS programme implementation efforts;
	Number of target households (0-23 on PSC) who have established kitchen garden in programme villages;****	0		55,856		
	Proportion of targeted small farmers (disaggregated data by gender) implementing new agriculture techniques adapted to climate change;*****	0		33% (4,000 Men and 1,000 women)		No major natural disaster occurs;
	Number and type of climate resilient measures for mitigating floods and drought impacts at local level;*****	285 VOs taken 3 type of measures in Thatta/ Sujawal under USAID's funded Tahafuz project;		At least 3 type of measures taken by 1,938 VOs in programme locations;		Communities remain willing to adapt new agriculture technologies to cope with climatic changes;
	Number and type of innovative approaches on agriculture and food security designed, tested and adopted in targeted districts;	0		3 innovative approaches on agriculture and food security tested and one adopted for scale-up;		
	Number of staff from concerned local authorities[70] and communities with acquired skills involved in implementation of nutrition sensitive agriculture initiatives in program target districts;	0		40 staff from concerned local authorities and 3,867 VO level agriculture entrepreneurs (50% women);		

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[69] FFS and demonstration sites will consider climate smart techniques and varieties and aim to improve household's resilience to climate change.
[70] Staff from GoS-PHED and Local Government.

Activities	**Start-up activities:** Signing of sub-agreement with technical partner Action Against Hunger (ACF) Orientation of RSPN's project staff about project implementation methodology and procurement procedures, HR, Financial management and compliance to EU guidelines Undertake food system mapping in target districts Development of PINS Programme Implementation Manual (PIM), to provide guidance for field teams to implement the activities for WASH and Agriculture & Food Security Development and Printing of PINS Social and Behaviour Change Communication Toolkit Singing of sub-agreement with programme implementation partner (NRSP, TRDP and SRSO) Training of RSPs key staff on PINS Programme Implementation Manual (PIM) and on maximization of nutritional impact on Agriculture and WASH District level orientation of RSPs staff on maximization of nutritional impact on Agriculture and WASH and use of PIM

Major Activities- Expected Result-1 Improved community-level climate resilient WASH infrastructures including behaviour change in rural areas of Sindh

Prepare Village Action Plans (VAPs) and support implementation to achieve Open Defecation Free (ODF) status and access to safe drinking water in target areas
Training of RSP Social Organizers, VO/LSO general bodies, Community Resource Persons (CRPs), masons & plumbers and sanitary entrepreneurs for community level implementation of WASH interventions.
VO level Community-Led Total Sanitation (CLTS) triggering by CRPs for latrine construction and use.
Construction of low cost disaster resilient demonstration latrines in each target village.
Establish VO level WASH entrepreneurs to ensure WASH related supplies at local level
Community level awareness on notorious food and WASH
Conduct Village level ODF certification through District ODF Certification committees, sustainability certification and celebrations by VOs/LSOs.
Training of PHED staff and LSOs on water testing and water quality monitoring.
Undertake chemical testing and periodic biological water quality monitoring of improved water sources through LSOs.
Chlorination of communal water sources of address biological contamination through LSOs.
Provision of safe drinking water through construction/installation/rehabilitation of hand pumps/water supply schemes in areas of extreme need (This activity will be implemented in partnership/coordination with the EU supported SUCCESS programme to avoid duplication).
Develop alternate water sources/ Construct Community Water Treatment Plants in areas of higher arsenic and Nitrates concentration through engagement of LSOs and technical assistance of PHED.
Household and Community level water harvesting for livestock and kitchen gardening
Pilot testing on LSO level chlorine production and household level chlorination for water treatment and explore possibility for scale up and commercialization/ social marketing.
Celebration of programme related international days i.e. Global Hand Washing Day, World Toilet Day, World Water Day and World Food Day at UC, District and Provincial levels
Coordination and quarterly meetings with national WASH partners to seek their technical assistance.

Major Activities- Expected Result-2 Improved community-level nutrition sensitive food production systems adapted to climate change in rural areas of Sindh

VO level preparation to improve availability of nutritious crops at all times
Develop a cadre of master trainers (Govt and RSPs) and VO level agricultural entrepreneurs in kitchen gardening (for drought, flood and peri-urban settings) in landless households, homestead gardening and small-scale community farming.
Establish VOs level Farmer Field Schools (FFS) to promote kitchen gardening and identify indigenous solutions to agricultural challenges and replicate at a larger scale.

Means and costs

Total cost of the action is EUR 21,428,400 million with EUR 21,000,000 million as EU contribution and EUR 428,400 million as RSPN contribution.

Budget Title	Amount in EUR
1. Human Resources	5,171,420.91
2. Travel	185,642.33
3. Equipment and supplies	280,941.67
4. Local office	1,779,739.71
5. Other costs, services	949,581.08
6. Other	11,659,216.35
7. Sub-total direct eligible costs of the Action	**20,026,542.06**
8. Indirect costs (maximum 7% of 7, subtotal of direct eligible costs of the Action)	1,401,857.94
9. Total eligible costs of the Action (7+8)	**21,428,400.00**
10. Provision for contingency reserve (maximum 5% of 7, subtotal of direct eligible costs of the Action)	-
11. Total accepted costs of the Action (9+10)	**21,428,400.00**

Pre-conditions and conditions outside the programme control

Government of Sindh remains committed to implement AAP in 50% areas of targeted programme districts;

The exchange rates remains within expected bounds of fluctuation;

Intervention logic	Indicators[64]	Baseline (incl. Ref. year)	Current value (incl. Ref. year)	Targets (2021)	Sources and means of verification	Assumptions
Orientation of poorest households (0-23 Poverty Score Card category) on kitchen gardening and family farming						
Promote and facilitate the implementation of kitchen garden demonstration at household level through provision of inputs and technical support						
Undertake Female agriculture entrepreneurship activities through Farmer Female Schools to promote pro poor markets to improve access to balanced and affordable food of choice.						
Orientation of CO/VO on food safety, food processing and preservation to be used during the lean season/food scarcity.						
Pilot initiative to introduce bio-fortified seeds, i.e. wheat, potatoes and rice, through demonstration plots and field level trial basis.						
Pilot initiative to promote Moringa production, processing and consumption as a supplement for maternal and early child nutrition.						
Capacitate small landholder farmers (up to 5 acres) in climate resilient crop production technologies including food safety through training and provision of inputs						
Provision of goats to poorest HH (0-12 PSC) with PLW women and children under 5 for food diversification.						
Improve livestock management practices through training of CLEWs and delivery of livestock extension services including introduction of improved livestock breeds						
Improve food diversification through community level poultry entrepreneurship.						
Improve community level fish production and consumption through training of individuals of fish farmers, support LSOs for community fish ponds and fish distribution among poor households						
Pilot testing on promotion of paddy fish farming cultures in rice cultivation areas.						
Develop and implementation of VO and LSO level Disaster Risk Reduction plans to reduce the impact of floods and drought on community/ promotion of resilient communities.						
Promote horticulture and non-timber forest products for household food consumption and mitigate the negative impacts of climate change.						
Organize in country learning visits and workshops for Govt. officials and out country exposure visits for Govt. officials and RSPs key staff						
Communication and Visibility activities:						
Support EUD contractor for communication to develop a global communication and visibility plan for PINS programme.						
Implement the RSPN's part of the overall global communication and visibility plan.						
Documentation of case studies and short visual success stories.						
Bi-annual PINS Newsletter and highlight key events in RSPN's publication on RSPs OUTRACH.						
Print Media campaign for PINS.						
Sharing of learning and successes at National and International Forums.						
Monitoring and Evaluation Activities:						
Development of M&E Framework and KPIs for the ER-3.						
Develop an integrated MIS to track the progress against KPIs and programme activities.						
Training of RSPN and RSP M&E staff on monitoring of the programme activities.						
Undertake baseline survey, midterm and end evaluation of programme.						
Undertake monthly monitoring visits to project districts.						
Quarterly review and half yearly planning meeting with RSPs.						
Submission of KPI tracking and periodic progress reports (narrative and financial).						

Note on defining "RURAL" for the overall action:

Rural Support Programmes in the main work in rural union councils and associated revenue-villages of tehsil and district notified by the provincial and federal governments to implement the community-driven development through social mobilisation and institutional development initiatives in order to reduce the poverty.

Rural areas are defined as the areas defined as "rural" by the governmental office, in our case notifies by the national population census of Pakistan. This includes even rural towns as well and in some others, rural settlements traditionally do not include towns. Common types of rural settlements are revenue-villages, hamlets, basti, mohallahs, farms, goths, etc. Traditionally, rural settlements were associated with agriculture. In modern times other types of rural communities have been developed.

The settlement where the occupation of majority of people relate to the local natural resources are called rural settlement for example, (1) settlement of fisheries along a sea coast, (2) settlement of farmers along the banks of rivers, and (3) settlement of tribal people in the forest area.

This action will work with approx. half-million rural households organised in Community Organisations (COs), Village Organisations (VOs) and Local Support Organisations (LSOs) fostered under SUCCESS and UCBPRP programmes by RSPs working in rural areas of 10 district of Sindh province.

PINS ER-3 Impact

Evaluation Design Document

October 2018

Programme for Improved Nutrition in Sindh Expected Results-3 "Nutrition Sensitive Component" 2018 – 2022

Acknowledgment

More information about European Union is available on:

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Acronyms and Abbreviations

AAP	Accelerated Action Plan
ACF	Action Against Hunger
C4ED	Center for Evaluation and Development
CAPI	Computer Assisted Personal Interviews
CDD	Community Driven Development
CO	Community Organisation
ER	Expected Result
EU	European Union
GoS	Government of Sindh
LSO	Local Support Organisation
M&E	Monitoring & Evaluation
MDD	Minimum Dietary Diversity
PDD	Planning and Development Department
PINS	Programme for Improved Nutrition in Sindh
RSPN	Rural Support Programmes Network
SDGs	Sustainable Development Goals
SUCCESS	Sindh Union Council and Community Economic Strengthening Support Programme
UCBPRP	Union Council Based Poverty Reduction Programme
UCs	Union Councils
VO	Village Organisation
WASH	Water, Sanitation and Hygiene

1. Overview and Introduction

1.1. About the PINS

Government of Sindh (GoS) through the Planning and Development Department (PDD) is implementing a six-year, from 2016 to 2021, multi-sectoral Sindh Accelerated Action Plan for Reduction of Stunting and Malnutrition (AAP). The European Union (EU), under the EU Commission Action Plan on Nutrition 2014, is supporting GoS in addressing the issue of malnutrition. Therefore, EU Brussels Office has approved the Programme for Improved Nutrition in Sindh (PINS) to be implemented in ten districts of Sindh. PINS will build upon the social mobilisation approach to community driven development (CDD) of RSPN and RSPs under the EU supported Sindh Union Council and Community Economic Strengthening Support Programme (SUCCESS) and GoS supported Union Council Based Poverty Reduction Programme (UCBPRP). PINS is a four-year programme that will be implemented in the following ten districts of Sindh province:

- Dadu
- Jamshoro
- Kambar Shahdadkot
- Larkana
- Matiari
- Shikarpur
- Sujawal
- Tando Allahyar
- Tando Muhammad Khan
- Thatta

1.2. Programme Objectives

The overall objective of the programme is "to sustainably improve the nutritional status of children under five (U-5) and of Pregnant and Lactating Women (PLW) in Sindh in line with the second target indicator of the SDG Goal No. 2".

The specific objective of the Action is to capacitate the GoS so that it may efficiently implement its nutrition multi-sectoral policy while providing direct assistance to significantly and rapidly reduce malnutrition in rural Sindh.

Results to be achieved by PINS: the Action aims to increase the capacities of the GoS to efficiently implement and monitor the implementation of its nutrition multi-sectoral policy, so that it has, by the end of the project, the capacity to deliver such public service to its population. However, considering the emergency situation faced in Sindh, in parallel, this Action will also contribute to treat malnutrition as well as to prevent it. There are therefore three main areas of intervention (expected results/components):

Expected Result 1 (ER1): Improved capacity of GoS and other stakeholders regarding nutrition-related policy/strategy development, coordination, implementation, adaptive research, data collection/analysis and communication;

Expected Result 2 (ER2): Treatment of malnutrition in health facilities supported by an outreach programme to screen children, a referral system for their follow up and a behaviour change communication programme for improved child care, sanitation and feeding practices (nutrition specific);

Expected Result 3 (ER3): Improved community-level WASH (infrastructure and behaviour change) and nutrition sensitive food production systems adapted to climate change in rural areas (nutrition sensitive);

2. Impact Evaluation Design Development Process

A consultative approach, based on shared expectations and joint ownership, was adopted with the aim of developing an impact evaluation design for PINS specifically for ER-3. The process started with a desk review of the existing experiences of RSPN, PINS documents including the programme logframe, programme proposals, grant agreement between EU and RSPN, and the action document that was part of the financing agreement of PINS signed between EU and Government of Pakistan.

This was followed by various consultative meetings with the senior M&E staff members of PINS partner RSPs and their focal persons for the PINS, representatives of Action Against Hunger (ACF) and the Technical Advisor for PINS research and M&E from Center for Evaluation and Development (C4ED) at Mannheim, Germany. The input on the overall impact evaluation design specifically on baseline methodologies and approaches and sampling methodology were incorporated, accordingly. This final document is a product of these consultations held during the period July to September 2018.

3. The Impact Evaluation Approach

3.1. Purpose of the Impact Evaluation

The purpose of the impact evaluation is to identify whether any change in key outcomes and outputs can be attributed to the PINS ER-3 activities. In particular, the evaluation will:
a) Estimate the change in targeted households' behaviour in terms of improving food diversity and
b) Estimate the change in targeted households' behaviour in terms of prevalence of water borne diseases by accessing improved WASH infrastructure.

The baseline, midline and end-line surveys to be conducted for the impact evaluation are part of the overall accountability and learning purpose of the M&E component of PINS ER-3.

3.2. Impact Evaluation Design

The Center for Evaluation & Development (C4ED) has provided technical assistance to RSPN in the overall designing of an impact evaluation for PINS and then further will provide support in the implementation.

Under PINS ER-3, RSPN delivers its activities in ten districts of Sindh province (see Table 1). However, PINS ER-3 will not be implemented in all 388 Union Councils (UCs) in these ten districts, but in one half of them (194). The other half are covered by AAP activities of the GoS. Assignment of UCs (in fact, not UCs but sub-districts were assigned) to either PINS ER-3 or AAP was done quasi-randomly such that a similar number of UCs was to be served by both projects.

PINS ER-3 focuses on nutrition-sensitive interventions, i.e. WASH infrastructure and behavior change and improvements in food production systems. The AAP is a broad program delivered by eight governmental departments but only some of its activities qualify as nutrition-sensitive and are therefore comparable to PINS ER-3. These are the activities implemented by the Agriculture, Education, Fisheries, Livestock, and Local Government departments:

- Agriculture: kitchen gardening, plantation of fruit plants, farmer field schools

- Education: renewal of school curriculum with focus on nutrition, awareness among parents to promote positive behavior related to nutrition

- Fisheries: establishment of community fish farms and divisional hatcheries, put fish seeds in lakes and rivers

- Livestock: distribution of livestock to poorest families, drenching and vaccination services by extension workers

- Local Government: mobilization of households to construct latrines

Table 1: Union Councils and Households Selection Break-up

Districts	Total Population	Total Households	RSPN/ RSPs Total Treatment UCs in the District	Govt Sindh Total Control UCs	Total UCs
Dadu	1,144,499	70,360	29	37	66
Jamshoro	90,291	78,177	17	13	30
Kamber Shahdadkot	1,012,727	46,804	24	28	52
Larkana	836,523	121,019	22	25	47
Matiari	539,980	78,031	15	15	30

Districts	Total Population	Total Households	RSPN/ RSPs Total Treatment UCs in the District	Govt Sindh Total Control UCs	Total UCs
Shikarpur	915,885	170,161	19	20	39
Sujawal	655,230	99,862	20	17	37
Tando Allahyar	530,909	82,586	16	10	26
Tando Muhammad Khan	492,046	72,938	15	13	28
Thatta	481,353	90,993	17	16	33
Grand Total	**7,099,443**	**1,110,931**	**194**	**194**	**388**

Neither RSPN nor the GoS have delivered any project activities in the ten districts at this point in time[71]. RSPN will always implement its PINS ER-3 activities in an integrated manner, i.e. all activities will be implemented at the same time in a particular location. In contrast, the GoS will phase in its activities, i.e. it will implement activities at different points in time in different locations. Note that five governmental departments are involved in the delivery of the nutrition-sensitive activities of the AAP and these departments coordinate their activities only to a small extent, if at all. The resulting phase- in of project activities allows for a quasi-experimental approach to impact evaluation.

Households in UCs served by PINS ER-3 will form the treatment group, while households in UCs served by AAP will be the control group. Because of the quasi-random assignment to the projects, it can be assumed that these groups of households are quite similar[72] and that they would evolve similarly in the absence of the projects. A Difference-in-Difference approach, combined with propensity score matching, thus seems appropriate as an impact evaluation design.

Option 1

The ideal setting for an impact evaluation would be such that the control group is formed by households in UCs that will not receive any AAP services until the end of the analysis period, i.e. until 2022. Unfortunately, this option is unlikely to be feasible because the GoS does not have a detailed AAP implementation plan (i.e. at the level of UCs): It is currently unclear where exactly and when the different governmental departments will implement their activities. For an impact evaluation, it would, however, be necessary to know for sure that certain UCs will not receive any nutrition-sensitive activities within AAP before the end of 2022 and only sample households from these UCs for survey data collection.

Table 2 displays the AAP implementation plan at the district level for 3 of the 5 involved governmental departments. Livestock, fisheries and agriculture activities will be implemented in essentially all districts before the end of PINS ER-3. As noted above, information on UCs is not available. WASH activities to be

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[71] The only exception is that demonstration fish ponds were established in few UCs in Jamshoro (3 UCs) and Sujawal (1 UC) districts.
[72] Within each district, sub-districts (taluka) were assigned to either AAP or PINS. Average population size, the share of organised households and the share of households with a poverty score card score in the range 0-23 are similar across UCs assigned to AAP and PINS, on average.

implemented by the Local Government department shall start in some of the ten districts in 2019/20 but it is currently unclear which districts and, hence, which UCs these will be. The Education department is currently revising the school curriculum and will implement a new curriculum everywhere in 2019/20.

Table 2: AAP implementation plan

	Agriculture				Fisheries				Livestock			
	17/18	18/19	19/20	20/21	17/18	18/19	19/20	20/21	17/18	18/19	19/20	20/21
Dadu		x						x		x		
Jamshoro		x			x	x				x		
Kamber Shahdadkot		x						x		x		
Larkana		x								x		
Matiari		x						x		x		
Shikarpur		x								x		
Sujawal		x			x	x				x		
Tando Allahyar		x						x		x		
Tando Muhammad Khan		x					x			x		
Thatta		x					x			x		

Option 2

An alternative to option 1 is to make use of the fact that nutrition-sensitive interventions under PINS ER-3 are more comprehensive than those under AAP. For example, AAP does not promote infrastructure for safe drinking water and does not teach livestock management practices. An impact evaluation can therefore focus on measuring the effect of PINS ER-3 activities that are not part of AAP. If access to safe drinking water and adoption of livestock management practices were outcome variables of interest, households in AAP UCs could serve as a control group even if they receive AAP services because they will not receive any interventions for safe drinking water and livestock management practices. Before the impact evaluation is conducted, it is imperative to closely compare the activities under PINS ER-3 and AAP to determine which indicators (for outcomes or outputs) can be used. In the following considerations for the survey, no limitation of possible indicators as made, yet.

4. Data Collection

RSPN will outsource the baseline, midline and end-line surveys to third-party consulting firms as per its procurement policies and rules to ensure independence in the data collection. The baseline will be conducted before the start of programme interventions in 2018, the midline in the course of the year 2020 and the end-line after the completion of all programme interventions as per the programme timeline in 2022.

The sample size must be sufficient, and the sample drawn randomly to reach conclusions that are representative of the PINS programme implementation districts and UCs. The findings of the data analysis are to be presented in a way that is disaggregated by gender and poverty status. To measure changes in key outcomes and outputs, survey data will be collected from the same sample households over time.

4.1. Methodology and Design of Survey

The surveys will use quantitative measurements, while the impact evaluation will include qualitative information and analysis wherever possible. The evaluation will measure overall development impact in the programme areas using a before, midlevel and after intervention design. Table 3 presents a summary of the objectives, key indicators, tools and survey methods for data collection.

Table 3: Objectives, Key Indicators, Tools and Survey Methods for Data Collection

Objectives	Key Indicators	Methods	Tools
Estimate the change in targeted households' behaviour in terms of improving food diversity;	▪ Percentage of expenditure ▪ dedicated to a minimum of four food groups; ▪ Percentage of women, age 15-49 years, who consume at least 5 out of 10 defined food groups of MDD; ▪ Percentage of children (age 6- 23 months) that consume a minimum acceptable diet;	Sample household Interview using quantitative methods;	Household questionnaire module on availability, use and access to improved food;
Estimate the change in targeted households' behaviour in terms of prevalence of water borne diseases by accessing improved WASH infrastructure;	▪ Proportion of population using appropriate water treatment method; ▪ Percentage of population using safely managed clean drinking water; ▪ Percentage of incidence of diarrhoea in U-5 age children; ▪ Percentage of households with a dedicated place for hand-washing with water and soap; ▪ Percentage of mothers/care- givers who practice hand washing before feeding children; ▪ Proportion of population using an improved sanitation facility;	Sample household interview using quantitative methods;	Household questionnaire module on availability, use and access to improved WASH infrastructure;

4.2. Sample Framework

4.2.1 Sample Size Determination

The power calculation which determines the minimum sample size for the surveys follows from the evaluation objectives formulated above. We intend to measure the change of several key indicators over time precisely enough to confirm a significant trend. Therefore, power calculations have to be conducted separately for each of the key indicators of interest. The maximum sample resulting from this exercise would then determine the required sample size. (For example, assume that to measure the desired effect for key indicator A, a sample of 2,000 households would be needed. To measure the desired effect for key indicator B, however, the sample would have to be composed of 3,000 households. The sample for the survey should then consist of 3,000 households.)

The Logframe of the PINS ER-3 reports targets (desired effects) for each of the key indicators of interest but provides information on current levels for only six of the nine indicators (see Table 2). Power calculations cannot be run for the three indicators for which no baseline information exists.

The underlying assumptions for the power calculation are:
▪ Power = 80%
▪ Statistical significance = 5%
▪ Intra-cluster correlation = 0.1

Power calculations are conducted under the assumption that there is correlation among households within clusters, i.e. UCs. We calculate the minimum sample size and the number of clusters that are needed to detect the desired effects for two different scenarios, namely that either 25 or 50 households within each cluster will be interviewed. As Table 4 reports, if 25 households were to be interviewed per cluster, the minimum number of clusters to be considered would be 84 (42 treatment and 42 control) and the minimum number of households to be interviewed would be 2,100 (1,050 treatment and 1,050 control). This sample size would be sufficient to detect all effects of interest, except for the envisioned change in diarrhoea in

children under the age of five. For this particular key indicator, 25 households per cluster would be too few to see any change.

If, in contrast, 50 households per cluster were to be interviewed, the minimum number of clusters to be considered would be 24 (12 treatment and 12 control) and the minimum number of households to be interviewed would be 1,200 (600 treatment and 600 control). With such a sample, all envisioned changes in the six key indicators could be detected. A selection of 50 households per cluster is therefore preferred.

Table 4: Power Calculations

Key Indicator	Current Level	Target Level	Sample size	Number of clusters	Sample size	Number of clusters
			25 obs. per cluster		_50 obs. per cluster_	
% expenditure dedicated to a minimum of four food groups	n.a.	n.a.	.	.	.	.
% women, age 15-49 years, who consume at least 5 out of 10 defined food groups of MDD	0.27	0.40	2,100	84	700	14
% children (age 6-23 months) that consume a minimum acceptable diet	0.13	0.30	300	12	200	4
% using appropriate water treatment method	0.13	0.30	300	12	200	4
% using safely managed clean drinking water	n.a.	n.a.	.	.	.	.
% incidence of diarrhea in U-5 age children	0.28	0.18	impossible to detect	Impossible to detect	1,200	24
% households with a dedicated place for hand-washing with water and soap	0.41	0.60	350	14	300	6
% mothers/care-givers who practice hand washing before feeding children	n.a.	n.a.	.	.	.	.
% using an improved sanitation facility	0.38	0.60	250	10	200	4

Note: Power 80%, level of statistical significance 5%.

It is important to note that the calculated numbers are minimum indications only. If larger samples were feasible financially and logistically, they should be realized for two reasons. 1) If the true change in any of the key indicators was smaller than desired, the calculated number of clusters and households in Table 4 would be too small. 2) The impact evaluation will rely on a matching exercise, i.e. households in the treatment and control group will be matched to each other to ensure their similarity before programme implementation. It is well possible that part of the sample cannot be used for data analysis because some of the control households may be too dissimilar from the treatment households and vice versa.

As can be seen in Table 5, the target sample for the surveys for this impact evaluation shall consist of 5,000 households to be interviewed in 50 UCs (and interviewing 100 households per UC).

4.2.2 Sample Selection Process

Universe**:** All rural UCs within the ten targeted districts (Dadu, Jamshoro, Larkana, Kamber-Shahdadkot, Matiari, Shikarpur, Sujawal, Tando Muhammad Khan, Tando Allahyar, and Thatta) of Sindh province are considered as the universe of this survey. Urban UCs are excluded as PINS ER-3 will only be implemented in rural UCs.

4.2.3. Sample Selection Strategy

In each district a two-stage sampling will be used.

Stage 1 - Selection of Union Councils:	Stage 2 - Selection of Households:
• In districts where the total numbers of UCs are up-to 40 - two UCs will be selected at random from each group; • Where the total numbers of UCs are from 41 to 50, three UCs will be selected at random from both groups; and • Finally where total UC number is more than 50 then four UCs will be selected from each group. • This guarantees that districts are represented roughly proportional to their number of UCs	• A fixed number of 100 households will be selected from each sampled UC. • Within the sampled UCs all the households will be listed based on the poverty score band of below 23 score and rest. • An equal proportion of sample will be selected on random from the target PSC category i.e. 0-23.

The following table presents the total number of UCs, households and corresponding number of samples. The same sampling plan will be repeated in the follow-up survey in mid and the end of the programme phases.

Table 5: Union Councils and Households Selection Break-up

Districts	Treatment UCs	Control UCs	Total Randomly Selected UCs	Treatment HHs	Control HHs	Total Randomly Sampled HHs
Dadu	4	4	8	400	400	800
Jamshoro	2	2	4	200	200	400
Kamber Shahdadkot	4	4	8	400	400	800
Larkana	3	3	6	300	300	600
Matiari	2	2	4	200	200	400
Sujawal	2	2	4	200	200	400
Tando Allahyar	2	2	4	200	200	400
Tando Muhammad Khan	2	2	4	200	200	400
Thatta	2	2	4	200	200	400
Shikarpur	2	2	4	200	200	400
Grand Total	25	25	50	2,500	2,500	5,000

The UCs and households will be randomly sampled by C4ED at Mannheim, Germany using an objective approach by using the above sampling methodology.

4.3. Survey Instruments

4.3.1 Household Questionnaire

To achieve the three objectives of the survey, the questionnaire will have four distinct modules. Structured questionnaires will be used containing information on the nutrition related characteristics of the sample households. The modules of the questionnaire will include the following content:

Module I: Information on Family Composition
Module II: General Household Characteristics
Module III: Household Food and Nutrition Security
Module IV: KAP Survey (e.g. feeding practices and care for infants, etc.)

4.3.2 Village Questionnaire

A separate village level questionnaire for each revenue village in the sampled UCs will also be filled and this will include the following content:

- Availability and functionality of physical infrastructure;
- Availability and functionality of economic and local and municipal services;
- Village prices;
- Data on LSOs, VOs and COs (where applicable);

4.4. Analysis Plan for Baseline and Follow-up Surveys

The baseline survey will have two purposes. First, it will provide the current situation and profile of sample households in the targeted districts. Second, it will set a benchmark of the key indicators for the PINS's logframe to measure the change at the end of the programme. The analysis of change can only be done after the two follow up surveys. In this regard, the quantitative analysis will include both descriptive analysis and advanced multivariate regression analysis. It will provide information on all pre- and post-intervention indicators for the intervention/treatment and control groups.

5. Implementation of the Surveys

The surveys will be done by third-party consulting firms. The RSPN will hire consulting firms through competitive bidding process as per the EU procurement guidelines and/or as per their procurement policy manual and guidelines.

5.1. Role of the third party firm

The consulting firm will be responsible for data collection, training of data collection team, pre-testing of data collection tools, develop manual for data collection team, data analysis and writing the survey reports. The data collection will be done through Computer Assisted Personal Interviews (CAPI) i.e. Tablet computers with customized software.

5.2. Role of RSPN and C4ED

RSPN will hire the services of a consulting firm to undertake the data collection exercise in the respective programme districts. The related RSPs facilitation will be limited to link the consulting firm data collection teams to the sample villages and households.

RSPN with technical support from the C4ED has designed the overall impact evaluation design along- with survey methodology and survey tools. With support of C4ED team at Germany, RSPN M&E team will also participate in the training of consulting firm's data collection team, participate in the consulting firm selection process and review the baseline, midline and end-line survey reports and provide their input.

C4ED will support RSPN in the elaboration of adequate documentation of the impact evaluation approach and of survey instruments and tools (questionnaires, enumerator manuals, etc.). Questions in the survey questionnaires will have to reflect the programme objectives and enable RSPN to conduct its impact evaluation mandate. Towards the end of the project, C4ED will also assist RSPN in the assessment of the impact evaluation results.

Baseline Survey of Implementation of the Nutrition-Sensitive Component (ER-3) of the PINS

Household Survey Questionnaire
on

Mother and Children's Dietary Deficiencies and Health/Hygiene

Introduction and Consent:

Assalam-o-alaikum.

My name is _____ and I am here on behalf of AASA Consulting. Our firm conducts research on socio-economic conditions in the country.

At the moment, we are working on a project that aims to improve the dietary deficiencies and health/ hygiene of mothers and children. The purpose of visiting you is to gain insights regarding health and hygiene of mothers and children, so that their dietary deficiencies and health/hygiene standards may be improved.

This questionnaire will take approximately 30 minutes of your time. Some questions in this survey are of a personal nature, but we will ensure that all information you provide us is kept strictly confidential.

Participation in the survey is completely voluntary and you have the right to not answer any or all of the questions. However, we do hope that you will participate in this survey, since your opinion is of great importance to us. The information you provide will only be used to develop a research report.

You can ask any questions you may have regarding the survey. If you allow me, may I begin the survey now?

A: Geographical Location

HH Serial No			PSC Score of HH			
Longitude	(Automatic)		Latitude	(Automatic)		
Name of District (and Code)			Name of *Tehsil* (and Code)			
Name of Union Council (and Code)						
Name of Village (and Code)			Name of Settlement			
Complete Home Address						
Name of Head of Household						

CNIC No. of Head of Household							-				-					
Respondent's CNIC No.							-				-					

Phone Number:
(Note: Provide phone number of household head or any member of the household through which the respondent may be contacted.)

Respondent's Relationship with the Head of Household	1	Self	2	Husband	3	Wife
	4	Son/Daughter/Ward	5	Father/ Mother	6	Brother/Sister
	7	Grandson/Grand-daughter	8	Son-in-law/ Daughter-in-law	9	Brother-in-law/Sister-in-law
	10	Father-in-in-law/Mother-in-law	11	Uncle/Aunt	12	Grandfather/Grandmother
	13	Nephew/Niece	14	other relation		
Mother Tongue of Most of the Members of Household	1	Urdu	2	Seraiki	3	Pushto
	4	Sindhi	5	Punjabi	6	Others

B: Survey Information

Date of Interview	(Automatic)			
Interview Start Time	(Automatic)	Interview End Time	(Automatic)	
Name of Enumerator (and Code)	(Automatic)	Name of Supervisor (and Code)		

Section 1: Family Roster

No.	Question	Men/Male Children	Women/Female Children	TOTAL
FR1	Total number of individuals in the household who have joint income and eating expenses			
FR2	Number of individuals aged five (05) years and more in the household			
FR3	Number of individuals aged less than five (05) years in the household			

Table No. 1
In the following table, please insert details of all household members

FR4	FR5	FR6				FR7	FR8	FR9	FR10	FR11	FR12		FR13
PID No.	Name	Relationship with the Household Head (code)	Age (Either use calendar or write age in total years. For members of age less than 5 years old, mention age in total months. In case, age is not determined, mention 00 in the respective column)				Gender (code)	Marital Status (code)	Educational Status (code)	Educational qualification (completed) (code)	Occupation (code)	Income		God-forbid, any permanent disability (code)
			Total Age (In years/ Months)	year	Month	Day						Income (PKR)	Duration (code)	

Code Key

Question No.	Codes
FR5	1—Self; 2—Husband; 3—Wife; 4—Son/Daughter/Ward; 5—Father/Mother; 6-- Brother/Sister; 7—Grandson/Grand-daughter; 8—Son-in-law/Daughter-in-law; 9—Brother-in-law/Sister-in-law; 10—Father-in-in-law/Mother-in-law; 11—Uncle/Aunt; 12—Grandfather/Grandmother; 13—Nephew/Niece; 14—other relation
FR7	1—Male; 2—Female
FR8	1—Married; 2—Single; 3—Divorcee; 4—Widow/Widower; 5—Nikkah, but no rukhsati; 6—Separated; 7-Underage
FR9	1—Has never gone to school; (please proceed to Q. FR11) 2— Has left school/college; 3— Has completed the education; 4— Currently going to school/college 5-Underage (proceed to Q.FR11)
FR10	1—Grade 1; 2—Grade 2; 3—Grade 3; 4—Grade 4; 5—Grade 5; 6—Grade 6; 7—Grade 7; 8—Grade 8; 9—Grade 9; 10—Grade 10; 11—Grade 11; 12—Grade 12; 13—Undergraduate; 14—Masters; 15—PhD; 16—MPhil; 17—Diploma; 18—*Kacchi*/Nursery;
FR11	1—Government/Armed forces; 2—Semi-government; 3—Private; 4—Pensioner; 5—Self-employed; 6—Agriculture; 7—Labourer; 8—Looking for work; 9—Do not want to work; 10—Retired; 11—Student; 12—Housewife; 13—Child
FR12	1—Daily; 2—Weekly; 3—Monthly; 4—Quarterly; 5—Annual;
FR13	1—No disability; 2—Disability in arms; 3—Disability in legs; 4—Mental disability; 5—Mute; 6—Deaf; 7—Visual impairment; 8—Complete blindness;
Others Code	1—Yes; 2—No; 77—Do not know; 99—No Response; 88—Not applicable

		Section 2: Characteristics of Housing Unit Structure			

HA1	What is your residential status at present?	1.	Personal residence (not Self Hired)	2.	On rent
		3.	Without rent	4.	On subsidized rent
		5.	Family property		
HA2	What material is used to construct the walls of this house?	1.	Burned bricks/rocks	2.	Raw bricks/mud
		3.	Woods/Bamboo	4.	Stones
HA3	What material is used to construct the roof of this house?	1.	RCC/RBC	2.	Wood/Bamboo
		3.	Iron/Cement sheets	4.	Girder/T-Iron bars
HA4	How many rooms are there in your house? (Note: Do not include store room, courtyard, and kitchen, in total number of rooms)				Total rooms
HA5	Is there electricity in your house?	1.	Yes	2.	No
HA6	Is there gas in your house?	1.	Yes	2.	No

		Section 3.1: Availability and Quality of Drinking Water	

AW1	From what sources does your household obtain water for drinking and cooking use (potable water)? Note: Tick all that apply. Enumerator to probe: "Anything else? Anything else?"	1.	Water supplied through pipes installed from government/NGOs or other institutions.
		2.	From protected/closed hand pump
		3.	From unprotected/ open hand pump
		4.	From protected/closed well
		5.	From unprotected/open well
		6.	From canister sold over carts
		7.	From small containers sold on donkey carts
		8.	From river, stream, dam, lake, canal.
		9.	From pond
		10.	From collecting rainwater.
		11.	From a water tanker
		12.	From a filtration plant
		13.	From bottled water

	Section 3.1: Availability and Quality of Drinking Water			
AW2	Who is usually responsible for fetching/collecting drinking water in your household?	1. Males of the household		2. Females of the household
		3. Females and children of the household		4. Children of the household
		5. Females and males of the household		
AW3	How long does it take your household to fetch drinking water for the household in a day?	minutes		
AW4	If you/your household has to fetch drinking water from outside, how far do you have to go (to fetch water)?	meters		
AW5	Does your drinking water usually have any odour?	1. Yes		2. No
AW6	Does your drinking water usually have any colouration?	1. Yes		2. No
AW7	Does your drinking water usually have any unpleasant taste?	1. Yes		2. No
	Section 3.2 Water Treatment			
WT1	Do you purify the drinking water?	1. Yes	2. No (Proceed to WT9)	
WT2	Which method does your household majorly utilize to purify drinking water? Note: Tick the one most frequently used.	1. Boil water before using/drinking it	(Proceed to WT3)	
		2. Use chlorine or chlorine tablets	(Proceed to WT5)	
		3. Add sulphur to water		
		4. Use water filter (ceramic, sand, composite, etc.)		
		5. Use company-made water filtration systems		
		6. Strain through cloth/fabric		
		7. Use alum (*phitkari*)		
		8. Solar disinfection		
		9. Let water stand and settle before using it		
WT3	How long do you boil water?	Duration: _____ (Minute)		
WT4	What do you do after the water is boiled? (Tick all that apply)	1. Cool it down	2. Sieve it through	
		3. Cover the utensil containing boiled water	4. Store it in cleaned bottles	

		Section 3.2 Water Treatment			
		5. Do not do anything use it as it is		77. Do not know	
WT5	How often does your household use the aforementioned method to purify drinking water?	1. Always		2. Sometimes	
		3. Only for children use		4. Only when the water is dirty	
Do not ask WT6, 7 and 8 from households using chlorine/chlorine tablets					
WT6	Do you know about chlorine or chlorine tablets?	1. Yes		2. No (Proceed to next section)	
WT7	If 'Yes', what purpose does chlorine or chlorine tablets serve?	1. Improves the taste of water		2. Improves the colouration of water	
		3. Cleans/purifies water for drinking			
WT8	Why doesn't your household treat water with chlorine or chlorine tablets?	1. Chlorine or chlorine tablets are not available in the area		2. The water gets a peculiar odour	
		3. It gives water an unpleasant taste		4. Treating water with chlorine or chlorine tablets is expensive	
				(Proceed to next section)	
WT9	Why does your household not purify water to purify drinking water? (Tick all that apply)	1. Drinking water is already safe for use/drinking			
		2. Treating water is too expensive			
		3. Do not know about treatment/filtering options			
		4. Treatment/filtering technologies or equipment is not available			
		5. Not enough time to purify water			
		6. No children in the house			
		Section 4: Latrine/Toilet			
LT1	Is there a latrine/toilet in your house?	1. Yes, Inside the household		2. Yes, Attached to a bedroom or other room	
		3. Yes, Outside the household		4. No (Proceed to LT13)	
LT2	What type of latrine/toilet is it?	1. Latrine/toilet with flush, connected to open drainage		2. Latrine/toilet with flush, connected to sewerage system (via closed pipes)	
		3. Latrine/toilet with flush, connected to septic tank		4. Eastern latrine/toilet without drainage	
		5. Dry pit		6. Eastern latrine/toilet with open drainage	

	Section 4: Latrine/Toilet				
LT3	What is the construction type of the latrine/toilet?	1. Kaccha		2. Pakka	
		3. Kaccha-Pakka			
LT4	At what distance (feet) latrine/toilet is constructed from the household drinking water source?				Feet
LT5	Who constructed/made this latrine/toilet?	1. Self		2. Government	
		3. Latrine was already present in the house		4. NGO	

Does the latrine/toilet have the following (LT6 to LT12):			
LT6	Water tap	1. Yes	2. No
LT7	Water	1. Yes	2. No
LT8	Roof	1. Yes	2. No
LT9	Door	1. Yes	2. No
LT10	Cemented floor	1. Yes	2. No
LT11	Soap	1. Yes	2. No
LT12	Wash basin/hand washing place	1. Yes	2. No

LT13	If there is no latrine/toilet, where do your family members go for defecation?	Men	Women	Male children	Female children
1	Outside the house, in communal/joint latrine				
2	Latrine/toilet in a mosque				
3	Latrine/toilet in a school				
4	Latrine/toilet at a work place				
5	Open fields/farmland				
6	Anywhere outside the house				
LT14	Is there any hand washing place in the house other than the one in latrine?	1. Yes		2. No	

Section 5: Hygiene and Cleanliness		
HC1	Does your household members usually wash their hands?	1. Yes
		2. No
		3. Sometimes
HC2	Does children in your household also wash their hands usually?	1. Yes
		2. No
		3. Sometimes
HC3	Which of the following do members of your household usually use to wash their hands? Note: Ask the one most frequently used.	1. Water with soap
		2. Only with water
		3. Water with ash
		4. Water with mud/*matti*
		5. Only with dry ash, without water
		6. Only with dry mud/*matti*, without water
HC4	When do you wash your/their hands with soap? Note: Tick all that apply. (Enumerator to probe what other instances does the respondent wash hands with soap?)	1. After using the latrine (defecation, urination)
		2. After cleaning babies' bottoms
		3. Before preparing food
		4. After preparing food
		5. Before eating food
		6. After eating food
		7. Before feeding children
		8. After cleaning the house
		9. After coming home from outside
		10. Does not wash hands with soap

Section 5: Hygiene and Cleanliness		
HC5	When do children in your household wash their hands with soap? Note: Tick all that apply. (Enumerator to probe at what other instances do children wash hands?)	1. After using the latrine
		2. Before eating food
		3. After eating food
		4. After coming home from outside
		5. After playing
		6. There are no children in this household
		7. Do not wash hands with soap
HC6	In terms of health and hygiene, what are you careful of whilst preparing for cooking? Note: Enumerator to probe: "Anything else? Anything else?"	1. Wash hands with water
		2. Wash hands with soap and water
		3. Wash/clean food items (such as meat, fish, vegetables etc.) properly
		4. Wash/clean food preparation utensils
		5. Wash/clean fruits
HC7	How do you clean food cooking and eating utensils?	1. Wash with only cloth or paper/paper towels
		2. Wash with water and soap
		3. Wash with water and ash
		4. Wash with cloth and water
		5. Wash with water and mud/*matti*
		6. Wash with water only
HC8	What is the best way to clean hands? Note: Take only one response.	1. Wipe on cloth/towel/paper towel
		2. Wipe on leaves/other items
		3. Wash with water
		4. Wash with water and soap

		Section 5: Hygiene and Cleanliness
		5. Wash with ash/mud/*matti*
		6. It does not matter what you use, as long as they are cleaned
HC9	In the last thirty (30) days, how much did you spend on soap for the entire household?	PKR
HC10	What do your household members use to dry their hands? (Tick all that apply)	1. Nothing, hands dry by themselves
		2. Any cloth
		3. Towel
		4. Tissue paper/paper roll
HC11	If you allow me, may I please see your hands? If the Enumerator is not allowed to observe, he/she should try and just see hands while interviewing.	1. Yes
		2. No (Proceed to HC13)
HC12	Enumerator: Please observe the respondent's palms, fingers, and nails for signs of dirt and choose one option	1. Clean appearance
		2. Unclean appearance
		3. Neither clean nor unclean
HC13	What arrangement do you have in place to cater to toilet of young children under two (02) years of age?	1. Take the child to the latrine at intervals
		2. Use a diaper
		3. Use a loincloth (*langote)* or some other cloth
		4. No such arrangements are in place (proceed to HC15)
		5. No children of under 2 years is present in the household
HC14	How do you usually dispose of this absorbent material/item (or which material you use to cater to toilet of young children) after using it?	1. Throw it outside the household
		2. Dispose of it outside the household at designated garbage bins/areas
		3. Dispose of it outside the household in a plastic bag
		4. Dispose of it outside the household at designated garbage bins/areas after putting it-in a plastic bag
		5. Dispose of it inside the household in a bin after putting it in a plastic bag

		Section 5: Hygiene and Cleanliness	
		6. Dispose of it inside the household in a bin	
		7. Do not dispose of the material, reuse it after washing	
HC15	When do you clean your house?	1. Every day in the morning only	2. Every day in the afternoon only
		3. Every day in the evening only	4. Once a day, no time is fixed
		5. Two times a day	6. Three times a day
		7. Once in alternate days	8. Once in two days
		9. Once in three days	10. Once in a week for one time
		11. Once seldomly	

		Section 6: Menstrual Hygiene	
MH1	What absorbent materials did you use during your last menstrual period? Note: Tick all that apply.	1. Disposable sanitary pads	2. Cloths
		3. Cotton and cloths	4. Did not use any absorbent material
MH2	How do you typically dispose of the materials after use?	1. Throw it outside the household	
		2. Dispose of it outside the household at designated garbage bins/areas	
		3. Dispose of it outside the household in a plastic bag	
		4. Dispose of it outside the household at designated garbage bins/areas in a plastic bag	
		5. Dispose of it inside the household in a bin in a plastic bag	
		6. Dispose of it inside the household in a bin	
		7. Do not dispose of the material, reuse it after washing	
MH3	For how many days did you skip work or school due to menstruation during your last menstrual period?		days
		33. Did not skip school or work at all	

		Section 7: Diarrhea	
DI1	What are the symptoms of diarrhea in children?	1.	Watery stools
		2.	Stomach pains
		3.	Vomiting
		4.	Vomiting and watery stools
		5.	Loss of appetite
		6.	Body weakness
DI2	In the case of diarrhea, what should be immediately administered to the child?	1.	Water
		2.	Tea
		3.	ORS
		4.	Zinc
		5.	ORS and zinc
		6.	*Nimcol*
		7.	Nothing should be given
DI3	Do you know how to make *nimco*l in your home?	1.	Yes
		2.	No
DI4	What is the purpose of ORS/*nimcol*?	1.	Helps to relieve watery stools
		2.	Helps to relieve stomach pains
		3.	Helps to reduce vomiting
		4.	Helps to reduce body weakness
		5.	Helps in replacing body salts and minerals
		77.	Do not know
DI5	What is the purpose of Zinc syrup?	1.	Helps to relieve watery stools
		2.	Helps to relieve stomach pains
		3.	Helps to reduce vomiting
		4.	Helps to reduce body weakness

		Section 7: Diarrhea	
		5. Helps in replacing body salts and minerals	
		77. Do not know	
DI6	In the last 15 days, has any child under 5 years old in your household suffered from diarrhea?	1. Yes (please note complete details in Table 2 below)	
		2. No (please proceed to next section)	

Section 7: Diarrhea; *Table No.:* 2					
In the following table, insert details of all the household's children under 5 years of age that have had diarrhea within the last three (03) months					
From Table **1** insert PID No. of all children under 5 years old who have been afflicted with diarrhea in the past 15 days	Name	DI7 Was the child taken to any health facility? (Code)	DI8 What was administered to the child? (Code)	DI9 From where did you obtain ORS or zinc syrup? (Code)	DI10 For how many days did you administer ORS/nimcol and/or zinc syrup to the child? (Days)

Code Key	
Question No.	Code
DI7	1—Yes; 2—No; 77—Don't know; 99—No response; 88—Not applicable
DI8	1—Only ORS; 2—Only zinc syrup; 3—ORS and zinc syrup; 4—Home-made *nimcol*; 5—Homeopathic medicines; 6—Herbal medicines (from Hakeem); 7—Home-made remedies; 8—Some other medicine; 9—Did not give any medicine; 77—Don't know; 99—No response
DI9	1—Outpatient Therapeutic Program (OTP); 2—Mobile Outpatient Therapeutic Program (OTP); 3—Some other health facility; 4—Health workers (LHWs, CHWs, CMWs)); 5 – Medical Store; 6—Doctor; 7—Hakeem; 77—Don't know; 88—Not applicable; 99—No response

Section 8: Food Security		
FS1	How many meals a day do members of your households have?	
FS2	In the past one month, have you or any member of your household stayed hungry, and went to sleep hungry, due to poverty or lack of funds?	1. Yes
		2. No (please proceed to FS5)
FS3	If 'Yes', how many individuals of your household have had to stay hungry and go to sleep hungry?	individuals
FS4	If 'Yes', how many times have you or members of your household had to stay hungry and go to sleep hungry?	times
FS5	In the past one month, have you or any member of your household been forced to eat something that you/they would not eat normally, due to poverty or lack of funds?	1. Yes
		2. No (please proceed to FS8)

Section 8: Food Security		

No.	Question	
FS6	If 'Yes', how many members of your household had to face this situation?	individuals
FS7	If 'Yes', how many times have these individuals faced such a situation?	times
FS8	In the past one month, have you or any member of your household been forced to consume less food due to scarcity/lack of food?	1. Yes
		2. No (Please proceed to FS11)
FS9	If 'Yes',-how many members of your household had to face this situation?	individuals
FS10	If 'Yes', how many times have these individuals faced such a situation?	times
FS11	In the last 24 hours, which of the following food items have you consumed? (Note: Ask about all items one by one.)	

No.	Food Item	Code: 1—Have eaten; 2—Have not eaten
1	Wheat, barley, corn, bread, rice, and other grains	
2	Lentils (*chaana, moong, mash, masoor*, etc.)	
3	Beans, *sem*, *gowar*, *lobia,* etc	
4	Seeds and Nuts (like peanuts, almonds, pistachios, walnuts, etc.)	
5	Dairy products (e.g. milk, butter, *lassi*, yoghurt, cheese), and food made of these	
6	Organ meat (like of heart, liver, kidney)	
7	Beef, mutton, chicken	
8	Fish, seafood, etc	
9	Eggs	
10	Green-leafed vegetables	
11	Vitamin-A vegetables and roots (like pumpkin, sweet potatoes, beetroot, carrots, etc)	
12	Vitamin-A fruits (like papaya, apricot, peach, etc)	
13	Other vegetables	
14	Other fruits	
15	Oil, fats, butter, and foot items made of these	
16	Sugary foods like chocolate, sweets, cakes, candies	
17	Other beverages (like tea, coffee, etc)	

Section 9: Child Diet; *Table No.: 3*								
Child No. 1					**Child No. 2**			
Write PID No. of all children from 6 to 23 months old from Table 1					Write PID No. of all children from 6 to 23 months old from Table 1			
Name					Name			
Age (in months)					Age (in months)			
CD1	Have you ever breastfed the child	1. Yes		2. No	CD1	Have you ever breastfed your child	1. Yes	2. No
CD2	During the past 24 hours, did you breastfeed the child?	1. Yes		2. No (Proceed to CD4)	CD2	During past 24 hours, did you breastfeed the child?	1. Yes	2. No (proceed to CD4)
CD3	If yes, during the past 24 hours how many times did you breastfeed the child?			(times)	CD3	If yes, during the past 24 hours how many times did you breastfeed the child?		(times)

		#	Food items	1. Yes 2. No	No of times			#	Food items	1. Yes 2. No	No of times
CD4	During the past 24 hours, what else did you feed the child other than the breast milk? And how many times?	1	Porridge, rice, bread, and various food items prepared from these.			CD4	During the past 24 hours, what else did you feed the child other than the breast milk? And how many times?	1	Porridge, rice, bread, and various food items prepared from these.		
		2	Lentils (split chickpeas, yellow lentils, red lentils, and etc)					2	Lentils (split chickpeas, yellow lentils, red lentils, and etc)		
		3	Cow, goat, chicken meat					3	Cow, goat, chicken meat		
		4	Liver, kidney, heart, or other organ meat					4	Liver, kidney, heart, or other organ meat		
		5	Fish or seafood					5	Fish or seafood		
		6	Vitamin A containing vegetables (carrots, white potatoes, pumpkins, and etc)					6	Vitamin A containing vegetables (carrots, white potatoes, pumpkins, and etc) and fruits (papaya, peach, apricot, melon, and etc)		
		7	Vitmain A containing fruits (papaya, peach, apricot, melon, and etc)					7	Vitmain A containing fruits (papaya, peach, apricot, melon, and etc)		
		8	Green leafy vegetables					8	Green leafy vegetables		
		9	Other fruits and vegetables					9	Other fruits and vegetables		
		10	Eggs					10	Eggs		

Section 9: Child Diet; *Table No.: 3*											
		11	Company-produced baby foods (e.g. Cerelac)					11	Company-produced baby foods (e.g. Cerelac)		
		12	Lassi					12	Lassi		
		13	Dairy products (e.g. yoghurt, cheese, and food made of these)					13	Dairy products (e.g. yoghurt, cheese, and food made of these)		
		14	Beans, peas, nuts					14	Beans, peas, nuts		
		15	Oil, fats, butter, , or food made of these					15	Oil, fats, butter, , or food made of these		
		16	Sugary foods (chocolate, biscuits, candy, and etc)					16	Sugary foods (chocolate, biscuits, candy, and etc)		
CD5	During the past 24 hours, what else did you give the child to drink other than the breast milk? And how many times?	#	Liquids	1. Yes 2. No	No of times	CD5	During the past 24 hours, what else did you give the child to drink other than the breast milk? And how many times?	#	Liquids	1. Yes 2. No	No of times
		1	Plain water					1	Plain water		
		2	Infant formula milk					2	Infant formula milk		
		3	Milk such as tinned, powdered, or fresh milk					3	Milk such as tinned, powdered, or fresh milk		
		4	Juice or juice drinks					4	Juice or juice drinks		
		5	Clear broth					5	Clear broth		
		6	Lassi (liquidy yougurt)					6	Lassi (liquidy yougurt)		
		7	Thin porridge					7	Thin porridge		

Section 9: Child Diet (Continued)

CD6	What do you do before breastfeeding your child?	1. Wash my hands
		2. Wash my body
		3. Nothing; I immediately start breastfeeding
CD7	What do you do before feeding your child?	1. Wash my hands
		2. Wash my body
		3. Nothing; I immediately start feeding the child

Section 10: Agriculture

AG1	Does your household have or hold any cultivable agricultural land?	1. Yes
		2. No (Proceed to AG6)
AG2	If 'Yes', what is the area of this cultivable agricultural land?	acres
AG3	What do you cultivate on your cultivable agricultural land? (Note: Tick all that apply)	1. Wheat
		2. Rice
		3. Vegetables
		4. Fruits
		5. Corn
		6. Sugarcane
		7. Lentils
		8. Do not cultivate any item (Proceed to AG6)
AG4	How do you utilize the agricultural produce that you cultivate?	1. We sell all the agricultural produce in the market (Proceed to AG6)
		2. We utilize the entire agricultural produce in the household
		3. We sell the produce that is left over after household consumption
		4. We give away (free-of-cost) the produce that is left over after household consumption

	Section 10: Agriculture	
		5. We use some in the household, and sell the remaining agricultural produce
AG5	Is this agricultural produce enough for your household consumption?	1. Yes
		2. No
AG6	Is there any cultivable agricultural land inside or adjoined to your house where a kitchen garden for vegetables has been set up"?	1. Yes
		2. No (please proceed to the next section)
AG7	Do you cultivate fruits and vegetables for household consumption?	1. Yes
		2. No (please proceed to the next section)
AG8	How do you plant these vegetables?	1. In the ground/earth
		2. In pots
		3. In the ground/earth and pots
AG9	If 'Yes', how do you utilize the agricultural produce that you cultivate?	1. We sell all the agricultural produce in the market
		2. We utilize the entire agricultural produce in the household
		3. We sell the produce that is left over after household consumption
		4. We give away (free-of-cost) the produce that is left over after household consumption
		5. We use some in the household, and sell the remaining agricultural produce

	Section 11: Livestock	
LS1	Does the household own any animal livestock, poultry, ducks etc.?	
No.	**Animal**	**Code:** **1—Yes; 2--No**
1	Chickens	
2	Ducks	
3	Sheep	

Section 11: Livestock		
4	Goats	
5	Cows	
6	Buffalo	
7	Camels	
Note: if no livestock is present in the household move to question LS11		
LS2	How does your household utilize various animal products derived from the livestock and other animals (such as milk, yoghurt, butter, clarified butter, eggs etc.)	1. We sell all the agricultural produce in the market
		2. We utilize the entire agricultural produce in the household
		3. We sell the produce that is left over after household consumption
		4. We give away (free-of-cost) the produce that is left over after household consumption
		5. We use some in the household, and sell the remaining agricultural produce
		6. There is no livestock produce
LS3	Do you sell animal livestock, poultry, ducks etc.?	1. Yes
		2. No
LS4	Are the animal products derived from livestock and other animals enough for your household consumption?	1. Yes
		2. No
LS5	Where do you hold your livestock during the day?	1. Outside the house
		2. In the courtyard
		3. In a room inside the house
		4. In a bedroom inside the house
LS6	Where do you hold your livestock during the night?	1. Outside the house

		Section 11: Livestock	
		2. In the courtyard	
		3. In a room inside the house	
		4. In a bedroom inside the house	
LS7	What do you usually feed your livestock and other animals?	1. Green fodder	
		2. Dry fodder/hay	
		3. Oil-seed by-product	
		4. Grain (such as lentils, beans, wheat, barley, rice etc.)	
LS8	How do you utilize animal dung etc. produced by the livestock?	1. We use it as fertilizer	
		2. We sell it	
		3. We make dung cakes/oplay and use them	
		4. We discard it	
LS9	Does anyone visit your household to vaccinate the livestock?	1. Yes	
		2. No	
LS10	What do you do when your livestock and other animals are afflicted by a dangerous disease?	1. We treat the animals at home with traditional remedies	
		2. We call veterinarians to the house to examine the animals	
		3. We take the animals to a veterinary clinic/animal hospital	
		4. Do not do anything	
LS11	Is there any institution in your area/village that teaches skills for household farming of vegetables?	1. Yes	
		2. No	
LS12	Is there any institution in your area/village that teaches skills for rearing livestock/animal husbandry?	1. Yes	
		2. No	

	Section 11: Livestock		
LS13	Is there any institution in your area/village that teaches skills for poultry farming?	1. Yes	
		2. No	
LS14	Does your household plant trees annually	1. Yes	
		2. No (Proceed to Next Section)	
LS15	In the last one (01) year, how many trees did you household plant?		trees

	Section 12: Household Income and Expenditure		
EX1	What is your household's daily expenditure on breakfast?	PKR	
EX2	What is your household's daily expenditure on lunch?	PKR	
EX3	What is your household's daily expenditure on dinner?	PKR	
EX4	What is your household's daily expenditure on tea?	PKR	
EX5	What is your household's daily expenditure on tobacco and betelnut products (such as cigarettes, *biri, paan, niswar, gutka* etc.) ?	PKR	
EX6	What is your households' total expenditure on non-food related items? (for example electricity, gas, kerosene, rent, children's education, medical expenses, transport and other miscellaneous activities)	PKR	Duration Code: 1—Daily 2—Weekly 3—Monthly 77-Do not know
EX7	What is your household total expenditure?	PKR	Duration Code: 1—Daily 2—Weekly 3—Monthly 77-Do not know
EX8	What is your household total income?	PKR	Duration Code: 1—Daily 2—Weekly 3—Monthly 77-Do not know
EX9	In past one week, how much quantities of the following items were utilized/consumed in your household?		

No.	Items	Quantity	Quality Unit: 1—250 grams 2— Kg 3— Litre 4-Item	No.	Items	Quantity	Quality Unit: 1—250 grams 2— Kg 3— Litre 4-Item
1	Wheat			23	Onions		
2	Wheat flour			24	Spinach, mustard etc.		

Section 12: Household Income and Expenditure							
3	Rice flour			25	Peas, French beans*, gowar, lobia* etc		
4	Basmati Rice			26	Carrots		
5	*Irri* Rice			27	Radish		
6	Gram flour *(Besan)*			28	Cucumber		
7	Split chickpeas *(Chana dal)*			29	Mangoes		
8	Yellow lentils *(Mung dal)*			30	Bananas		
9	Red lentils *(Masoor dal)*			31	Apples		
10	Black gram *(maash dal)*			32	Guava		
11	Sugar			33	Eggs		
12	Raw sugar *(gurrh)*			34	Fish		
13	Raw sugar powder			35	Chicken meat		
14	Tea			36	Mutton		
15	Cooking oil			37	Beef		
16	Clarified vegetable-based butter *(Banaspati)*			38	*Tandoor* bread		
17	Clarified milk-based butter (Desi ghee)			39	Almonds		
18	Butter			40	Pistachios		
19	Milk			41	Walnut		
20	Yoghurt			42	Peanuts		
21	Tomatoes			43	Dates		
22	Potatoes			44	Dry dates		

Section 13: Observations		
Ob1	What is the overall state of cleanliness of the housing unit?	1. Very clean
		2. Very dirty
		3. Neither clean nor dirty
Ob2	What is the overall state of cleanliness of the rooms inside the housing unit?	1. Very clean
		2. Very dirty
		3. Neither clean nor dirty

Section 13: Observations		
Ob3	What is the overall state of cleanliness of the housing unit's courtyard?	1. Very clean
		2. Very dirty
		3. Neither clean nor dirty
Ob4	Has the housing units been swept?	1. Yes
		2. No
Ob5	Is there any human or animal feces present in the housing unit?	1. Yes
		2. No
Ob6	Is there any trash or refuse littered in in the housing unit?	1. Yes
		2. No
Ob7	Is there any stagnant water in in the housing unit?	1. Yes
		2. No
Ob8	Is this any unpleasant odour in the housing unit?	1. Yes
		2. No
Ob9	Are adult members of the household neat and clean?	1. Yes
		2. No
Ob10	Are the children of the household neat and clean?	1. Yes
		2. No
Ob11	Is the latrine clean overall?	1. Yes
		2. No
Ob12	Is the latrine pit clean?	1. Yes
		2. No
Ob13	Is there any feces present in the latrine?	1. Yes
		2. No
Ob14	Is there water available in the latrine?	1. Yes
		2. No
Ob15	Is there an area to wash hands (e.g. wash basin) in the latrine?	1. Yes
		2. No
Ob16	Is there soap available in the latrine?	1. Yes
		2. No

Baseline Survey of Implementation of the Nutrition-Sensitive Component (ER-3) of the PINS

Village Survey Questionnaire on

Mother and Children's Dietary Deficiencies and Health/Hygiene

District		Tehsil	
Union Council		Village	
Venue of FGD			
Name of Moderator		Name of Note Taker	
Date of FGD		No. of Participants	
Start time of FGD		End time of FGD	

Introduction and Consent:

Assalam-o-alaikum.

My name is _____ and I am here on behalf of _____. Our firm conducts research on socio-economic conditions in the country.

At the moment, we are working on a project that aims to improve the dietary deficiencies and health/ hygiene of mothers and children. The purpose of visiting you is to gain insights regarding health and hygiene of mothers and children, so that their dietary deficiencies may be addressed and their health/hygiene standards may be improved.

We will get information from you through conversations. Each of you should openly express your opinion. This conversation will take approximately one hour of your time.

Participation in this discussion is completely voluntary, and you have the right to not answer any or all of the questions. However, we do hope that you will participate in this discussion, as your opinion is of great importance to us. The information you provide will only be used to develop a research report.

You can ask any questions you may have regarding this conversation. If not, may I begin the questions now?

	Participants Information				
Sr. No.	Name	Age	Gender	Phone No.	Occupation/ Vocation
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					

Section 1: Village Profile	
VP1	Approximately how many households are there in your village?
VP2	Approximately how many people reside your village?
VP3	How many households (in percentage terms) in your area have electricity?
VP4	How many households (in percentage terms) in your area have gas?
VP5	What is the occupation/vocation of majority of residents of your village?
VP6	How many households (in percentage terms) in your village have latrines/toilets?
VP7	What do the people from the remaining households do to relieve themselves?

Section 2: Agriculture	
AG1	Approximately how much cultivable agricultural land exists in your village?
AG2	Which crops are usually cultivated in your village during the *rabi* season?
AG3	Which crops are usually cultivated in your village during the *kharif* season?
AG4	How is the cultivable agricultural land irrigated in your village?
AG5	Is there water available in your area during the entire year for irrigation?
AG6	If not, in which season is water available (for irrigation)?
AG7	What are the methods of crop cultivation in fields (less than 5 acres) in your area?
1	How are fields leveled?
2	How are the fields plowed?
3	How are the field leveled after plowing?
4	What is the method of irrigating the fields?
5	What types of seeds do you use in cultivation?
6	How do they get or make seeds/seedlings for planting?
7	What is the method for sowing/transplanting the crop?
8	How are the fields fertilized?

	Section 2: Agriculture
9	What is the method for preparing lanes for sowing vegetable/vegetable seedlings?
10	What is the method of spraying the crops (with insecticides/pesticides)?
11	How are weeds removed from the field?
12	How is the crop/field protected from the adverse effects of weather?
13	What is the method of harvesting and picking the crop?
14	What is the method for threshing harvested crop?
15	How do you conduct off-season cultivation?
AG8	Are there any Agriculture Department offices in your village?
AG9	Do the villagers keep livestock and poultry for the purposes of household consumption?
AG10	Do the villagers keep livestock and poultry for commercial purposes?
AG11	Do the women of your village tend to the livestock?
AG12	Do the women of your village take the livestock to graze in the fields?
AG13	Do the residents of your village cultivate crops for household use?
AG14	Which cultivation-related activities are conducted by women?
	Section 3: Drought
DR1	Has your village ever suffered a drought?
DR2	How many times has your village faced a drought?
DR3	Approximately how long does drought last during a given season?
DR4	How do the residents of your area prepare to face a drought? *(Note to Moderator: Probe for extra information)*
DR5	During drought, what is the people's source of income?
DR6	What is the usual diet of the villagers during drought?
DR7	How many meals in a day do villagers have during drought?
DR8	What should people do to protect themselves from drought?

	Section 3: Drought	
DR9	What is the people's source of drinking water during drought?	
DR10	What do the villagers do of their livestock during drought?	
DR11	Are there any crops that can be cultivated during drought? Please clarify.	
DR12	Do people relocate to other areas because of the drought?	

	Section 4: Flood	
FL1	Has your area ever been flooded?	
FL2	How many times has your area been flooded?	
FL3	For approximately how long does the area remain flooded?	
FL4	How do the residents of your area prepare to face floods? *(Note to Moderator: Probe for extra information)*	
FL5	During floods, what is the people's source of income?	
FL6	What is the usual diet of the villagers during floods?	
FL7	How many meals in a day do villagers have during floods?	
FL8	What should people do to protect themselves from floods?	
FL9	What are the sources of drinking water during floods?	
FL10	What do the villagers do of their livestock during floods?	
FL11	Are there any activities that can be done in flood-affected areas through which people may earn an income?	
FL12	Do people temporarily relocate to other areas because of the flood?	
FL13	Is there any planning done in your area to protect sources of drinking water? Please clarify.	
FL14	Are there any village-level interventions implemented in your area to improve the quality of drinking water? Please clarify.	

	Section 5: Plantation	
PL1	Are there any annual tree plantation drives conducted in your area?	
PL2	In the last year, how many trees were planted during the tree plantation drive?	
PL3	What are the plans to protect trees that were planted last year?	
PL4	Approximately how many trees (in percentage terms) planted last year are alive?	

PL5	Do any government/non-government personnel visit your area to vaccinate livestock?
PL6	If yes, how many times a year do these government/non-government personnel visit your area?
PL7	Is there any institution in your area/village that teaches skills for household farming of vegetables?
PL8	Is there any institution in your area/village that teaches skills for rearing livestock/animal husbandry?
PL9	Is there any institution in your area/village that teaches skills for poultry farming?

PR1	What are the prices of the following items in your village? *(Note: Acquire prices of following items from shops and markets located in the village)*				
1	Wheat/kg	PKR	23	Onions/kg	PKR
2	Wheat flour/kg	PKR	24	Spinach, mustard etc./kg	PKR
3	Rice flour/kg	PKR	25	Peas, French beans*, gowar, lobia* etc./kg	PKR
4	Basmati rice/kg	PKR	26	Carrots/kg	PKR
5	*Irri* rice/kg	PKR	27	Radish/kg	PKR
6	Chickpea flour (*besan*)/kg	PKR	28	Cucumber/kg	PKR
7	Lentil (*channa*)/kg	PKR	29	Mangoes/kg	PKR
8	Lentil (*moong*)/kg	PKR	30	Bananas/dozen	PKR
9	Lentil (*masoor*)/kg	PKR	31	Apples/kg	PKR
10	Lentil (*maash*)/kg	PKR	32	Guava/kg	PKR
11	Sugar/kg	PKR	33	Egg/piece	PKR
12	Raw sugar (*gurrh*)/kg	PKR	34	Fish/kg	PKR
13	Raw sugar powder/kg	PKR	35	Chicken meat/kg	PKR
14	Tea/kg	PKR	36	Mutton/kg	PKR
15	Cooking oil/kg	PKR	37	Beef/kg	PKR
16	Clarified vegetable-based butter (*Banaspati*)/kg	PKR	38	*Tandoor* bread/piece	PKR
17	Clarified milk-based butter (Desi ghee)/kg	PKR	39	Almonds/50g	PKR
18	Butter/kg	PKR	40	Pistachios/50g	PKR
19	Milk/kg	PKR	41	Walnuts/50g	PKR
20	Yoghurt/kg	PKR	42	Peanuts/50g	PKR
21	Tomatoes/kg	PKR	43	Dates/kg	PKR
22	Potatoes/kg	PKR	44	Dry dates/kg	PKR
Section 6: Observation					
OB1	What is the sewerage/drainage mechanism in the area?				
OB2	What is the cleanliness condition of the area?				
OB3	Is there dirty swamp water in the area?				
OB4	What is the condition of the streets in the area? (Pakki / Katchi / Clean / Dirty)				
OB6	What is the condition of the sewerage/dirty water in the area?				
OB7	Are there animal/human excrete lying on the streets of the area?				

ANNEXURE 5: DAILY MONITORING FORM

#	Questions	Answers
1.	Supervisor CNIC	
2.	Household serial #	
3.	Household geographic location	"Record Location (GPS coordinates)"
4.	Enumerator code	
5.	Enumerator's interview number	
6.	Interview Status	Household refused to interview
		House is closed
		Household agreed to interview
7.	Name of respondent	
8.	Did the interviewer explained the purpose of interview to you?	Yes
		No
9.	Total number of household members	
10.	Total number of children in the household in the age bracket of 6-23 months	
11.	Total of number of rooms in the house	
12.	Does household purify drinking water?	Yes
		No
13.	Amount spent on purchase of soap	_____ (Rupees)
14.	Presence of latrine in the household	Yes
		No
15.	Total number of children under 5 years old in the household suffered from diarrhea in the past 15 days	
16.	Presence of cultivable land in the household	Yes
		No
17.	Presence of livestock animals in the household	Yes
		No

ANNEXURE 6: CHARACTERISTICS OF HOUSING UNITS

A general picture regarding housing conditions, structure and services in the sample area is summarized in Table 1. Close to 90% of surveyed housing units are owned by the household and their families. Approximately 36% of housing units comprise *pacca* walls, whereas only 6% comprised strong roofing structures (RCC or RBF). Although three-quarters of all sampled housing units had an electricity connection, only close to 15% of housing units had a gas connection. Most importantly the exhibit reveals that approximately 37% of the surveyed housing units do not have functioning latrines.

TABLE 1: OVERALL HOUSING UNIT CHARACTERISTICS

Owners	Pacca Wall	RCC/RBF	Electricity	Gas	Without Latrine
90.3	36.3	6.0	73.4	14.7	36.8

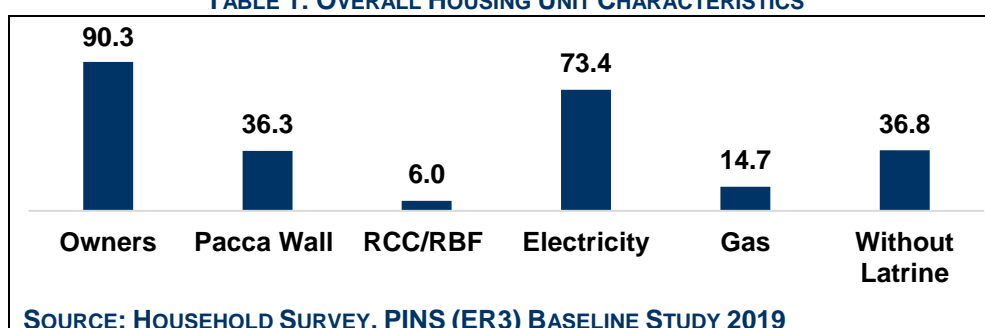**SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019**

Table 2 compares these characteristics across treatment and control groups. Two observations emerge from this exhibit. First, households in the control group have an edge over treatment group in housing structure and consumption of utilities. Average values of these characteristics are relatively higher in the control group as compared with the treatment group. Second, the differences in the average values across treatment and control groups are statistically significant as evaluated by applying t-test, particularly for the following features: 'Pacca' wall, electricity, gas and non-availability of latrine indicate that the differences are statistically significant.

TABLE 2: HOUSING UNIT CHARACTERISTICS (PERCENTAGES)

	Overall	Group		t-value	p-value
		Treatment	Control		
House Owners	90.3	90.7	89.8	1.01	0.31
Structure: *Pakka* Wall	36.3	34.6	37.9	-2.43	0.02
Structure: RCC/RBF	6.0	5.5	6.4	-1.32	0.19
Electricity Connection	73.4	70.8	76.0	-4.19	0.00
Gas Connection	14.7	12.9	16.5	-3.64	0.00
Household without Latrine	36.8	39.4	34.1	4.28	0.00
Rooms (Average Numbers)	2	2	1	1.46	0.15
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019					

That being said, a significant variation between housing unit characteristics is seen once the survey data is disaggregated at the district level (refer to the annexure for district-wise results). For example, house ownership ranges from 73% (in Tando Allah Yar) to 98% in Tando Muhammad Khan. The presence of *pakka* walls are seen in only 10% of housing units in Sujawal, whereas they are more readily seen in Jamshoro (46%). Although overall incidence of strong roofing structures is *relatively* higher (16 %) in Tando Allah Yar and Shikarpur, they are almost negligible in Dadu and Sujawal. (Refer to Volume 2, Section 1, 6, 7 8, 9, Table 1.9)

Similarly, significant differences exist in the availability of electricity and gas connections. For instance, Shikarpur, where a resounding 96% of housing units have electricity connection as compared with Sujawal, Tando Muhammad Khan, and Thatta where prevalence of electricity connections ranged from 40% to 45%. Such trends can also be seen in the prevalence of gas connections-in districts such as Sujawal and Thatta, only approximately 1% and 2% (respectively) of housing units have gas connections, compared to Larkana, Matiari, and Jamshoro, where the availability of gas connections was higher (at 30%, 28%, and 23% of housing units surveyed, respectively). (Refer to Volume 2, Section 2, 4, 5, 7, 9 and 10, Table 1.9).

ANNEXURE 7: HOUSEHOLD FOOD SECURITY EXPERIENCE

Using Food Insecurity Experience (FAO) criteria of understanding household food insecurity, the study results reveal that close to 11% of the households across districts experienced severe food insecurity, as shown in Table 3. This determines that were 11% of households that ran out of food due to poverty or lack of resources. The proportion of such households is highest (41.8%) in Thatta. Furthermore, as reported, there were on average five individuals (at overall level) who had gone on entire day without eating for four times in the past month. It increases above average in the districts of Sujawal and Shikarpur.

There were 13.8% of households across districts who experienced moderate food insecurity, illustrated in Table 3. It comprises of households where individuals had to either eat unwanted food i.e. compromise on the quality of food or reduce meal quantity. 4.6% of the households from the sample population had unwanted food in the past month. The proportion of such households is found to be highest (20.6%) in the district of Sujawal followed by Tando Muhammad Khan (with 8.2% of households). (Refer to Volume 2, Section 7 and 9, Table 1.23)

There were also 9.2% of households where individuals had to reduce the quantity of food than their usual times. Thatta and Sujawal comprises highest number of households experiencing such conditions (32.3% and 23.3% respectively). (Refer to Volume 2, Section 7 and 10, Table 1.23)

TABLE 3: HOUSEHOLD FOOD INSECURITY EXPERIENCE
(BASED ON LAST MONTH INSTANCE)

	Overall	Group	
		Treatment	Control
Individuals in household stayed hungry (yes/no)	10.5	10.7	10.3
Number of individuals stayed hungry	5	5	5
Number of times stayed hungry	4	4	4
Individuals in household had unwanted food (yes/no)	4.6	5	4.2
Number of individuals had unwanted food	5	5	5
Number of times had unwanted food	4	4	4
Individuals in households had less food (yes/no)	9.2	10	8.4
Number of individuals had less food	6	6	5
Number of times less food	5	5	4
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

ANNEXURE 8: CHILDREN (UNDER 2 YEARS OLD)-SPECIFIC CLEANLINESS PRACTICES

Table 4 records household practices towards maintaining hygiene and cleanliness of children under 2 years old, particularly in terms of managing their children's latrine usage. 23% of households reported taking their children to latrine at regular intervals, which shows that households are performing the practice of using latrine for their children.

District wise data reveals that such practice is more prevalent in the districts of Kamber Shahdadkot (45%), whereas lowest in Tando Allah Yar (2%) followed by Matiari (~6%). (Refer to Volume 2, Section 3, 5, and 8, Table 1.31)

There were still ~18% of households who used a loincloth or similar cloth material. Only 2.6% of households were such who were using diapers. Using loincloth/cloth or diaper can be a matter of concern in maintaining hygiene because study observations suggest that loincloths are normally reused after washing. Furthermore, the survey results also reported that there were 69% of households who reused the absorbent material after washing.

Disaggregated data at district level reveals that the usage of loincloth is relatively higher in districts of Matiari (28%), Tando Mohammad Khan (25.4) and Tando Allah Yar (24.5). More than 70 percent households reported the practice of reusing absorbent material in Dadu, Kamber Shedad Kot, Tando Allah Yar and Thatta. (Refer to Volume 2, Section 3, 8 and 10, Table 31, district Kamber, Tando Allah Yar, and Thatta)

TABLE 4: CHILDREN (UNDER 2 YEARS OLD)-SPECIFIC CLEANLINESS PRACTICES

	Overall	Group	
		Treatment	Control
Practices of Latrine Usage among Children			
No Child below two year	40.8	39.8	41.8
Take the child to the latrine at intervals	23.0	21.0	24.9
Use a loincloth (langote) or some other cloth	17.6	20.0	15.2
No such arrangements are in place	16.0	16.5	15.5
Use a diaper	2.6	2.7	2.5
Practice of Using Absorbent Among Children			
Reuse after washing	69.2	72.8	65.4
Throw it outside the household	18.1	14	22.5
Dispose it of outside the household in bin/garbage area	5.0	6.0	4.0
Dispose it of outside the household in a plastic bag	3.5	3.5	3.5
Dispose it of inside the household in a bin	2.4	2.7	2.2
Dispose it of outside the household in a plastic bag at garbage area/bin	1.2	0.8	1.5
Dispose it of inside the household in a plastic bag in a garbage area/bin	0.5	0.2	0.9
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Other Household Hygiene Practices

Cooking food is a regular part of household routine that is linked with quality of food intake. Table 5 illustrates that only 26% and 24% the female respondents overall reported of knowledge of the importance of washing hands with soap and water, and cleaning food items, respectively, during cooking.

Only 17% females reportedly knew of the significance of washing food preparation utensils. However, of them, 51% reported of washing utensils with soap and water (found highest in Jamshoro) followed by 33% with water and ash (found highest in Shikarpur). (Refer to Volume 2, Section 2 and 6, Table 1.30)

TABLE 5: KNOWLEDGE AND PRACTICE LEVELS OF MAINTAINING HYGIENE WHILE COOKING

	Overall	Group	
		Treatment	Control
Knowledge (Essentials considered to maintain cleanliness while cooking)			
Wash hands with soap and water	26.0	25.1	27.0
Wash/clean food items	23.6	23.7	23.6
Wash hands with water	23.1	23.9	22.4
Wash/clean food preparation utensils	17.2	17.8	16.6
Wash/clean fruits	10.0	9.6	10.5
Practice (Essentials performed while cleaning food making/eating utensils)			
Wash with water and soap	51.2	49.1	53.3
Wash with water and ash	33.1	33.7	32.4
Wash with water and mud/matti	7.7	8.4	7.0
Wash with only cloth or paper/paper towels	3.7	3.7	3.8
Wash with water	3.5	3.9	3
Wash with cloth and water	0.8	1.1	0.5
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Similar to cooking, cleaning of household spaces is considered essential for maintaining overall hygiene and cleanliness of household members. Table 6 records that majority proportion (44%) of households in sample areas reported cleaning their houses at least two times a day followed by 39% of households cleaning for one time a day in morning. District variations exist in performing this practice, important to note is there minimal percentage of households who just seldom clean their house space. The latter indicates that this practice is present across the target districts.

TABLE 6: HOUSEHOLD CLEANING PRACTICE

	Overall	Group	
		Treatment	Control
Two times a day	43.7	44.8	42.6
Every day in the morning only	38.8	37.3	40.2
Three times a day	8.9	9.4	8.4
Every day in the afternoon only	4.4	4.5	4.2
Once a day, no time is fixed	1.8	1.6	2.1
Every day in the evening only	1.0	0.8	1.1
Once in alternate days	0.6	0.7	0.4
Once in two days	0.2	0.1	0.3
Once in three days	0.3	0.3	0.2
Occasionally	0.2	0.2	0.3
Once in a week for one time	0.1	0.1	0.2
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

The findings are confirmed by the data collection field team's observations. Majority of the housing units (courtyards and the rooms) were marked to be clean. They were neither very clean nor very dirty. Some trash or refused littered was observed in some instances. Presence of animal feces was also noted within the household. Minimal instances were recorded of observing the stagnant water in the housing unit.

Field teams also explored the cleanliness conditions at the level of villages. In most of the cases across the districts, streets were unclean. Sewerage/dirty water was observed in several instances. Lying of animal

feces in the outdoors was also very common. Management of garbage had been poor since garbage dumps were noted in the majority of the cases.

Menstrual Hygiene

Menstruation is an essential component of women living but according to studies hygiene maintenance during this period is often neglected. Table 7 records hygiene practices among females during menstruation. 26% of females overall in the sample areas reported of not using anything during their menses. No notable difference is observed in the sampled group (Treatment, ~26% and Control, ~27%).

TABLE 7: PRACTICES REGARDING MENSTRUAL HYGIENE

	Overall	Group	
		Treatment	Control
Absorbent Material			
Cloths	65.7	66.4	65.0
Did not use any absorbent material	26.3	25.8	26.8
Disposable sanitary pads	4.5	3.9	5.0
Cotton and cloths	3.6	3.9	3.2
Disposing Method			
Dispose off inside the household in a bin	72.6	75.2	70.0
Throw it outside the household	16.7	15.1	18.2
Dispose of it inside the household in a bin in a plastic bag	3.0	2.6	3.4
Dispose of it outside the household in a plastic bag	2.7	2.5	3.0
Dispose of it outside the household at designated garbage bins/areas	2.1	1.9	2.4
Dispose of it outside the household at garbage bins/areas in a plastic bag	2.8	2.7	2.9
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Of the females using any absorbent material, ~66% females reported of using cloth while only ~5% of them reported of using sanitary pads. On exploring methods practiced for disposing absorbent materials (be it cloths, cottons, or pads), around 73% of respondents reported of disposing it off (in a plastic inside the house). There were also ~17% of respondents who mentioned of just throwing them outside the house. Slight differences are however noted with regards to disposing methods in treatment and control groups.

ANNEXURE 9: FOOD PRODUCTION SYSTEMS (ADAPTED TO CLIMATE CHANGE)

Cropping Pattern in Villages at UC Level

Following Exhibit illustrates cropping pattern across the target UCs over rabi and kharif seasons.

TABLE 8: DIVERSITY OF FOOD CROPS

District	Seasons	Control UCs				Treatment UCs			
		Panhwaro	Lakha	Gathar	Sijawal Junejo	Dhamraho	Seelra	Junani	Mirpur
Kamber Shahdadkot	Rabi	Wheat, melon, tomatoes, okra	Wheat, mustard, melon, onion	Wheat, mustard, tomatoes, onion, okra, melon	Wheat, mustard melon, tomatoes, okra	Wheat, mustard, tomatoes (okra, onion, ridge gourd were seldom reported)	Wheat, mustard, tomatoes (okra, melon, ridge and bitter gourd were seldom reported)	Wheat, mustard (peas and lentils were seldom reported)	Wheat and mustard
	Kharif	Rice	Rice (sugar cane was seldom reported)	Rice	Rice	Rice	Rice	Rice (vegetables such as okra, onion, tomatoes, ridge gourd were seldom reported)	Rice
		Makhdum Bilawal	Magsi	Kolachi	Butt Serai	Sawro	Wahi Pandhi	Thalo	Kandichuki
Dadu	Rabi	Wheat, mustard, chilies, tomatoes	Wheat, mustard, corn, onion	Wheat, gram seeds, peas,	Wheat, garlic, mustard, onion, tomatoes, okra	Wheat, mustard, tomatoes, onion, chilies	Wheat, chilies, tomatoes	Wheat, mustard, tomatoes, chilies, ridge gourd (tori)	Wheat, bitter gourd, okra,
	Kharif	Rice, onion, okra, chilies, egg plant	Rice, Sesame seeds, onion	Rice and sesame seeds	Rice	Guwaar, lentils	Sugar cane, guwaar, lentils	Rice, guwaar, sesame seeds, lentils	Rice

		Kothi	Pir Bux Bhutto	Garhi Khuda Bux Bhutto	Mehrabpur	Dara	Tatri
Larkana	Rabi	Wheat, mustard	Wheat	Wheat	Wheat	Wheat	Wheat
	Kharif	Rice	Rice	Rice	Rice	Rice	Rice

		Allah Bachayo Shoro	Uner pur		Channa	Toung	
Jamshoro	Rabi	Wheat, sugar cane	Wheat, sugar cane		Wheat, mustard	Wheat, onion, *guwaar*, melon, peas	
	Kharif	Rice, cotton	Rice, cotton		Cotton*, guwaar*, sesame seeds (rice was seldom reported)	Cotton, okra, apple gourd (*tinda*), *guwaar*	

		Oderal Station	Oderal Village		Abdul Waheed Burio	Old Saeedabad	
Matiari	Rabi	Mustard, wheat, tomatoes	Wheat, peas		Wheat, ridge gourd, chilies	Chilies, wheat, bitter gourd	
	Kharif	Rice, onion, okra	Lentils, rice, cotton, corn		Rice, ridge gourd, chilies	Rice, okra, corn, cotton	

		Jhando Mari	Mail Mori		Darya Khan Mari	Shah Inayat Rizvi	
Tando Allah Yar	Rabi	Wheat, mustard, ridge gourd, tomatoes	Wheat, corn, tomatoes, sugarcane, peas		Wheat, mustard, ridge gourd, banana, tomatoes, chilies	Bananas, bitter gourd, chilies, wheat, mustard, corn	
	Kharif	Cotton, onion, okra,	Corns, lentils, cotton, banana, okra, sugar cane, cotton		Cotton, sugar cane, okra, ridge gourd, chilies	Corn, okra, ridge gourd, cotton, melons, mangoes	

		Khokar	Saeedpur		Jamal Din Lashari	Tando Saindad	
Tando Muhammad Khan	Rabi	Wheat, mustard, sugar cane,	Wheat, mustard, sugar cane,		Wheat, barley, onion, tomatoes	Wheat, sugar cane, garlic	
	Kharif	Rice, sugar cane, cotton, okra, apple gourd	Rice, sugar cane, cotton,		Rice, cotton, sugar cane	Rice, tomatoes, cabbage, cotton, sugar cane	

		Jhimpir	Sonda	Keti Bunder	Sukhpur
Thatta	Rabi	Tomatoes, chilies	Wheat, tomatoes, chilies, sugar cane	Wheat, tomatoes	Tomatoes, chilies, okra, radish, sugar cane, mustards
	Kharif	Onions and rice (only when rainfall)	Sugar cane, rice, corns, onions	Rice, corn, cotton, okra	Rice, corns, onions
		Marho Bola Khan	Jar	Bachal Gugo	Chach Jehan Khan
Sujawal	Rabi	Tomatoes, chilies	Tomatoes, chilies	Tomatoes, chilies	Tomatoes, chilies, peas
	Kharif	Corn, sugar cane	Chilies, tomatoes	Rice, chilies, tomatoes	Rice, chilies, tomatoes
		Amrote Sharif	Gaheja	Pir Bux Shijrah	Zarkhail
Shikarpur	Rabi	Wheat, peas	Wheat, peas, gram seeds, (other vegetables such as ridge gourd were seldom reported)	Wheat, melon, gram seeds, peas	Wheat, coriander, peas, mustard, melon
	Kharif	Rice	Rice	Rice,	Rice

Water sources of Irrigation

The table records sources of irrigation in the villages, of the targeted UCs, adapted by the small farmers.

TABLE 9: WATER SOURCES FOR IRRIGATION

District	Control UCs				Treatment UCs			
Kamber Shahdadkot	Panhwaro	Lakha	Gathar	Sijawal Junejo	Dhamraho	Seelra	Junani	Mirpur
	Canal irrigation	Canal irrigation and tube well	Canal irrigation and tube well	Canal irrigation	Canal irrigation and seldom tube well	Canal irrigation and seldom tube well	Canal irrigation	Canal irrigation
Dadu	Makhdum Bilawal	Magsi	Kolachi	Butt Serai	Sawro	Wahi Pandhi	Thalo	Kandichuki
	Canal irrigation and tube well	Canal irrigation and tube well	Canal irrigation and tube well	Canal irrigation and tube well	Rain water, and seldom use tube well	Rain water and tube well	Rain water, and seldom use tube well	Rainwater and canal irrigation
Larkana	Kothi	Pir Bux Bhutto	Garhi Khuda Bux Bhutto		Mehrabpur	Dara		Tatri
	Canal irrigation	Canal irrigation	Canal irrigation		Canal irrigation and boring	Canal irrigation and boring		Canal irrigation
Jamshoro	Allah Bachayo Shoro	Uner pur			Channa			Toung

TABLE 9: WATER SOURCES FOR IRRIGATION

District	Control UCs		Treatment UCs	
	Canal irrigation and tube well	Canal irrigation and tube well	Canal irrigation, boring and tube well	Canal irrigation, rain water and tube well
Matiari	Oderal Station	Oderal Village	Abdul Waheed Burio	Old Saeedabad
	Canal irrigation and tube well	Canal irrigation and tube well	Canal irrigation, boring and tube well	Rain water and tube well
Tando Allah Yar	Jhando Mari	Mail Mori	Darya Khan Mari	Shah Inayat Rizvi
	Boring, tube well, canal irrigation	Canal irrigation and tube well	Canal irrigation, tube well, and boring	Canal irrigation, tube well, boring, and rainwater
Tando Muhammad Khan	Khokar	Saeedpur	Jamal Din Lashari	Tando Saindad
	Canal irrigation	Canal irrigation	Canal irrigation and tube well	Canal irrigation and tube well
Thatta	Jhimpir	Sonda	Keti Bunder	Sukhpur
	Canal irrigation and tube well	Canal irrigation and tube well	Canal irrigation and tube well	Canal irrigation and tube well
Sujawal	Marho Bola Khan	Jar	Bachal Gugo	Chach Jehan Khan
	Tube well	Tube well	Tube well	Tube well
Shikarpur	Amrote Sharif	Gaheja	Pir Bux Shijrah	Zarkhail

TABLE 9: WATER SOURCES FOR IRRIGATION

District	Control UCs		Treatment UCs	
	Canal irrigation, tube well, and use seldom boring	Canal irrigation, tube well	Canal irrigation, tube well	Canal irrigation, boring, tube well

Livestock Care

Ensuring animal health and preventing them from diseases is essential to ensure the quality of food supply. The baseline survey evaluated it in terms of three variables namely: type of feed given to them (i.e. linked in essence to ensure its quality of produce and its impact on environment), its placement in the household (i.e. linked with overall household hygiene situation), vaccination and treatment provided to animals to ensure their health.

Type of Feed provided to Livestock:

Use of green fodder is prevalent among households. Illustrated in Table 10, overall 71% of households were reported to be using green fodder in sample districts followed by 20.6% of households using dry fodder/hay. Oil-seed by-product and grains (such as lentils, beans, wheat, barley, rice, and likewise) were reported with seldom use (4 percent). No significant differences are observed across the sampled groups.

The practice in Thatta district however is slightly different; ~57% of households in Thatta were reported to be using green fodder over ~32% of households using dry fodder/hay. (Refer to Volume 2, Section 10, Table 1.39)

TABLE 10: TYPE OF FEED PROVIDED TO LIVESTOCK BY HOUSEHOLD PERCENTAGE

	Overall	Group	
		Treatment	Control
Green fodder	71.0	69.3	72.8
Dry fodder/hay	20.6	21.2	20.0
Oil-Seed by-Product	4.3	5.9	2.6
Grain (such as lentils, beans, wheat, barley, rice etc.)	4.1	3.6	4.6
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Placement of Livestock in Households

Illustrated in Table 11, majority of the households reported of holding their livestock in their courtyard area irrespective of the time of the day. (74.9% of households during the daytime and 75.4% during the night time). It is the practice found prevalent across the districts except in Thatta and Matiari where majority households reported of holding their livestock outside the house during the daytime particularly. A few proportion of households reported of taking the livestock animals inside the house in one of the rooms during the night time, but majority of them reported of holding them outside only during the night time as well.

Minimal instances are found where households have reported of holding livestock in the rooms used for sleeping purpose of household members.

TABLE 11: LIVESTOCK PLACEMENT PRACTICES BY HOUSEHOLD PERCENTAGE

	Overall	Group	
		Treatment	Control
Hold livestock during the day			
Outside the house	23.9	25.2	22.6
In the courtyard	74.9	73.4	76.5
In a room inside the house	0.7	0.9	0.4
In a bedroom inside the house	0.5	0.5	0.5
Hold livestock during the Night			
Outside the house	12.8	13	12.6
In the courtyard	75.4	74.4	76.6
In a room inside the house	11	11.9	10.1
In a bedroom inside the house	0.7	0.7	0.8
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Livestock Vaccination and Treatment Practices Adopted by Households

Practice of vaccinating livestock is not prevalent among Programme's target areas. Illustrated in Table 12, overall only 26% of households reported of providing vaccination to their animals. Findings at district level reveal that the households in districts of Matiari and Sujawal only noted to have considerable proportion of households (over 40%) who provided vaccination to animals.   (Refer to Volume 2, Section 5 and 7, Table 1.39)

In spite of the case where households had not developed practice of livestock vaccination, they had developed the practice of getting their animals checked by veterinarians in the situation where they are struck with any disease. ~57% of households across districts reported to call veterinarians to the house to examine their animals and ~22% treat their animals using traditional / home-based remedies. However, there are still ~13% of households who do not take any treatment measure, which is surprising because livestock is an important asset for their livelihood.

TABLE 12: LIVESTOCK VACCINATION AND TREATMENT PRACTICES BY HOUSEHOLD PERCENTAGE

	Overall	Group	
		Treatment	Control
Households reported Visit to Vaccination Centre			
Percentage of Households	25.5	24.5	26.7
Households reported Treatment Practices			
Treat the animals at home with traditional remedies	22.4	22.6	22.2
Call veterinarians to the house to examine the animals	55.6	52.7	58.8
Take the animals to a veterinary clinic/animal hospital	9.1	10	8.1
Do not do anything	12.9	14.7	10.9
SOURCE: HOUSEHOLD SURVEY, PINS (ER3) BASELINE STUDY 2019			

Given there are still 35% of households in the Programme target areas either not treating or using traditional remedies for livestock treatment, there requires presence of institutions for teaching population of the ways of rearing and taking care of various animals.

Flood Occurrence

Following exhibits records last occurrence of floods in the targeted UCs of the Programme as reported during the FGDs.

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TABLE 13: OCCURRENCE OF FLOODS

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District	Control UCs				Treatment UCs			
Kamber Shahdadkot	Panhwaro	Lakha	Gathar	Sijawal Junejo	Dhamraho	Seelra	Junani	Mirpur
	Last occurred in 2010/11	No floods occurred	No floods occurred	No floods occurred	No floods occurred	Last occurred in 2010/11	Last occurred in 2010/11	Last occurred in 2010/11
Dadu	Makhdum Bilawal	Magsi	Kolachi	Butt Serai	Sawro	Wahi Pandhi	Thalo	Kandichuki
	No floods occurred	Last occurred in 2015	Last occurred in 2010/11	Only some villages were hit by 2010/11 floods	Floods occur every year after rainfall	Floods occur every year after rainfall	Last occurred in 2010/11	Last occurred in 2010/11
Larkana	Kothi	Pir Bux Bhutto		Garhi Khuda Bux Bhutto	Mehrabpur		Dara	Tatri
	A few villages were last hit in 2009 whereas some were in 2015	A few villages were last hit in 2009 whereas some were in 2015		Last occurred in 1973	No floods occured		Last occurred in 2010/11	Last occurred in 2010/11
Jamshoro	Allah Bachayo Shoro		Uner pur		Channa		Toung	
	No floods occurred		No floods occurred		Last occurred in 2010/2011		No floods occurred	
Matiari	Oderal Station		Oderal Village		Abdul Waheed Burio		Old Saeedabad	
	No floods occurred		Last occurred in 2010/2011		Last occurred in 2010/2011		Last occurred in 2010/2011	

TABLE 13: OCCURRENCE OF FLOODS

District	Control UCs		Treatment UCs	
Tando Allah Yar	Jhando Mari	Mail Mori	Darya Khan Mari	Shah Inayat Rizvi
	Last occurred in 2010/2011	Last occurred in 2010/2011	Last occurred in 2010/2011	No floods occurred
Tando Muhammad Khan	Khokar	Saeedpur	Jamal Din Lashari	Tando Saindad
	Last occurred in 2010/2011	Last occurred in 2010/2011	No floods occurred	Last occurred in 2010/2011
Thatta	Jhimpir	Sonda	Keti Bunder	Sukhpur
	No floods occurred	No floods occurred	Occur every year (in June-July)	
Sujawal	Marho Bola Khan	Jar	Bachal Gugo	Chach Jehan Khan
	Last occurred in 2010/11	Last occurred in 2010/11	Last occurred in 2010/11	Last occurred in 2010/11
Shikarpur	Amrote Sharif	Gaheja	Pir Bux Shijrah	Zarkhail
	Last occurred in 2010/11	Last occurred in 2010/11	Last occurred in 2010/11	Last occurred in 2010/11

Drought Occurrence

Following exhibits records instances of drought occurrence in the targeted UCs of the Programme as reported during the FGDs.

TABLE 14: OCCURRENCE OF DROUGHTS

District	Control UCs				Treatment UCs			
	Panhwaro	Lakha	Gathar	Sijawal Junejo	Dhamraho	Seelra	Junani	Mirpur
Kamber Shahdadkot	No drought has occurred	No drought has occurred	No drought has occurred	No drought has occurred	No drought has occurred	Drought condition is prevalent due to lack of water	Drought condition is prevalent due to lack of water	Drought condition is prevalent due to lack of water
	Makhdum Bilawal	Magsi	Kolachi	Butt Serai	Sawro	Wahi Pandhi	Thalo	Kandichuki
Dadu	No drought has occurred	No drought has occurred	No drought has occurred	No drought has occurred	No drought has occurred	No drought has occurred	No drought has occurred	No drought has occurred
	Kothi	Pir Bux Bhutto		Garhi Khuda Bux Bhutto	Mehrabpur		Dara	Tatri
Larkana	In some villages it occurred in 2018 only. In other villages, drought like conditions are prevalent due to lack of water.	No drought has occurred		No drought has occurred	Drought occurred in some villages back in 2012		No drought has occurred	Drought occurred in some villages in 1997
	Allah Bachayo Shoro		Uner pur		Channa		Toung	
Jamshoro	No drought has occurred		No drought has occurred		No drought has occurred		Drought is a prevalent condition occur due to lack of rainfall	

TABLE 14: OCCURRENCE OF DROUGHTS

District	Control UCs		Treatment UCs	
Matiari	Oderal Station	Oderal Village	Abdul Waheed Burio	Old Saeedabad
	No drought has occurred	Drought condition is prevalent due to lack of water	Drought condition is prevalent due to lack of water	Drought condition is prevalent due to lack of water
Tando Allah Yar	Jhando Mari	Mail Mori	Darya Khan Mari	Shah Inayat Rizvi
	A few villages suffered through drought last in 2017, and others back in 2011	A few villages suffered through drought last in 2017, and others back in 2011	Last occurred in 2011 post floods, however, recently as well drought conditions are prevalent	Last occurred in 2011
Tando Muhammad Khan	Khokar	Saeedpur	Jamal Din Lashari	Tando Saindad
	No drought has occurred	No drought has occurred	No drought has occurred	No drought has occurred
Thatta	Jhimpir	Sonda	Keti Bunder	Sukhpur
	Drought conditions occurred due to lack of rain	No drought has occurred	Drought like conditions prevail due to lack of water	Drought like conditions prevail due to lack of water
Sujawal	Marho Bola Khan	Jar	Bachal Gugo	Chach Jehan Khan
	Drought like condition has occurred and stayed over the span of 2-3 months in villages	Drought like condition has occurred recently and stayed over the span of 5-10 months in villages	-	Drought like condition has occurred and stayed over the span of 2-5 months in villages
Shikarpur	Amrote Sharif	Gaheja	Pir Bux Shijrah	Zarkhail
	No drought has occurred	No drought has occurred	No drought has occurred	No drought has occurred

Pakistan Demographic and Health Survey (2017-18) reports that 38% of children under 5 in Pakistan are stunted, in Sindh alone, a whopping 50% of children are stunted.

To address this, The Government of Sindh (GoS) through the Planning and Development Department (PDD) is implementing a six-year, from 2016 to 2021, multi-sectoral Accelerated Action Plan for Reduction of Stunting and Malnutrition in Sindh – *Sehatmand Sindh*, with the objective of reducing the stunting rate from the existing 48% to 30% in first five years (by 2021) and to 15% by 2026 by increasing and expanding coverage of multi-sectoral interventions.

In line with the Plan's focus, the European Union, under the EU Commission Action Plan on Nutrition (2014), is supporting the Sindh Government through the comprehensive Programme for Improved Nutrition in Sindh (PINS).

PINS will aim to sustainably improve the nutritional status of children under five (U5) and of pregnant and lactating women (PLW) in Sindh through nutrition-specific and nutrition-sensitive interventions while capacitating the Government of Sindh so that it may efficiently implement its multi-sectoral nutrition policy.

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