Endline Report

PROSHAR Quantitative Final Program Evaluation (QFPE) 2015, Bangladesh

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PROSHAR QFPE Study Team
TANGO International, Inc.

ACRONYMS

ARI	Acute respiratory infection
BADC	Bangladesh Agricultural Development Corporation
BARI	Bangladesh Agricultural Research Institute
BDT	Bangladesh taka
BMI	Body mass index
BRAC	Bangladesh Rural Advancement Committee
BRRI	Bangladesh Rice Research Institute
CODEC	Community Development Centre
CPI	Consumer price index
DHS	Demographic and Health Survey
EWR	Early warning and response
FANTA	Food and Nutrition Technical Assistance
FFP	Food for Peace
HH	Household
HYV	High-yielding variety
iDE	International Development Enterprises
IPM	Integrated pest management
IPTT	Indicator performance tracking table
IYCF	Infant and young child feeding
LOA	Life of agreement
LIV	Local Improved Variety
M&E	Monitoring and evaluation
MCHN	Maternal and child health and nutrition
MYAP	Multi-year assistance program
NGO	Non-governmental organization
ODK	Open Data Kit
ORT	Oral rehydration Therapy
PCI	Project Concern International
PLW	Pregnant and lactating Women
PM2A	Preventing malnutrition in children under two years of age approach
PNGO	Partner NGO
PPS	Probability-proportional-to-size
PROSHAR	Program for Strengthening Household Access to Resources
QFPE	Quantitative Final Program Evaluation
SHOUHARDO	Strengthening Household Ability to Respond to Development Opportunities
SO	Strategic objective
TANGO	Technical Assistance to Non-Governmental Organizations
U5	Children under five years of age
UDMC	Union Disaster Management Committee
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

EXECUTIVE SUMMARY

Since May 2010, ACDI-VOCA has been implementing the United States Agency for International Development (USAID)-supported Title II Program for Strengthening Household Access to Resources (PROSHAR) project in three upazilas; Batighata, Lohagara and Sarankhola in Khulna Division of Bangladesh. The program is designed to "*reduce food insecurity among vulnerable rural populations in selected upazilas in Khulna Division*." It has three strategic objectives (SOs) in the areas of income and access to food of poor and ultra-poor households (SO1), Health of pregnant and lactating women (PLW) and children under 5 (SO2), and disaster risk reduction (SO3), as well as a cross-cutting gender component. The Government of Bangladesh (GOB), along with its funded resources also provided critical support to PROSHAR and was invaluable to the program outcome. This report documents the findings of the program's quantitative final program evaluation (QFPE), conducted January – February 2015 by Technical Assistance to Non-Governmental Organizations (TANGO) International, Inc.

The purpose of the final QFPE is to measure changes in project impact and outcome indicators over the life of the PROSHAR project, in order to assess the extent to which project objectives have been achieved, measure the overall impacts on populations in the project areas, assess the assumed causal pathways linking project activities to outcomes and impacts, and determine how interventions contributed to achieving project goals. Another key function of the final QFPE is to provide current status for key indicators included in PROSHAR's Indicator Performance Tracking Table (IPTT).

Context

The food security situation in the targeted area of Bangladesh was critical at the point of project inception in 2010. Despite real wage growth in the previous five years leading to program initiation, a high rate of households, 31.5 percent, were in poverty. High food commodity prices, rising since 2007, exacerbated an already poor food security situation. Food insecurity at a national level was extremely high as measured by the Household Food Security Access Scale – at the beginning of 2011; the reported value was 69, a value more than double what was reported nearly two years later at the end of 2013.[1]

Inadequate Child feeding practices, poor maternal health, and low child nutrition were persistent problems on a national level at program commencement. An alarming number of children, 41 percent (34.1% in Khulna Division) as measured by the 2011 Demographic and Health Survey (DHS), were stunted, 16 percent (14.6% in Khulna division) wasted, and 36 percent (29.1% in Khulna Division) underweight. Only 21 percent (28.2 percent in Khulna Division) of children age 6-23 months were fed appropriately based on infant and young child feeding (IYCF) practices, over half (54.2 percent in Khulna Division) of children 6-59 months were reported as anemic, and 42 percent (37.4 percent in Khulna Division) of ever-married women age 15-49 were anemic as well.[2]

The Government's long-term development strategy (2010-2021) is implemented through two medium-term development plans, the first of which is called the Sixth Five-Year Plan. This plan focuses on poverty and income, education, nutrition, health and women's empowerment, among others,[3] which have been key areas of emphasis of the PROSHAR program.

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[1] *State of Food Security and Nutrition in Bangladesh: 2013*. Food Security and Nutrition Surveillance Project (FSNSP), 2014. Helen Keller International and James P. Grant School of Public Health.
[2] *Bangladesh Demographic and Health Survey (DHS): 2011.* National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International, 2013.
[3] Government of the People's Republic of Bangladesh (Ministry of Planning, General Economics Division). 2012.

Methodology

The PROSHAR QFPE utilized an 'adequacy design', or non-experimental design for simple pre-post comparison of results. The evaluation survey was population-based with the sample drawn randomly from the sample frame of all households residing within the action areas of PROSHAR. The sample size was determined to provide statistically representative results for indicators at the level of household (HH) and children under five years of age. A two-stage sample selection process was used to select households to be interviewed. In the first stage, a total of 50 clusters (villages) were selected in two geographic strata: Coast (Sarankhola) and Inland (Batiaghata and Lohagara). In the second stage, 25 households were interviewed in each of the selected villages. The households were selected from a census listing of all households in the selected villages. During analysis the sample was weighted to account for the fact that within the two strata, the proportion of sampled households to strata population was different.

Findings

Comparison of baseline with endline values demonstrates that the PROSHAR program surpassed targets for all SO1 and SO2 impact indicators measuring household nutrition and food security status. Details of project indicators at baseline and endline as well as target values are provided in the IPTT Table, Annex 2. In particular, the endline values for all anthropometric indicators, Household Dietary Diversity Score (HDDS), and Months of Adequate Household Food Provisioning (MAHFP) exceeded the target values for these indicators. Many of the SO1 and SO2 outcome indicators also showed significant improvements from baseline to endline, exceeding targets as well, suggesting that program activities have supported the favorable program outcomes. The results for the SO3 indicators revealed high levels of disaster preparedness awareness, particularly for households reporting receipt of support from SO3 interventions in the more disaster-prone Coast region.[4]

***SO1* Income and Access to Food of Poor and Ultra-Poor Households**

Impact level indicators for SO1 have improved substantially from baseline to endline. The HDDS increased by 10 percent, to 7.2 at endline for all surveyed households, exceeding the program target (target of 6.9). MAHFP increased from 9 months to 10.6 months over the life of the program, also exceeding the program target of 10.2 months. Livelihoods improved as measured by livestock gross margins. The average value of livestock gross margin (in Taka, real values adjusted for inflation), increased 27 percent to 9,085 taka. Agricultural (crop) gross margins showed no change over the life of the program in real terms (14,695 Tk.) and fell just short of the program target of 14,994 Taka.

There are some positive signs suggesting that program activities will continue to contribute to increased livelihoods for households in the program area. The yields for all key crops measured in the survey increased, particularly for all varieties of rice. Yields of the high-yielding variety (HYV) of rice increased by 49 percent (to 4,284 kg / ha), even more for the local variety (by 51 percent to 3,204 kg/ha), and the most for locally improved variety (LIV) by an impressive 139 percent gain (to 4,584 kg/ha). There is evidence of growing adoption of improved agricultural practices in the program area. The mean number of improved agricultural production techniques employed by all households increased from 2.8 to 5.3; the number of improved gardening techniques increased from 1.6 to 5.1; and, the number of improved fishing practices increased from 32 to 5.2. The increases in adoption of improved farming techniques are higher for SO1 participants compared to non-participants, implying that SO1 programming has effectively promoted positive changes in farmer behavior. These results suggest that there is interest on

[4] No IPTT indicators for SO3 are measured at the household level.

the part of farmers to adopt these practices, but there is probably continued need for promoting the messages to large numbers of farmers into the future.

SO2 Maternal Child Health and Nutrition (MCHN)

Goal indicators and impact indicators[5] for SO2, particularly anthropometric indicators, improved dramatically from baseline to endline. The prevalence of overall stunting for children aged 6-59 months declined 25 percent - from 42 percent at baseline to 32 percent at endline. This exceeded the program target of 34 percent. This result is comparable to national statistics – stunting fell nationally from 45 percent in 2010 to 35 percent in 2013.[6]

Declines in the prevalence of underweight children (aged 0-59 months) and overall wasting (aged 6-59 months) were even more favorable over the life of program, 40 percent and 46 percent respectively. The endline results for underweight children 0-59 months (19 percent) also surpassed the program target of 24 percent. Reductions in underweight children and wasting compared quite favorably to national trends – underweight children remained flat at 32 percent from 2010 to 2013. National rates of child wasting rose from 10 percent in 2010 to 12 percent in 2013.[7] As a final point, chronic malnutrition rates of ever-married women declined considerably from 24 percent to 17 percent, surpassing the target of 22 percent.

Food security for the PROSHAR sample population improved markedly as measured by the household hunger scale (HHS). The HHS declined 43 percent for all households sampled from 51 percent at baseline to 29 percent at endline. Reductions in food insecurity were even greater for participant households compared to households that did not participate in PROSHAR. Non-participant households had a HHS of 29 percent at endline, compared to 19 percent for households participating in only SO2 activities; while those households that received both SO1 and SO2 services performed even better with an average endline HHS of 13 percent.

These improvements were supported by high rates of adoption of recommended practices for child feeding and care. Infants and toddlers (aged 6-23 months) receiving a minimally acceptable diet increased from a baseline value of 29 percent to 39 percent of households surveyed at endline, meeting the program target of 36 percent. The proportion of children under six months exclusively breastfed grew markedly, as well, from 41 percent to 74 percent of children of mother's surveyed. This bettered the program target of 60 percent substantially and was contrary to national trends, in which exclusive breastfeeding actually decreased from 52 percent to 43 percent between 2010 and 2013.[8]

Mother and infant health during pregnancy was supported by strong improvements in nutritional and antenatal health behaviors of pregnant women in the program area. The proportion of mothers reporting taking vitamin A supplementation increased 66 percent to 57 percent of mothers. The prevalence of mothers taking folic acid during pregnancy almost doubled from 38 percent to 74 percent for all households. Also, the percent of mothers that reported attending 4 or more antenatal care visit increased from 17 percent to 46 percent at endline.

It is important to note that the changes in anthropometrics were observed for both respondents that participated in SO2 interventions and those that did not report participating directly in these

[5] See the IPTT table in Annex 2 for indicator types.
[6] FSNSP, 2014.
[7] FSNSP, 2014.
[8] FSNSP, 2014.

interventions. These results indicate that PROSHAR has helped to contribute to a change in child care and nutrition practices, and household hygiene practices that has been also supported by the government and other organizations that have reached households not participating directly PROSHAR, or that PROSHAR interventions have indirectly reached individuals in project areas that have not been participants in project activities.

SO3 Disaster Risk Reduction

The percent of households reporting that they experienced a disaster in the previous four years decreased substantially from baseline to endline, from 88 percent to 58 percent of households surveyed, although this may be largely the result of the fluctuations of the incidence of disasters over time. More importantly, the negative impacts reported by households that experienced a disaster fell substantially as well. Where at baseline, a third to half of households reported having loss of home, stress/anxiety/fear, loss of livelihood, or loss of general assets, this rate declined to between 4 percent and 28 percent of households at endline. It should be noted, however that there were a number of intense disasters prior to the baseline survey, while there were no intense disasters prior to the endline.

Conclusions and Recommendations

While many of the nutrition impact indicators, along with the childhood stunting goal indicator, improved dramatically over the life of the program, the trends were quite similar for project participants and non-participants. This generally similar pattern of improvements for both participants and non-participants may be explained by the existence of government programs and projects supported by non-governmental organizations that have been providing similar MCHN messages throughout Bangladesh over the past several years. However, attribution of positive program effects is difficult when there are multiple programs, services, and messaging being delivered in the same geographic areas. An alternative explanation could be that project messages have been widely diffused to households throughout the project implementation area. The evidence from these quantitative findings supports the conclusion that PROSHAR has helped to contribute to the overall improvements in nutritional conditions in Bangladesh over the past five years, but further qualitative information is necessary to better understand the ways in which PROSHAR or other projects have contributed to improvements in these impact indicators.

One area of changes that can be more justifiably attributed to program participation was in farmer adoption of appropriate agricultural practices and in rice yields. The number of improved agriculture, gardening, and fishery activities adopted by SO1 participants were all significantly higher than non-participants. Rice yields for SO1 participant households (5,567 kg/ha) are 52 percent higher than households that did not participate in SO1 (3,657 kg/ha). These differences in outcomes between participants and non-participants indicate effective program implementation to promote improved behaviors.

One unexpected finding in the final quantitative study of PROSHAR was the decline in the index of women's empowerment with respect to decision making. This is very surprising, given that PROSHAR interventions are strongly oriented toward enhancing women's empowerment. In future project M&E designs, more detailed and qualitative analyses that focus specifically on measuring and assessing the factors that affect women's empowerment should be built into initial assessments and final project evaluations.

One real limitation of this quantitative performance evaluation study has been the lack of supporting qualitative information to help interpret the trends in quantitative indicators that have been measured and tracked over the two rounds of quantitative household surveys. In the future, project M&E plans should include an integrated final project evaluation design that includes both qualitative and quantitative components. Ideally, monitoring and evaluation design of the next round of programming (or a separate impact evaluation) would incorporate testable hypotheses and a representative comparison group to evaluate the effectiveness of project activities for beneficiaries vs. non-beneficiaries.

fishing practices increased from 3.2 to 5.2. The increases in adoption of improved farming techniques are significantly higher for SO1 participants compared to non-participants, implying that SO1 programming has effectively promoted positive changes in farmer behavior that improve livelihoods and reduce vulnerability. However, the rate of adoption of improved practices also increased for non-participants, supporting the hypothesis that the design of PROSHAR did attain sufficient critical mass to support spillover effects to non-participating households.

SO2 Maternal and Child Health and Nutrition (MCHN)

Goal indicators and impact indicators[9] for SO2, particularly anthropometric indicators, improved dramatically from baseline to endline. The prevalence of overall stunting for children aged 6-59 months declined 25 percent - from 42 percent at baseline to 32 percent at endline. This exceeded the program target of 34 percent. This result is comparable to national statistics – stunting fell nationally from 45 percent in 2010 to 35 percent in 2013 (DHS 34 percent in 2011 for Khulna Division and FSNP 33 percent in 2013).[10]

Declines in the prevalence of underweight children (aged 0-59 months) and overall wasting (aged 6-59 months) were even more favorable over the life of program, 40 percent and 46 percent respectively. The endline results for underweight children 0-59 months (19 percent) also surpassed the program target of 24 percent. Reductions in underweight children and wasting compared quite favorably to national trends – underweight children remained flat at 32 percent from 2010 to 2013 (DHS 29 percent in 2011 for Khulna Division and FSNP 26 percent in 2013). National rates of child wasting rose from 10 percent in 2010 to 12 percent in 2013 (DHS 15 percent in 2011 for Khulna Division and FSNP 33 percent in 2013).[11] As a final point, chronic malnutrition rates of ever-married women declined considerably from 24 percent to 17 percent, surpassing the target of 22 percent (DHS 19 percent (women 15-49 years) in 2011 for Khulna Division and FSNP 13 percent (women 19-49 years) in 2013).

Food security for the PROSHAR sample population improved markedly as measured by the household hunger scale (HHS). The HHS declined 43 percent for all households sampled from 51 percent at baseline to 29 percent at endline. Reductions in food insecurity were even greater for participant households compared to households that did not participate in PROSHAR. Non-participant households had a HHS of 29 percent at endline, compared to 19 percent for households participating in only SO2 activities; while those households that received both SO1 and SO2 services performed even better with an average endline HHS of 13 percent.

These improvements were supported by high rates of adoption of recommended practices for child feeding and care. Infants and toddlers (aged 6-23 months) receiving a minimally acceptable diet

[9] See the IPTT in Annex 2 for indicator types.
[10] FSNSP, 2014.
[11] ibid.

increased from a baseline value of 29 percent to 39 percent of households surveyed at endline, meeting the program target of 36 percent. The proportion of children under six months exclusively breastfed grew markedly, as well, from 41 percent to 74 percent of children of mother's surveyed. This bettered the program target of 60 percent substantially and was contrary to national trends, in which exclusive breastfeeding actually decreased from 52 percent to 43 percent between 2010 and 2013 (FSNP 28 percent exclusive breast feeding and 61 percent predominant breastfeeding in Khulna Division in 2013).[12]

Mother and infant health during pregnancy was supported by strong improvements in nutritional and antenatal health behaviors of pregnant women in the program area. The proportion of mothers reporting taking vitamin A supplementation increased 66 percent to 57 percent of mothers. The prevalence of mothers taking folic acid during pregnancy almost doubled from 38 percent to 74 percent for all households. Also, the percent of mothers that reported attending 4 or more antenatal care visit increased from 17 percent at baseline to 46 percent at endline.

It is important to note that the changes in anthropometrics were observed for both respondents that participated in SO2 interventions and those that did not report participating directly in these interventions. It appears that PROSHAR has helped to contribute to a change in child care and nutrition practices, and household hygiene practices in the three upazilas. Further qualitative analysis should address whether the changes of non-participants resulted from PROSHAR interventions or other sources of support or information.

***SO3* Disaster Risk Reduction**

The percent of households reporting that they experienced a disaster in the previous four years decreased substantially from baseline to endline, from 88 percent to 58 percent of households surveyed, although this may be largely the result of the fluctuations of the incidence of disasters over time. More importantly, the negative impacts reported by households that experienced a disaster fell substantiallyl. Whereas at baseline, a third to half of households reported having loss of home, stress/anxiety/fear, loss of livelihood, or loss of general assets, this rate declined to between 4 percent and 28 percent of households at endline.

Conclusions and Recommendations

While many of the nutrition impact indicators, along with the childhood stunting goal indicator, improved dramatically over the life of the program, the trends were quite similar for project participants and non-participants. This generally similar pattern of improvements for both participants and non-participants may be explained by the existence of government programs and projects supported by non-governmental organizations that have been providing similar MCHN messages throughout Bangladesh over the past several years. However, attribution of positive program effects is difficult when there are multiple programs, services, and messaging being delivered in the same geographic areas. An alternative explanation could be that project messages have been widely diffused to households throughout the project implementation area. The evidence from these quantitative findings supports the conclusion that PROSHAR has helped to contribute to the overall improvements in nutritional conditions in Bangladesh over the past five years, but further qualitative information is necessary to better understand the ways in which PROSHAR or other projects have contributed to improvements in these impact indicators.

[12] FSNSP, 2014.

One area of changes that can be more justifiably attributed to program participation was in farmer adoption of appropriate agricultural practices and in rice yields. While the percentage improvement in farmers adopting these improved practices was large (3.0 mean number of improved practices vs. 5.3 at endline), there are still an overwhelming proportion of farming households that could benefit from SO2-type programming support – even after strong growth, at endline only 24 percent of farmers perceived that they had received direct SO1 programming support. Encouragingly, the mean number of improved practices for farmers participating in SO1 (5.5 improved practices) was higher than those not participating (5.1 improved practices). The number of improved agriculture, gardening, and fishery activities adopted by SO1 participants were all significantly higher than non-participants. Rice yields for SO1 participant households (5,567 kg/ha) are 52 percent higher than households that did not participate in SO1 (3,657 kg/ha). These differences in outcomes between participants and non-participants indicate effective program implementation to promote improved behaviors.

One unexpected finding in the final quantitative study of PROSHAR was the decline in the index of women's empowerment with respect to decision making. This is very surprising, given that PROSHAR interventions are strongly oriented toward enhancing women's empowerment. In future project Monitoring and Evaluation (M&E) designs, more detailed and qualitative analyses that focus specifically on measuring and assessing the factors that affect women's empowerment should be built into initial assessments and final project evaluations.

One real limitation of this quantitative performance evaluation study has been the lack of supporting qualitative information to help interpret the trends in quantitative indicators that have been measured and tracked over the two rounds of quantitative household surveys. In the future, project M&E plans should include an integrated final project evaluation design that includes both qualitative and quantitative components. Ideally, M&E design of the next round of programming (or a separate impact evaluation) would incorporate testable hypotheses and a representative comparison group to evaluate the effectiveness of project activities for beneficiaries vs. non-beneficiaries.

1.0 INTRODUCTION

1.1 CONTEXT

ACDI/VOCA is implementing the Program for Strengthening Household Access to Resources (PROSHAR) in three *upazilas* in Khulna Division of Bangladesh. PROSHAR is a Multi-Year Assistance Program (MYAP) funded by the Office of Food for Peace (FFP) of the United States Agency for International Development (USAID) in partnership with Project Concern International (PCI), International Development Enterprises (iDE) and three local partner NGOs (PNGOs) - Shushilan, Muslim Aid, and the Community Development Centre (CODEC). The program started in June 2010 and runs through May 2015. Its goal is to "*Reduce food insecurity among vulnerable rural populations in selected upazilas in Khulna Division*."

In achieving this goal, PROSHAR's activities are designed around three SOs and their intermediate results (IR) to support vulnerable communities through an integrated food security approach. This approach is primarily directed at both poor and ultra-poor populations in the three *upazilas* of Lohagara, Sarankhola and Batiaghata in the Khulna Division. The three SOs are:

SO1: Incomes and access to food of poor and ultra-poor households improved

SO2: Health of pregnant and lactating women (PLW) and children under 5 (with particular attention to children under 2) improved

SO3: Institutions and households prepared to respond effectively to shocks

PROSHAR also provides a mix of technical assistance and training directed at the household level to provide the tools that households need to improve their overall food security. These interventions are based on an in-depth value chain analysis and are centered on enhancing both on- and off-farm productivity and livelihoods through the adoption of improved practices and technologies. Building sustainable relationships between beneficiaries and public and private stakeholders and linking smallholders to profitable domestic markets are also central to this approach.

In addition to each of the three SOs, PROSHAR promotes gender equity by including both men and women in project activities, facilitating women's participation without overburdening them, and ensuring that both men and women are engaged in remunerative productive activities, including interactions with markets.

In July 2012, PROSHAR revised the project livelihoods strategy by targeting different types of SO1 interventions according to the vulnerability conditions of the unions within the project intervention area. The project categorized all unions into vulnerability categories based on secondary information about access to services and infrastructures, exposure to hazards and the overall economic status, all at the union level. Within all unions, interventions would be directed toward homestead production, with a higher proportion of households served in the most vulnerable unions, while commercial production was promoted in the seven most vulnerable unions,. Off-farm livelihoods activities were also focused in the seven most vulnerable unions.

The quantitative final performance evaluation survey (QFPE) has been conducted in the penultimate year (2014-2015) of PROSHAR project implementation (Annex 10). The survey provides end of program milestones for IPTT indicators to measure the program results, impact, and long-lasting change in the lives of the beneficiaries. The QFPE analysis has also taken into consideration a variety of contextual factors, such as: geographical spread of the project (e.g., inland and coastal locations), socio-economic factors (gender and poverty levels) and food security/nutrition interventions and their impact (negative or positive) compared to the baseline findings.

TANGO International has provided technical support in the form of the development of the QFPE study methodology and instruments, including programming of computer tablets for data collection,

training of the data collection team, data tabulation and analysis, and the preparation of this QFPE report.

1.2 Purpose of the Study

The purpose of the QFPE is to evaluate the performance of key indicators against the baseline values to measure progress towards achievement of the SOs and IRs of PROSHAR. The objectives are to:

1. Evaluate PROSHAR's theory of change. This is specifically to:
   - Use quantitative measurement to track endline values for project output, outcome and impact indicators;
   - Create plausible links between outputs and outcomes/impacts.
2. Evaluate the results of cross-sector integration across project activities, SOs, and implementing partners. Two specific comparisons are key:
   a) A comparison of households participating in multiple activities to households participating in one activity, and
   b) A comparison of endline results from coastal and inland *upazilas*.

1.3 Main Evaluation Questions

The evaluation process of the QFPE is based on the three basic evaluation questions and related topics given in the analytical framework in Table 1.

Table 1: Analytical framework

Evaluation Question	Methodology
1. Did PROSHAR achieve the targets of outcome and impact indicators?	Analysis of impact and outcome indicators given in the IPTT and PIRS and comparison of the endline values with the Life of Achievement (LOA) targets.
2. Did the program make any change in its intended outcome and impact?	The endline information will be compared to the baseline to measure the extent of changes over the period of time and their statistical significance.
3. What is the conclusion and recommendation on program achievement?	Quantitative data analysis to enable appropriate and accurate interpretation and recommendation.

In turn, these main evaluation questions were answered through a series of sub-questions outlined in the SOW.

The QFPE is not sufficient to answer of all of the evaluation questions (detailed evaluation questions are presented in Annex 1). The main objective of the QFPE is to estimate IPTT indicator values at endline and to track progress compared to the baseline. The quantitative information in this QFPE report will supplement the qualitative evaluation.

In order to address the second and third research questions, more detailed analysis was conducted by comparing some key project impact and outcome indicators across participants and non-participants in specific project interventions, by geographic areas having different profiles of project interventions, and by households in different levels of vulnerability (based on food security indicators). These comparisons provide information about the contribution of project interventions to changes in outcome and impact indicators (participant/non-participant comparisons), targeting of project interventions and impacts (vulnerability category comparisons), and the project implementation strategy (categories of project intervention areas). As described more fully below, these comparisons must be interpreted with some care, since the survey design was not for an impact evaluation, and differences across groups (including participants/non-participants) may be the result of other confounding factors than simply the defined characteristics of the groups.

1.4 INDICATORS

PROSHAR has a set of impact and outcome level indicators in the IPTT. Due to the geographical context and the importance of disaggregating data, the study findings are disaggregated by program *upazilas* in coastal and inland areas, and by gender (where applicable). Table 2 shows the summary IPTT indicators that are used to estimate program achievement compared to the baseline. The complete set of indicators values for baseline and endline, along with Life of Agreement (LOA) targets is provided in the IPPT table in Annex 2.

Table 2: Summary of the indicators

Indicator		Type of respondents	Main Disaggregation
SO1: Incomes and access to food of poor and ultra-poor households improved			
	Impact Indicators		
IM1	Average # of months of adequate household food provisioning	HH Head/Adult Female HH member	None
IM2	Average HH dietary diversity score (HDDS)	Female HH member (who cook food)	None
IM3	Gross margin per unit of land, kilogram, or animal of selected product (crops/animals/fish production)	HH Head/Adult Female HH member	None
OC1	Value of a set of assets (including savings, livestock, etc.)	HH Head/Adult Female HH member	None
OC2	Number of farmers and others who have applied new technologies or management practices as a result of United States Government (USG) assistance.		Male, Female
OC3	Number of hectares under improved technologies or management practices as a result of USG assistance		Male, Female
	Outcome Indicators		
OC7	% of producer groups with women in leadership positions	HH Head/Adult Female HH member	None
OC8	% of agricultural smallholders reporting increased market access and use as a result of PROSHAR intervention	HH Head/Adult Female HH member	Male, Female
OC9	% of producer group members bulking as a result of PROSHAR intervention	HH Head/Adult Female HH member	Male, Female
OC10	% of alternative livelihood groups members reporting increased market access and use	HH Head/Adult Female HH member	Male, Female
OC11	% of non-agriculture beneficiaries who adopted at least one technology introduced by the PROSHAR intervention	HH Head/Adult Female HH member	Male, Female
OC12	Quantity sold as a result of participation in PROSHAR technology transfer, • Karchupi (Piece/year/beneficiary) • Bamboo products (Piece/year/beneficiary) • Others (Piece/year/ beneficiary)	HH Head/Adult Female HH member	None
SO2: Health of pregnant and lactating women (PLW) and children under 5 (with particular attention to children under 2) improved			
	Impact Indicators		
IM4	Prevalence of stunted children under five years of age	Children 0-59 months	Boy, Girl
IM5	Prevalence of underweight children under five years of age	Children 0-59 months	Boy, Girl
IM6	% chronic malnutrition (energy deficient) of ever-married women 15-49 (BMI < 18.5mm)	Ever-married women 15-49 years of age	None
	Outcome Indicators		
OC13	Prevalence of exclusive breast feeding of children	Mother/caregiver of	Boy, Girl

Indicator		Type of respondents	Main Disaggregation
	under six months of age	children <2 years	
OC15	% of children under 2 years old who are underweight	Children 0-23 months	Boy, Girl
OC18	% of caregivers who adopted at least three of the recommended behaviors as a result of USG assistance	Mothers/ caregivers of children U2	None
OC19	% of women who received at least 3 antenatal checkups by a qualified provider during pregnancy	Mother of children <2 years	None
OC20	% of children 6-23 months of age with 3 appropriate infant and young child feeding practices	Mother/ Caregivers of children U2	Boy, Girl
OC21	Percent of children 6-59 months' with diarrhea treated with Oral Rehydration Therapy	Mother/ Caregivers of children U2	Boy, Girl
OC23	% of children aged 6-23 months of age with diarrhea continuously fed during illness	Mother/ Caregivers of children U2	Boy, Girl
OC24	% of children 0-23 months who had symptoms of Acute Respiratory Infection (ARI) that sought advice or treatment from trained health care provider	Mother/ Caregivers of children U2	Boy, Girl
0C25	% of households with soap and water at a hand washing station commonly used by family members		None
SO3: Institutions and households prepared to respond effectively to shocks			
OC31	# of wards with disaster early warning and response (EWR) systems in place as a result of project assistance		

1.5 Evaluation Methodology

The overall survey design is a non-experimental pre- and post-test that mirrors the geographical disaggregation used at baseline. An inclusive population-based sample survey was conducted for this quantitative evaluation.

The survey includes structured questions to measure project indicators, and to measure the present status, knowledge, attitudes and practices on themes relevant to all three SOs. It has recorded responses from a representative sample of beneficiaries and non-beneficiaries about the implementation of the program and its impacts, and outcomes.

1.5.1 *Sample design and strategy*

The minimum required sample size for the endline was estimated based on the outcome indicator *stunting among children 6-59 months*. The indicator value and the design effect are obtained from the PROSHAR baseline dataset. The FANTA Sampling Guidelines[13] were used to calculate a sample size capable of detecting a 10 percent reduction in the child stunting indicator over the five-year intervention. The minimum sample size required per survey round was computed as follows:

$$n = [(Z_\alpha + Z_\beta)^2 * \{P_1(1-P_1) + P_2(1-P_2)\}/(P_2-P_1)^2] * D * N_f$$

where:

n = required minimum sample size per survey round or comparison group (strata)

P_1 = stunting rate at baseline, 42.4% = **0.424**

P_2 = the *expected* level of stunting at endline for the program area such that the quantity (P_2 - P_1) is the size of the magnitude of change it is desired to be able to detect, PROSHAR life of award (LOA) target reduction of 8 percentage points, 34.4% = **0.344**

[13] Sampling Guideline, FANTA III, Robert Magnani, 1999

Z_α = the Z-score corresponding to the degree of confidence with which it is desired to be able to conclude that an observed change of magnitude (P_2-P_1) would not have occurred by chance (α - the level of statistical significance for one-tailed test), 95% = **1.645**

Z_β = the z-score corresponding to the degree of confidence with which it is desired to be certain of detecting a change of magnitude (P_2-P_1) if one actually occurred (β - statistical power), 80% = **0.840.**

D = Actual PROSHAR baseline design effect for stunting = **1.40**

N_f = Non-response factor (assuming a 10% non-response rate) = 1.10

Based on these parameter values, the estimated sample size (n) was 635. Thus, the minimum required sample size per survey round for the entire program area is 635 children under five years of age (U5). Considering that not all households have U5 children, the sample size was adjusted according to the Addendum to Fanta Sampling Guide to ensure that a sufficient number of U5 children were measured[14]. Assuming that the proportion of households with U5 children is 50 percent and that the average number of U5s in the population is 11.5 percent and the average households size is 4.4[15], the total number of households required to be interviewed to reach 635 U5s is 1,525 households.[16] This sample size is adequate to detect a 10% reduction in the stunting rate of children U5 at the program level (LOA target in IPTT). To account for the possibility of non-response, a 10 percent non-response factor is applied to the minimum required sample size, to get a target sample size for the survey (number of households to be selected) of 1,677 households.

In order to have comparable results with the baseline, the sample design of the baseline round was followed for the endline. The baseline sample size calculation was computed based on the following criteria:

1. The sample was powered to detect a 10 percentage point difference in stunting across comparison groups (46.6% value taken from 2007 DHS, Khulna Division, to 24.6%)
2. The target number of households calculation was computed using an inflation factor based on the proportion of households with under 5s (45 percent) and the average number of under 5s per household (1.5)
3. The sample was stratified by two project intervention areas (Coast and Inland).
4. The design effect used for the baseline was set at 2.0 (recommended default value)

The minimum required sample size computed for the baseline was 2,250 households, larger than the minimum sample size to detect a 10 percent change in the prevalence of stunting at the project level, as described above.

The computation of the target sample size for the endline was adjusted, based on the actual stunting rate from the PROSHAR baseline survey. The sample size for the endline was computed from the same formula:

$$n = [(Z_\alpha + Z_\beta)^2 * \{P_1(1-P_1) + P_2(1-P_2)\}/(P_2-P_1)^2] * D * N_f$$

where:

[14] Stukel, Diana & Deitchler, Megan. Addendum to FANTA Sampling Guide by Robert Magnani (1999): Correction to Section 3.3.1 Determining the Number of Households that need to be Contacted. March 2012.
[15] From DHS 2011.
[16] All U5s in a selected household were measured for anthropometric indicators. The estimate for the proportion of children U5 per household is consistent with the baseline sample and data from the most recent Demographic and Health Survey (DHS).

n = required minimum sample size per survey round or comparison group (strata)

P_1 = stunting rate at baseline, 42.4% = **0.424**

P_2 = the *expected* level of stunting at endline for the program area such that the quantity (P_2 - P_1) is the size of the magnitude of change it is desired to be able to detect , a 10 percentage point reduction, 32.4% = **0.324**

Z_α = the Z-score corresponding to the degree of confidence with which it is desired to be able to conclude that an observed change of magnitude (P_2-P_1) would not have occurred by chance (α - the level of statistical significance for one-tailed test), 95% = **1.645**

Z_β = the z-score corresponding to the degree of confidence with which it is desired to be certain of detecting a change of magnitude (P_2-P_1) if one actually occurred (β - statistical power), 80% = **0.840.**

D = Design effect for stunting = **2.0**

N_f = Non-response factor (assuming a 10% non-response rate) = 1.10

Based on these parameter values, the estimated target sample size (n) per comparison group is 629 U5 children per stratum. Considering that not all households have U5 children, the sample size was adjusted to ensure that a sufficient number of U5 children were measured. Assuming that the proportion of households with U5 children is 50 percent and that the average number of U5s per household is 0.5, the total number of households required to be interviewed to reach 629 U5s is 1,259 per stratum (district) rounded to 1,250, for a total sample of 2,500 households in the two strata. Again, this sample size is larger than the required minimum to be able to detect a reduction in the stunting rate of 8 percentage points for the PROSHAR project area. This larger sample size also permits comparison of project indicators across the project intervention areas.

1.5.2 SELECTION OF CLUSTERS[17]

A two-stage sample selection process was used to select households to be interviewed. In the first stage, a total of 50 clusters were selected in each of the two strata: Coast (Sarankhola*upazila*) and Inland (Batiaghata and Lohagara *upazilas*). In the second stage of sampling, 25 households were interviewed in each of the selected clusters, for a total of 1,250 households interviewed in each strata. Clusters were selected using a probability-proportional-to-size (PPS)[18] sampling procedure (the list of selected clusters is provided in Annex 3). The PPS procedure ensures that all households within the stratum have an equal chance of being selected. The listings of clusters were arranged by union and *upazila* in the PPS selection process, to ensure wide geographic coverage.

1.5.3 SAMPLING FRAME

A complete sampling frame for all households in the selected clusters was constructed by conducting a census of households within the clusters.[19] Separate teams of census enumerators obtained lists and maps of all households within the selected clusters. The census enumerators prepared a hand-sketched map (an actual map is given in Annex 4) for each selected cluster to identify the pattern of household distribution in rural settlements. Clusters were quite compact geographically, with houses

[17] Cluster is defined as the PROSHAR program villages.

[18] In larger clusters the chance that any single household will be selected is smaller, but this is offset by the fact that larger clusters have a greater chance of being selected in the PPS procedure.

[20] Age dependency ratio is calculated by dividing the number of "dependent" household members (individuals age 0-14 years or 65 years and older) by the number of "independent" household members (individuals age 15-64 years).

grouped along rural roads and pathways. These characteristics made it possible for survey teams to quickly identify the boundaries of clusters and to locate roads, paths, and pockets of settlements within the clusters. Each household location in a given cluster was plotted on the hand-sketched map with a serial number starting from the number "1". Listing experts from Mitra used the same procedure of mapping and listing that they use in DHS. Details on the procedure are given in Annex 5.

A separate quality control team was assigned to ensure the accuracy of the household listing. A follow-up quality control team randomly selected at least one village from each *upazila* and visited every household to verify the listing file for that village. The quality control team found the listing files to be accurate.

1.5.4 SAMPLING WEIGHTS

The PROSHAR QFPE survey sample was drawn with two-stage, stratified cluster sampling based on a sample frame generated by a separate household listing exercise. Clusters were equally allocated among strata (Inland and Coast). At the first stage, a sample cluster was selected independently with probability proportional to the cluster's population in each stratum. The strata were the two geographical regions encompassing the program area – Inland (Batiaghata and Lohagara *upazilas*) and Coast (Sarankhola *upazila*). The unequal probabilities of selection across strata caused by the equal number of clusters in each stratum were adjusted relative to the population of each stratum. Design weights were calculated based on the separate sampling probabilities for each sampling stage and for each cluster.

The sampling weight was calculated with the design weight corrected for non-response for each of the selected clusters. Response rates were calculated at cluster level as ratios of the number of interviewed households over the number of eligible households. The overall household sampling weight was calculated by dividing the household design weight by the household response rate. The detailed sampling weights for QFPR are given in Table 3.

Table 3: Household sampling weights

Strata	Total household	Estimated Sample size	Household Interviewed	Sampling weights
Inland (Batiaghata, Lohagara)	83,887	1,250	1,179	1.6145
Coast (Sarankhola)	26,289	1,250	1,140	0.5233
All	110,176	2,500	2,319	

1.5.5 SELECTION OF HOUSEHOLDS

Once the census was completed, all listed households were given an identification number. Twenty-five households from each cluster were then randomly selected, using the statistical software SPSS, and noted on hand-sketched maps. The data collection team moved from house to house according to the map so that they could complete 25 households in a day.

1.5.6 COVERAGE OF THE SAMPLE

Table 4 shows the results of the household interviews from a total of 2,500 selected households, of which 2,496 were found to be occupied. Interviews were successfully completed in households, or 92.9 percent of all the occupied households. The non-response rate was found to be 7.1 percent, lower than the expected 10 percent non-response rate in the sample size calculation. The non-response rate is comparatively higher in coastal areas than in inland areas. The main reason for non-response is the unavailability of eligible respondents (7 percent) at the household despite repeated visits.

Table 4: Sample household and individual respondents

Background Characteristics	Inland	Coast	Total
Number of clusters	50	50	100
Household:			
Number of households estimated (n)	1,250	1,250	2,500
Number of households selected randomly from the sampling frame (obtained from census)	1,250	1,250	2,500
Number of households located to be interviewed	1,248	1,248	2,496
Number of household located and respondent available	1,181	1,140	2,321
Number of households interviewed	1179	1140	2319
Household non-response rate (%)	5.5	8.7	7.1
Percentage of households with children less than 5 years of age	31.3	31.2	31.2
Percentage of households with children less than 2 years of age	13.7	13.1	13.4
Children of age less than 5 years:			
Number of children estimated to be in the sample	629	629	1,258
Number of children in the sample	446	435	881
Number of children with anthropometric measurements	383	371	754
Percentage of children not available in the household	12.6	14.0	13.3
Mothers/Caregivers:			
Mothers of children under 2 years of age	403	383	786
Percentage of mothers absent during interview	13.0	14.1	13.5
Caregivers of children under 2 years of age	4	15	19

Based on the DHS 2011, it was anticipated that 50 percent of households would have children under the age of five years. However, the survey results show that 31.2 percent of households have children U5, which is lower than was expected in the sample size calculation. There were 881 children U5 in the sample; of them, 754 children were measured for anthropometric indicators and 127 (13.5 percent) were not available at the time of the household interview. However, the number of children in the sample is adequate to estimate IPTT indicator values as a whole for PROSHAR. Disaggregated child-level results by region will have a higher level of confidence interval.

The survey interviewed all mothers or caregivers of children U5. There were 805 mothers/caregivers in the sample, of which 786 are mothers (97.6 percent). It was found that 13.5 percent of mothers were absent during the interview.

1.5.7 SELECTION OF RESPONDENTS

Household heads or male respondents were involved in the interview process for the collection of basic information at the household level. The person who is directly involved in the SO1 activities was interviewed to collect agriculture, farming and marketing related information. The household heads and spouse/adult household members were the main respondents of this survey. Most of the questions in the SO2 component were related to health and hygiene, IYCF and child care practices. Mothers or caregivers of children U2 were interviewed for the majority of the questions for SO2. However, pregnant women were also interviewed if they were available in the household. In particular, questions related to household dietary diversity were asked of the person who usually cooks food for the household. The diet diversity questions were skipped if the appropriate respondent was not available at the time of the survey.

1.5.8 DATA COLLECTION TEAM COMPOSITION AND NUMBER OF DAYS REQUIRED FOR DATA COLLECTION

There were five data collection teams, with two coordinators to oversee all five teams and ensure data quality. A data collection team was comprised of 11 team members: one team supervisor, one field editor, five household survey enumerators, two anthropometric data collectors, one additional enumerator and one logistics assistant. Twenty-five households were interviewed per day by one team, thereby completing approximately one cluster per day (as noted earlier, 25 households were interviewed in each cluster). Then 19 working days (20 days were estimated during design) were required to complete the survey for 2,500 households. The data collection started on January 18, 2015 and finished on February 8, 2015.

The team supervisors were comparatively senior in the team with experience both in data collection and in leading teams. All five team supervisors were male. The team supervisor was responsible for identifying randomly selected HHs and for managing the data collector's movement during the data collection process. The team supervisors also took part in the practical training session as group facilitators and ensured quality data by cross-checking interviews on a sample basis. A detailed manual on field data collection is given in Annex 6.

All of the five field editors were female and had extensive experience in field data editing and quality control. The field editor in a team played the role of technical supervisor. The field editor observed the interview process and the accuracy of anthropometric measurements, provided on the spot technical support to the enumerators. The field editor edited all 25 HH records in the tablet at the end of the day before finalizing the survey and sending it to the cloud server.

Appropriate to the type of the respondents and the social context, all 25 enumerators, plus the five additional enumerators, were female. Eighty percent of the enumerators have experience conducting DHS surveys and recent Title II surveys (Strengthening Household Ability to Respond to Development Opportunities (SHOUHARDO)-II and the Nobo Jibon endline survey).

Each team had two members who performed anthropometric measurements, one male and one female. All of them have experience collecting anthropometric data for DHS and Title-II programs.

1.5.9 DATA COLLECTION AND ENTRY

Android tablets (Google Nexus Tablets) were used for data collection, complemented with Open Data Kit (ODK) software. The use of mobile devices and an electronic questionnaire improved data quality by allowing data validation rules and consistency checks that were integrated in the tablet ODK software program. The mobile-based data collection process reduced the data entry burden, as data was entered at the interviewer level and records were uploaded to a cloud server using the built-in internet connectivity of the devices. This allowed the data analysis team to review data consistency every day, and ensured the data were ready for analysis as early as one day after the completion of data collection for all 2,500 sample households. The ODK software-based electronic questionnaire was designed both in Bangla and English survey forms which were interchangeable at any time during the data collection process. The enumerators used the Bangla form on the tablet while interviewing the respondents and taking anthropometric measurements.

1.5.10 DATA QUALITY CONTROL

The Team Supervisors were responsible for re-interviewing two households per day for some critical questions, using tablets. This procedure was not strictly maintained in some very scattered clusters in Sarankhola and Batiaghata. The supervisor also verified that the non-response households were unavailable, or truly opted out of participation.

In addition to the data collection team quality control system, there was an independent quality control team comprised of two Quality Control Officers (QCOs). Both of the QCOs were female. The QCOs made a random visit to each of the data collection teams to observe the data collection,

sampling and re-interviewing processes. ODK database software allows for the cross-referencing of re-interview records with the original records collected by the enumerators. At the end of the day, the QCOs cross-checked the re-interview records with the actual interview record. The QCOs provided the necessary technical support to the team if they found significant differences between the re-interview record and the record that the respective enumerator collected.

The survey specialist runs data frequencies and cross-tabulations to verify data consistency at the individual interviewer level by comparing the re-interview data with the corresponding interview data. For any discrepancies found, the survey specialist provides the results to the respective enumerator and the respective team leader to determine the reasons and fix any problems. The TANGO Survey Specialist (TANGO International staff) spent time in the field during the first week of data collection to monitor whether the data collection teams were collecting information appropriately. The survey specialist provided immediate feedback and technical support as needed. He also monitored data consistency throughout the data collection process remotely by downloading data daily from the cloud server. A national consultant spent time in the survey area during the entire data collection process for on-the-spot monitoring, especially for the anthropometry.

1.5.11 DATA MANAGEMENT AND ANALYSIS

The ODK dataset (CSV format) was converted into an SPSS (Version 20) database for data management and analysis. Validated data was accumulated in the main SPSS database daily. The data analysis and tabulation followed the definition of the indicators in the IPTT and baseline data analysis logic so that the indicator values are accurately comparable.

SPSS statistical software was used to analyze the dataset, supplemented by World Health Orgnaization (WHO) Anthro software for the anthropometric data analysis. Syntax files were created to compute indicator and sub-indicator values. The analysis includes mostly descriptive statistics with some statistical hypothesis testing. Due to stratification, normalized sampling weights have been used to adjust indicator value estimates. Also, complex analysis was performed to estimate standard error and confidence intervals by adjusting the actual design effect.

1.5.12 SURVEY TOOLS AND SURVEY QUESTIONNAIRE

The PROSHAR baseline questionnaire was used as the basis for the QFPE to ensure consistency of the indicator values that were estimated for PROSHAR endline impact and outcome indicators. At the time of the inception report, the questionnaire was revised based on recent FFP/FANTA guidance and PROSHAR program data requirements. The English questionnaire was translated to Bangla and both versions are available in the ODK database system. The questionnaire form is provided in Annex 7.

1.5.13 SURVEY TEAM TRAINING AND FIELD TESTING

The survey team planned to have 12 days of training, including two days for field-testing and adjustment of tools, in Khulna. However, due to the security situation it was not possible for the team to travel to Khulna by road because of politically-motivated strikes and blockades. To avoid rescheduling the survey plan, the study team organized the data collection team training for 8 days in Dhaka starting from January 6, 2015 to avoid potential disruption of the data collection. Then the entire team was able to travel to Khulna by air despite the political volatility. The team completed training including field testing in the PROSHAR program area (non-sampled clusters) in Batiaghata, Khulna. The following topics were discussed in the training (detailed training agenda is given in Annex 8):

A. Brief program overview and the objectives of the surveys
B. General rules, norms and guidance on survey implementation

C. Survey methodology – team composition, sampling, household selection process
D. Detailed discussion of the questionnaire form (question-by-question)
E. Use of questionnaire in computer tablet
F. Applying a mock procedure for a more clear understanding of the questionnaire
G. Role play to show the technique of asking some sensitive questions
H. Data quality

The anthropometric teams received training on both questionnaire interviews and anthropometric measurement, with a separate practical training session conducted on anthropometric measurement. Ten mothers with 10 children under five years of age were invited for the practical demonstration on anthropometric measurement and standardization process. The detailed standardization process and results of the practical demonstration for the mothers and children is given in Annex 9.

1.5.14 LIMITATIONS

One potential limitation of the evaluation was the difference in evaluation design with respect to sampling between baseline and endline. At baseline, detailed household listings were unavailable; therefore, second-stage selection of households was conducted using the random walk method. At endline, a household listing exercise was conducted prior to the commencement of field work and households for the second-stage of sampling were chosen from among the household lists.

When possible, sample selection from household listings is preferable as a more truly random selection process. In particularly, if not conducted properly, the random walk method of selecting households in a village may lead to bias in the selection of households, with households nearer the village central meeting points more likely to be selected than more isolated households.

In order to examine for the possibility of bias in the selection of the baseline sample, basic characteristics of households expected to be relatively stable over time across households within a village. Table 5 includes general household characteristics that are expected to remain relatively constant over time, in both the baseline and endline samples. These characteristics include asset ownership, prevalence of farming as an income earning activity, and prevalence of other-income earning activities, such as wage labor, and rickshaw driving that might be indicative of lack of access to farming activities. Several characteristics are significantly different across the survey rounds. The proportion of households indicating that their primary occupation is day labor or rickshaw puller/boatman are substantially different across the two rounds, by 28 percent and 33 percent, respectively. The average number of cows and goats owned is less in the endline round, 25 percent and 13 percent less, respectively. However, land ownership and water body access are not very different across the survey rounds. There was no difference in the percentage of households that own cultivable land, or in the average farmland area owned. Access to water bodies (ponds) was 10 percent less at endline than at baseline.

Table 5: Selected household characteristics, baseline and endline survey rounds

Background Characteristics	Baseline	Endline	% Difference		n (unweighted)	
Household:					Baseline	Endline
% HH that own cultivable land	34.0	32.0	-5.9		2,201	2,319
Average farmland area (decimals)	40.6	38.8	-4.4		2,201	2,319
% HH with access to water bodies	40.2	36.1	-10.2	***	2,197	2,319
Average # cows	1.30	0.97	-25.4	***	2,201	2,319
% HH primary occupation: day labor	41.4	29.7	-28.3	***	2,207	2,672
% HH primary occupation: rickshaw puller/boatman	13.7	9.2	-32.8	***	2,207	2,672

If the random walk sample selection technique produced a biased sample, one might expect to see several of the household characteristics to be different for the sample at endline compared to

baseline. This was, in fact, true. While the percentage of households with access to farmland and the average size of agricultural land owned did not exhibit any change, all other characteristics changed from baseline to endline. There is no clear bias, either towards wealthier or poorer households implied by the direction of change in those variables that were significantly different across the two rounds. For instance, the prevalence of day labor and rickshaw pulling increased dramatically in the endline, suggesting distribution of wealthier households in the later round; however, conversely the average number of cows owned was lower at endline. Unfortunately, without additional information to determine if the observed changes are due to selection bias or underlying structural changes of household conditions.

Finally, it should be noted that in following FFP guidance for performance monitoring evaluation design (as opposed to for an IE), a statistically representative comparison (or control) group was not built into the evaluation design. However, the population based survey design did include a large proportion of households that did not participate directly in PROSHAR activities, from which a limited amount of analysis is included in this report, comparing non-participant households to participant households for certain key indicators. While the analysis is constructive, it is only meant to provide subjective context, in an attempt to ascertain if there is any (non-statistically representative) indication that program activities might be influencing the program results reported in this document. Any comparisons made in this report between non-participant and participant households that suggest that program outcomes might be attributable to program activities could be explored further in a future IE, or as part of a more robust evaluation design in the subsequent, follow-on program.

1.6 Organization of the Report

The first section of the report outlines the broad characteristics of the household sample, demographics, and household composition. The report then follows the structure of the IPTT and incorporates additional endline and baseline findings in logical places. The next and largest section in the report focuses on community characteristics that are relevant to SO1, including food and livelihood security indicators, household asset ownership, agriculture, market access and use, credit, distress behavior, social services and women's empowerment. The following section presents findings related to SO2, namely water, sanitation and hygiene, primary health care clinics, child health and nutritional status, infant feeding practices and ante- and post-natal care. The next section focuses on disaster risk management in PROSHAR communities. It is followed by a brief section providing analysis of key indicators by vulnerability group and sex of household head. The report ends with a section outlining main conclusions and recommendations.

Levels of significance are reported in the tables in the column titled "sig." Where significant differences between means or proportions are detected, an asterisk is used to denote the level of significance using the following assigned values.

Indicator	p-value
*	p<.05
**	p<.01
***	p<.001

2.0 Household Demographics and General Characteristics

2.1 Demographics

The PROSHAR endline survey completed interviews with 2,319 households and gathered demographic information on 10,439 individuals (Figure 1). Overall, the sample was split almost exactly in half between males and females (50.6 and 49.4 percent respectively).

The population pyramids for baseline and endline show some difference in the pattern of age distribution. In the endline, the distribution of males and females is more symmetrical while in the baseline the percentage of males was less than females in the age group 20-24. In all age categories the population has increased slightly with few exceptions, including among the most elderly portion of the population, indicating that people are living longer lives. Both the male and female

population below nine years of age is smaller in the endline than in the baseline. This may indicate a decline in the birth rate.

Figure 1: Population pyramid in baseline and endline

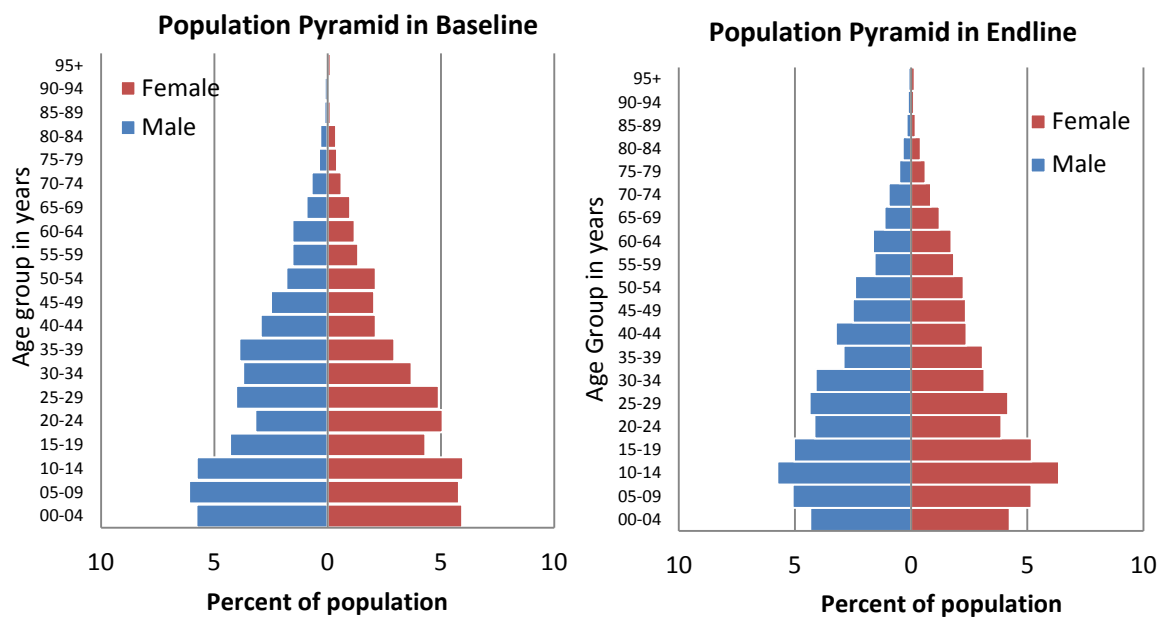


Table 6 shows the average household size in surveyed communities is 4.5 people, with household size ranging from 1 to 19 members. Average household size is slightly less than the baseline in both the inland and coastal areas. Households from the Coastal region have a slightly higher dependency ratio[20] than inland households (0.75 vs 0.69). As a result, household resources may be more strained in the coastal area due to the higher number of dependents. There is a big decrease of the dependency ratio in coastal communities compared to the baseline (from 0.90 to 0.75) while the decrease of the ration is small (from 0.73 to 0.69) in inland communities.

Table 6: Key household demographic information, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Mean household size	4.8	4.9	**4.9**	4.5	4.5	**4.5**	
Mean dependency ratio	0.73	0.90	**0.81**	0.69	0.75	**0.70**	
Percent of female headed household	5.7	6.9	**6.3**	3.8	2.8	**2.6**	***
Mean age of household head (years)	44.2	43.6	**43.9**	45.5	47.5	**46.0**	
n (unweighted)	1,189	1,018	**2,207**	1,179	1,140	**2,319**	

Overall, less than three percent of households were headed by females, higher by one percentage point in inland communities over coastal communities. There is a reduction in the overall proportion of female-headed households compared to the baseline (from 6.3 to 2.6) and the difference is statistically significant. The average age of the household head is 46 years.

[20] Age dependency ratio is calculated by dividing the number of "dependent" household members (individuals age 0-14 years or 65 years and older) by the number of "independent" household members (individuals age 15-64 years).

Some interesting regional trends regarding educational attainment of adults emerged from both the endline and baseline analysis (Table 7). The primary completion rate has increased significantly among adults in both inland and coastal areas. There is no significant difference in the secondary completion rate, but the increase in higher secondary completion is statistically significant. Adults in coastal communities are more likely to complete primary school than inland adults, but less likely to complete higher secondary education.

Table 7: Percentage of household adults (18+ years) with highest level of education, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
No education	31.9	22.8	27.5	29.3	19.1	26.9	
Some primary	25.6	40.4	32.7	14.0	20.7	15.5	***
Primary completed	27.6	24.3	26.0	38.5	43.9	39.8	***
Secondary completed	7.4	7.1	7.2	8.0	7.9	8.0	
Higher secondary completed	7.5	5.4	6.5	10.3	8.4	9.9	***
n (unweighted)	3,314	3,058	6,372	3,388	3,188	6,576	

Table 8 presents the same data disaggregated by sex of household member. Among all respondents, women are more slightly more likely to have no education as compared to men, but are more likely to complete their primary education than their male counterparts. While the great majority of males and females do not access secondary and higher secondary education, men are more likely than women to complete these levels. There is a small increase from the baseline in the percentage of all respondents reporting completion of some level of secondary education.

Table 8: Percentage of household adults (18+ years) with highest level of education, by sex

Indicator	Baseline			Endline			Sig.[1]
	Male	Female	**All**	Male	Female	**All**	
No education	26.1	28.9	27.5	22.8	30.9	26.9	***
Some primary	30.7	34.6	32.7	15.9	15.2	15.5	
Primary completed	24.9	27.2	26.0	37.5	42.0	39.8	***
Secondary completed	8.9	5.6	7.2	10.2	5.7	8.0	***
Higher secondary completed	9.4	3.6	6.5	13.5	6.3	9.9	***
n	3142	3230	6,372	3,276	3,300	6,576	

[1]*Significance test is for male and female in endline*

2.2 Housing Characteristics

A key indicator of socioeconomic status is the type and quality of housing that households are able to afford.

Table 9 shows that over half of the homes in the survey area are constructed from corrugated iron sheets and wood, indicating little change from the baseline. These construction materials are twice as prevalent in the coastal area (83.2 percent) than in the inland areas (46.4 percent), where a wider variety of materials are used. Nearly all homes use iron sheeting and wood for roofing materials, and have dirt floors, showing little change from baseline to endline. There is a small decrease in the use of less durable construction materials (mud, straw, bamboo).

Both inland and coastal areas show increases in the percentage of homes constructed with brick walls, with a greater increase in the coastal areas (Table 9). There is also an increase in both the inland and coastal areas in the use of thatched bamboo/polythene. However, the percentage of homes constructed with bricks is nearly three times higher than those using thatched bamboo/polythene. This indicates that a greater number of households are able to afford more durable building materials (brick, concrete, cement) for their homes. Homes built of more durable

materials provide better protection from weather and more sanitary conditions, help to protect the health and well-being of its inhabitants, and offer greater psychological benefits. While still a small percentage of homes in the survey area (16.7 percent with brick walls; 3.8 percent with concrete roofing materials; 11 percent with cement floors), this change indicates that some people are better able to invest in more permanent building materials. While both the coastal and inland areas have benefitted, the majority of households enjoying these improvements in housing materials are in the inland areas.

Table 9: Household construction, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Mean number of rooms (number)	2.1	1.8	2.0	2.0	2.5	2.1	
Main wall materials (Percent):							
C.I. sheet/wood	38.3	84.4	59.6	46.4	83.2	55.2	
Mud	20.8	0.3	11.3	15.0	0.3	11.5	
Brick	12.5	5.6	9.3	19.1	9.0	16.7	***
Straw/jute	13.9	3.0	8.8	10.3	1.8	8.3	
Bamboo	10.3	4.3	7.5	1.7	1.6	1.7	
Thatched bamboo/polythene	3.7	1.8	2.8	7.3	4.1	6.5	***
Other	0.5	0.6	0.5	0.2	0.0	0.1	
Main roof materials (percent):							
C.I. Sheet/wood	81.2	93.1	86.7	87.6	94.7	89.3	
Straw/jute	15.7	5.5	11.0	7.9	2.4	6.6	
Concrete	1.9	0.8	1.4	4.2	2.7	3.8	***
Other	0.4	0.3	0.4	0.0	0.0	0.0	
Thatched bamboo	0.3	0.3	0.3	0.2	0.1	0.2	
Bamboo	0.3	0.0	0.2	0.0	0.0	0.0	
Tiles	0.1	0.0	0.0	0.2	0.1	0.2	
Main floor materials (percent):							
Dirt	90.7	96.6	93.4	83.2	94.1	85.8	
Cement	6.1	1.9	4.2	13.3	3.5	11.0	***
Stone/brick	3.2	1.2	2.3	3.3	2.0	3.0	
Other	0.0	0.3	0.1	0.2	0.2	0.2	
Wood	0.0	0.1	0.0	0.0	0.2	0.0	
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319	

2.3 Households with PROSHAR Assistance in the Sample

At the time of the endline survey, some thirty-seven percent of all surveyed households reported that they had participated in at least one PROSHAR intervention (Figure 2). Over 20 percent of households in the sample received assistance to improve income and access to food under the SO1 component. A slightly smaller share of the population, 17.4 percent of respondents received assistance to improve the health of PLW and children U5 under the SO2 component, with the share higher Inland than in the Coast area. The majority of households receiving assistance under SO3 to more effectively respond to shocks were located in Coast, twenty percent of sampled households, compared with less than five percent Inland.

The Inland and Coast households in the sample that received PROSHAR assistance received similar types and levels of support from SO 1 and SO 2 interventions. Nearly all households participating in SO1 activities (36.4 percent) received training on farm activities and micro grants (41.7 percent, see Table 10).

Figure 2: Percentage of households participating in PROSHAR, by SO, by region

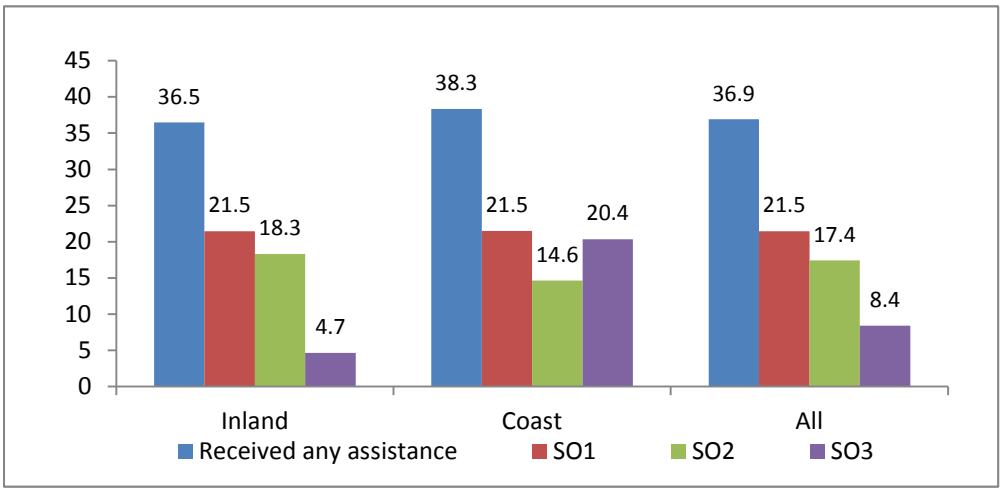


Table 10: Type of assistance received, by region

Indicator	Endline		
	Inland	Coast	**All**
SO1 (Percent of HH that have received any assistance):	***58.8***	***56.1***	***58.2***
A. Training on farm activities (poultry, livestock, aquaculture, crops, vegetables etc.)	35.3	39.6	36.4
B. Training on off farm activities (Karchupi, Bamboo craft, tailoring etc.)	4.7	2.5	4.1
C. Master trainer for capacity building and inputs	8.4	3.0	7.0
D. Micro grants assistance	43.5	36.2	41.7
SO2 (Percent of HH that have received any assistance):	***50.2***	***38.2***	***47.3***
E. Child health and Nutrition care	36.5	21.7	32.9
F. Antenatal care	35.6	24.3	32.8
G. Lactating mothers care (Post-natal care)	33.3	25.4	31.3
H. Growth monitoring and promotion service	34.7	23.1	31.8
I. Commodity (wheat, lentil, vegetable oil)	46.5	33.2	43.2
J. Ready to use Therapeutic food (RUTF)	25.1	10.3	21.4
K. Tippy Tap	10.9	7.3	10.0
L. Care group meeting	16.3	12.4	15.3
M. Maternal and child health training	28.6	19.5	26.3
SO3 (Percent of HH that have received any assistance):	***12.8***	***53.1***	***22.8***
N. Disaster preparedness training of UDMC/CBDMVG/CPP volunteers	10.2	38.9	17.3
O. Food for Work (FFW)	1.6	17.6	5.6
P. Cash for Work (CFW)	2.1	19.5	6.4
n (HH that have received any assistance, unweighted)	430	437	867

3.0 Strategic Objective 1: Incomes and access to food of poor and ultra-poor households improved.

Over the life of the Program, PROSHAR has sought to directly and indirectly address a number of factors that constrain the food security and general welfare of the target population, which are incorporated under SO1. The findings from the QFPE are presented first in terms of those related to

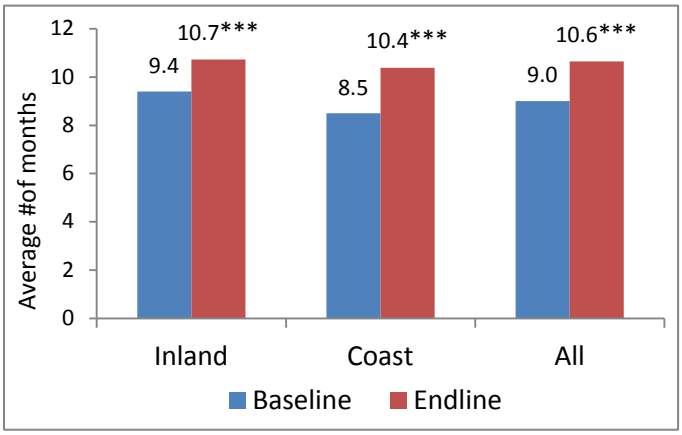
higher-level impact indicators of livelihood status such as dietary provisioning and diversity, and income and asset ownership. Next, information is provided about outcome indicators that measure adoption of improved practices to enhance crop cultivation, livestock rearing, and aquaculture. The following sections present information on market access and use, credit and economic distress indicators. Finally, information on access to social services and women's empowerment is presented.

3.1 Household Food Security

IPTT Indicator IM1: *Average # of months of adequate household food provisioning*

The number of months of adequate household food provisioning (MAHFP) is a proxy indicator that captures the seasonality of food security. Significant changes with respect to MAHFP emerge between the baseline and endline, with an overall increase of 18.3 percent (from 9.0 to 10.6) across the two rounds. Households on the coast had significantly fewer months of adequate food provisioning at the time of the baseline. Over five years of PROSHAR programming, there has been a significant improvement in the coastal communities (Figure 4). There has been a two-fold increase in percentage of households with 12 months of food sufficiency from baseline 28 percent to 57 percent in endline (Figure 3).

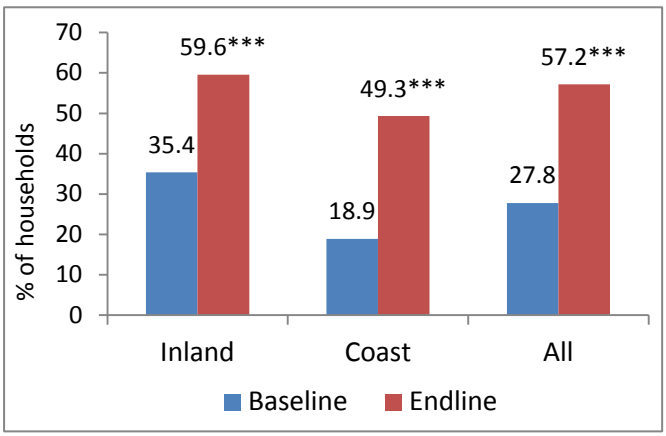
Figure 4: Average months of adequate household food provisioning, by region



IPTT Indicator IM2: *Average household diet diversity score (HDDS)*

The HDDS is a proxy measure for household food access. The index is computed as the number out of 12 food/food groups (cereals, roots/tubers, pulses/legumes, milk/milk products, eggs, meat and offal, fish/sea food, oil/fats, sugar/honey, fruits, vegetables, species, condiments etc.) that consumed in last 24 hours by the household. Overall, the HDDS increased by 0.6 percentage points, from 6.6 at baseline to 7.2 at endline, and the project target for this indicator was surpassed.

Figure 3: Percent of households with 12 months of food sufficiency, by region



There is a clear emphasis on rice and fish in the Bangladeshi diet, and also a strong tradition of consuming a number of vegetables, pulses and to some extent, fruit. In Figure 6, household level dietary composition shows an overall increase in fish, eggs, milk/dairy, pulses and meat consumption compared to the baseline. While the increase in pulse consumption may be biased by the rations provided to Preventing malnutrition in children under two years of age approach (PM2A) households, which included wheat lentils and vegetable oil, the other increases are likely the direct result of understanding the importance of these foods in the diet to maintain health, and the additional resources they had available (either through reduced need to purchase at the market, or through increased incomes. The overall average diet diversity score has increased significantly (Figure 5).

Figure 5: Average household diet diversity score

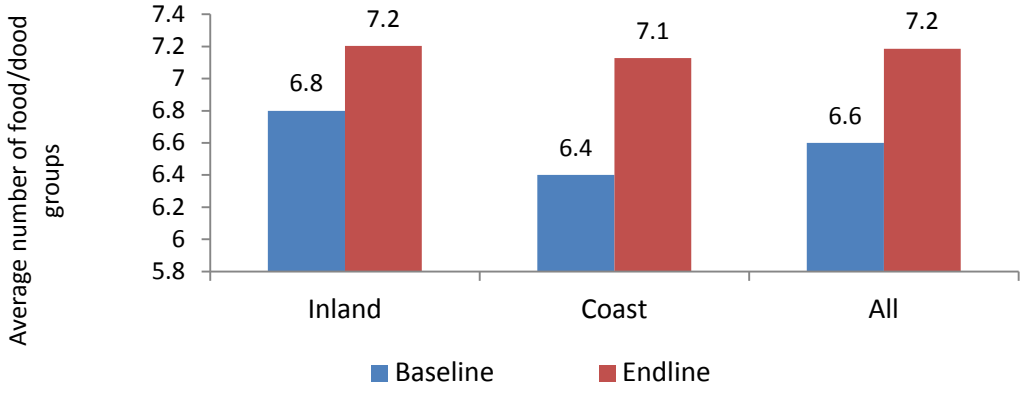
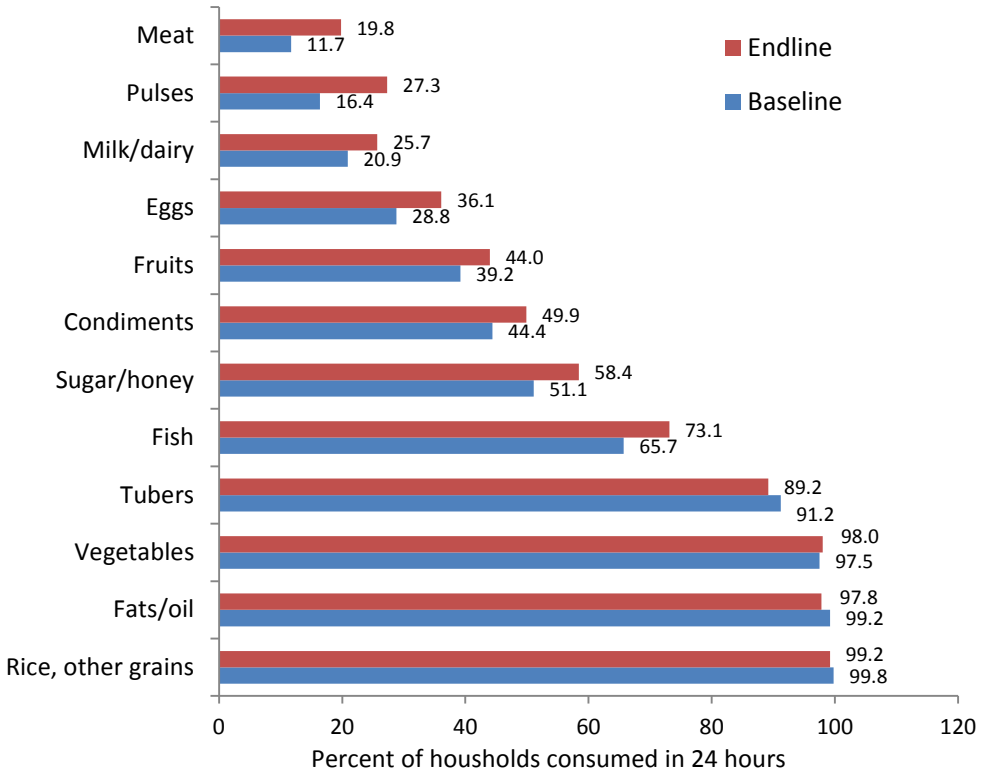


Figure 6: Household dietary composition



3.2 Household Hunger

The household hunger scale (HHS) uses questions to measure varying levels of household food insecurity that captures the following: (1) respondent's anxiety about household food supply; (2) insufficient quality, which includes variety, preferences, and social acceptability; and (3) insufficient food supply, intake and the physical consequences.[21] As shown in Table 11, there was a large decrease in households reporting having no food in the last four weeks from 29.7 percent at baseline to 11.4 percent at endline. The Coast saw the greatest decrease from baseline to endline of 21.6

[21] Ballard, Terri; Coates, Jennifer; Swindale, Anne; and Deitchler, Megan. 2011. Household Hunger Scale: Indicator Definition and Measurement Guide. Washington, DC: Food and Nutrition Technical Assistance II Project, FHI 360. Frequency is measured as follows: rarely (1-2 times); sometimes (3-10 times); and often (more than 10 times) in the past 30 days.

percentage points; Inland, comparatively, saw a decrease of 14.4 percentage points. Likewise, the proportion of households going to sleep hungry and the proportion of household members skipping meals has decreased in the program area, from 15.6 to 13.0 percent and from 3.2 to 2.9 percent, respectively. Households also reported significant gains in experiencing little to no hunger overall and across regions. The majority of households in all categories show improvements in their overall household food security, in t report that they rarely (i.e., 1-2 times per month) go without food.

It should be noted that although regionally there is a downward trend over time for the proportion of households going to sleep hungry, the proportion of household members reporting sometimes skipping an entire day of eating (i.e., 3-10 times a month) increased significantly . The increase is larger in the coastal areas. In other words, while over half of coastal households have some kind of food most of the time, the proportion of coastal households who experience hunger sometimes has increased. There are many fewer households who often skip eating for a day (i.e., more than 10 times a month) and they increased only in the coastal areas. This indicates that while more households have some kind of food available, and a very small proportion of households in the overall sample report severe hunger, many households still do not have enough food to meet their daily needs.

Table 11: Household hunger scale, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Proportion of HHs with no food at any time in last 4 weeks	**25.3**	**34.7**	**29.7**	**10.9**	**13.1**	**11.4**	***
Rarely	57.6	54.9	56.2	58.6	57.0	58.2	
Sometimes	36.9	40.3	38.7	33.6	35.6	34.1	
Often	5.5	4.8	5.1	7.8	7.4	7.7	
Proportion of HHs going to sleep hungry at any time in last 4 weeks	**13.0**	**18.7**	**15.6**	**9.8**	**8.6**	**9.5**	***
Rarely	55.8	63.9	60.2	66.4	51.0	63.1	
Sometimes	41.0	34.6	37.5	30.2	40.8	32.5	
Often	3.2	1.6	2.3	3.4	8.2	4.5	
Proportion of HHs w/ member skipping entire day eating in last 4 weeks	**2.9**	**3.5**	**3.2**	**7.5**	**4.3**	**6.8**	***
Rarely	77.8	86.1	81.9	68.5	51.0	65.9	
Sometimes	16.7	13.9	15.3	25.8	44.9	28.7	
Often	5.6	0.0	2.8	5.6	4.1	5.4	
Household hunger category							
Little/no hunger	86.9	80.9	84.1	90.9	92.2	91.2	***
Moderate hunger	12.4	18.6	15.2	8.5	7.3	8.2	***
Severe hunger	0.8	0.5	0.6	0.6	0.5	0.6	
n (unweighted)	1,189	1,016	2,205	1,179	1,140	2,319	

3.3 Household Revenue

Table 12: Household number of income earners and sources of income, by regionshows the mean number of income earners, mean number of income sources, and mean months of income per income earner. From baseline to endline, no significant differences were detected across these three indicators. However when the sources of income were disaggregated, it was found that non-agricultural day labor, farming (on own land), petty business, and poultry/livestock rearing had significantly decreased overall. The sources of income that saw significant increasing trends both overall and regionally included regular salaried employment, agricultural day labor, and casual labor.

It should also be noted that across regions, respondents' sources of income during the time period of PROSHAR have also changed. At baseline, a greater proportion of Inland respondents cited farming their own land as their main source of income (29.9 percent), whereas at endline, a greater proportion of respondents cited agricultural day labor (30.6 percent). Coastal households, on the

other hand, had a greater proportion of respondents working as non-agricultural day laborers at baseline (42.0 percent) and at endline, had a greater proportion farming their own land (25.9 percent).

Table 12: Household number of income earners and sources of income, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Mean number of income earners	1.7	1.8	1.7	1.5	1.7	1.6	
Mean number of income sources	1.8	1.9	1.9	1.5	1.8	1.6	
Mean number of months of income per income earner	10.5	10.6	10.6	10.6	10.7	10.6	
Sources of income (Percent):							
1. Non-agricultural day labor	25.9	42.0	33.3	11.9	23.5	14.7	***
2. Farming (own land)	29.9	16.9	23.9	12.9	25.9	16.0	***
3. Petty business	19.0	21.8	20.3	11.6	8.3	10.8	***
4. Regular salaried employment	20.1	18.4	19.3	25.3	25.2	25.3	***
5. Self-employment in business/service provision	18.7	15.2	17.1	16.4	17.1	16.6	
6. Student stipend	10.4	23.3	16.3	0.0	0.0	0.0	
7. Agricultural day labor	15.6	14.4	15.0	30.6	20.7	28.3	***
8. Transport	13.4	12.9	13.2	10.9	13.2	11.5	
9. Poultry/livestock rearing	8.3	6.7	7.5	3.0	5.1	3.5	***
10. Non-agricultural contract labor	6.1	8.3	7.1	9.0	8.5	8.8	
11. Casual labor	6.3	4.4	5.4	8.9	11.8	9.6	***
12. Working as servant/maid	2.3	2.7	2.5	3.3	3.4	3.3	
13. Agricultural contract labor	2.5	2.3	2.4	3.0	3.2	3.0	
14. Cash for work	1.2	1.4	1.3	0.3	2.1	0.7	
15. Business, using hired labor	0.4	1.4	0.9	0.7	0.1	0.6	
16. Boatman	0.3	0.7	0.5	0.1	0.1	0.1	
17. Begging	0.2	0.6	0.4	0.0	0.3	0.1	
18. Paid volunteer	0.1	0.2	0.1	1.8	0.8	1.6	
n	1,189	1,018	2,207	1,005	967	1,972	

As shown in Table 13, the average household monthly per capita income increased from a baseline of Bangladesh Taka (BDT) 1,401 to an endline of BDT 2,206 the increase is statistically significant. This trend was similar across regions. Additional sources of income including remittances, gifts, pensions, leases, and crop sales were also found to be significant different from baseline to endline (Table 13). Remittances, pension, crop sales, and livestock increased, while leases decreased.

Table 13: Household average monthly per capita income and annual income (in BDT) from various sources, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Average per capita income	1,544	1,234	1,401	2,,305	1,891	2,206	***
Remittances	3,089	2,915	3,009	5,693	10,933	6,944	***
Gifts	799	863	829	1,090	475	943	***
Pensions	318	297	308	2,095	195	1,642	***
Leases	8,651	3,750	6,391	468	529	483	***
Crop sales	9,994	2,820	6,686	9,099	3,402	7,704	***
Livestock sales	3,909	1,335	2,722	4,020	1,468	3,395	***
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319	

Annual income values are deflated by the CPI 2012-2014

3.3 Household Asset Ownership

Asset ownership is an important indicator of economic status, productive capacity and by extension, resilience. Household survey respondents were asked the number of assets owned in each of the following broad categories: domestic, productive, land, animal, and resource. In each of the three surveyed *upazila*s, market information was collected on average prices for each of the asset types listed during baseline. The baseline market prices have been adjusted for the inflation during the period 2012-2014 for the endline analysis. The number of assets owned was then multiplied by the commodity price and summed across categories to develop mean asset values for each asset category.

IPTT Indicator OC1: *Value of a set of assets*

The average asset value increased from BDT 48,453 to BDT 71,729 collectively for domestic, productive and animal assets overall (Table 14), and the overall increase was statistically significant, as were the increases in the values of domestic and productive assets.

Table 14: Average assets value (in BDT), by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Domestic assets	33,813	23,307	28,968	51,300	34,184	47,233	***
Productive assets	12,659	7,645	10,347	19,975	12,415	18,171	***
Animal assets	9,097	9,186	9,138	9,213	7,350	8,754	***
Total average	**55,569**	**40,138**	**48,453**	**77,890**	**52,069**	**71,729**	***
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2319	

Average assets value is deflated by the CPI 2012-2014

Not included in the asset indices calculated above were the value of trees that households owned due to the difficulty in estimating the cost of the various trees.

Table 15: Average number of trees owned, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Timber	11.1	20.2	15.7	22.6	18.7	21.6	***
Fruit	13.1	20.4	16.8	10.4	9.9	10.3	***
Bamboo	15.2	10.3	12.7	57.1	11.1	46.1	***
Medicinal	0.9	0.5	0.7	9.2	0.5	7.1	***
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2319	

3.3.1 Land ownership

Table 16 shows no significant change in the average amount of land owned by households in any category between the baseline and endline surveys.

Table 16: Average amount of land (in decimal) owned, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Homestead land	13.4	16.1	14.8	12.6	18.6	14.1	***
Agricultural land	53.4	25.5	39.4	44.3	21.1	38.8	***
Land lease - IN	39.9	23.1	31.5	40.0	29.7	37.5	***
Land lease - OUT	14.3	7.0	10.6	19.4	11.7	17.5	***
Mortgage - IN	4.9	9.5	7.2	4.4	2.8	4.0	***
Mortgage - OUT	5.7	7.3	6.5	5.1	5.6	5.2	***
Haor land (extended marsh)	0.1	0.1	0.1	1.9	0.2	1.5	***
Pond/ditch	3.4	3.3	3.4	4.0	3.4	3.8	***

Other land	3.1	6.9	5.0	1.0	1.8	1.2	***
Total	138.2	98.7	118.4	132.7	94.9	123.7	***
n	1,189	1,018	2,207	1,179	1,140	2319	

3.3.2 Landless households

The landless are often seen as a critically vulnerable group. These households are sometimes broken down into two categories, those with a homestead but no other production land, and those without a homestead.[22]

As shown in **Error! Reference source not found.**, the percent of all households without access to any land decreased significantly from 6.6 percent to 5.0 percent from baseline to endline. Coastal households saw a similar significant trend, where the percent of households without access to any land decreased from 5.7 percent to 3.5 percent.

Figure 7 shows that coastal households also saw a significant decrease in the percent of households with less than 10 decimals of land, which is on par with overall trends. However, it should be noted

Figure 8: Percent of household without access to any land, by region

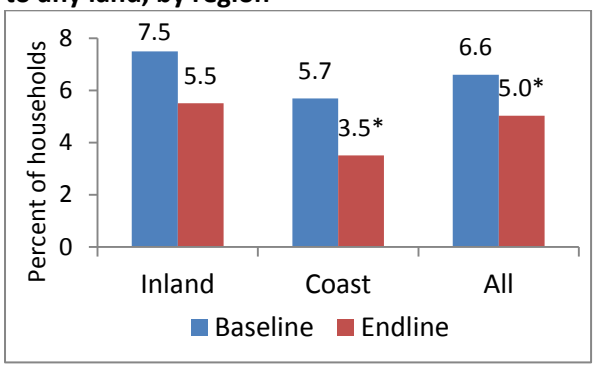
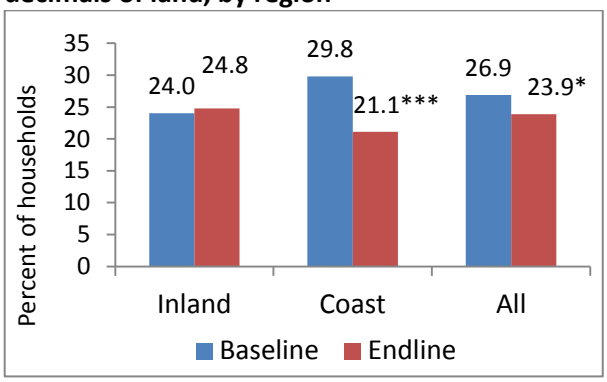


Figure 7: Percent of household with less than 10 decimals of land, by region



that

inland households did not show any significant improvements in either of these indicators, but rather saw slight increases in the percent of households with less than 10 decimals of land.

3.3.3 Common property land assets

Aside from the private land resources which are mentioned above, some important common properties are found in and around villages in the PROSHAR program area. Trends in common property available to households is important, as there is considerable discussion in Bangladesh about natural resources as the foundation of food security and economic development because land and water resources are in particularly short supply amidst a high and extremely concentrated population. The endline survey indicates that many forms of common property available to and used by households have increased significantly.

Table 17 shows the percent of households in the survey reporting what common properties are available to them. For the households in this survey, the common properties available to them are predominantly river/canal, followed by roadside sloping, *khas* land, *beel*/*haor*/closed water body, and *khas* ponds. For both inland and coastal households, the availability of roadside sloping has increased significantly from the baseline, increasing by 30.1 percentage points in inland areas and by 22.6 percentage points on the coast. Available common property in the form of *beel*/*haor*/closed water body has also increased significantly from the baseline, though the greatest part of that gain is in the inland areas (from 37.8 percent to 71.6 percent) rather than coastal areas (from 22.4 percent

[22] *Bhoomi keen* are people with less than 10 decimals of land, which is effectively a homestead.

to 33.5 percent). Community-based organization (CBO)-managed water bodies are available to a small percentage of households (4.8 percent) but have grown from 0.6 percent of households since baseline.

Khas land availability as common property has decreased significantly in both areas, declining from 40.5 percent for coastal households and 39.7 percent for inland households at baseline to only 24.7 percent and 24 percent, respectively, at endline. The availability of *khas* ponds as common property has decreased in inland areas but increased in coastal areas. Also, there is a significant decrease in the availability of common grazing land to households (13.1 percent to 6.6 percent) and a small but significant decrease of 0.3 percent in the availability of forest land, indicating that these types of land are becoming less available to households.

Table 17: Common property available in the community, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
River/canal	92.6	97.6	94.9	87.0	97.4	89.5	
Roadside sloping	55.7	63.0	59.1	85.8	85.6	85.8	***
Embankments	38.4	56.2	46.6	33.9	60.0	40.1	
Khas land	39.7	40.5	40.1	24.0	24.7	24.2	***
Beel/*haor*/closed water body	37.8	22.4	30.7	71.6	33.5	62.5	***
Khas pond	13.7	23.3	18.2	11.6	34.6	17.1	***
Grazing land	14.1	11.9	13.1	6.5	7.0	6.6	***
Forest land	0.3	7.0	3.4	0.6	11.2	3.1	***
CBO water body	0.6	0.5	0.6	4.1	7.1	4.8	***
Railway grounds	0.5	0.1	0.3	0.2	0.3	0.2	
Other	0.4	0.2	0.3	0.1	0.0	0.1	
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2319	

Table 17 shows the common property resources used during the previous six months by households in the survey. As found in the baseline, in most cases less than half of households with access to common property resources are actually taking advantage of these resources; for example, although nearly 90 percent of households have access to river/canal property, a little more than half of households (53.9 percent) use them.

The majority of households use common property rivers/canals, most often for fishing and irrigation (Table 17). However, the percentage of households using this option has declined by 13.6 percentage points since baseline, possibly reflecting increased competition for a preferred resource. *Beel*/*haor*/closed water body is the second-most used common property resource by households, with the percentage of households using this resource rising from less than one-fifth at baseline to over 40 percent at endline. One-third of the households surveyed use roadside sloping or *khas* pond common property resources. While the percentage of households using roadside sloping has increased by over 10 percentage points, the percent of households using *khas* ponds has risen from 2.6 percent to 33.9 percent. Although, as shown in Table 17, the availability of *khas* ponds has decreased in inland areas, their use by households has increased from 0.8 to 18.1 percent, suggesting much more intensive use of the *khas* ponds that are available. Household use of common grazing land and forest land has risen by over 20 percentage points even though households report a decrease in availability (see Table 18). Nearly one-third (29.5 percent) of households surveyed did not use common property resources in the six months preceding the survey, an increase of 8.8 percentage points from the baseline.

Table 18: Common property resources used in the community, by region

Indicator	Baseline	Endline	Sig.

	Inland	Coast	**All**	Inland	Coast	**All**	
River/canal	62.0	74.0	67.5	48.5	69.1	53.9	***
Embankments	23.0	38.0	29.9	23.2	44.3	30.8	
Roadside sloping	22.9	24.3	23.5	33.9	34.6	34.1	***
None	25.3	15.3	20.7	33.6	16.6	29.5	***
Beel/*haor*/closed water body	20.0	13.6	17.0	42.1	37.2	41.4	***
Khas land	3.4	6.8	5.0	16.1	17.5	16.5	***
Grazing land	5.3	2.7	4.1	22.7	15.1	21.2	***
Khas pond	0.8	4.7	2.6	18.1	49.8	33.9	***
Forest land	0.1	3.5	1.7	11.1	26.7	24.2	***
Railway grounds	0.2	0.1	0.1	0.0	0.0	0.0	
CBO water body	0.1	0.0	0.0	20.2	32.3	22.7	***
Other	0.1	0.0	0.0	0.0	0.0	0.0	
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2319	

3.4 Agricultural Livelihoods

There is no statistically significant change in the percent of households with agricultural production in the previous season (Table 19). However, a comparison of baseline and endline data show a shift is occurring in the most commonly cultivated crop, as households move from growing local rice (local and local improved variety) to HYV rice. Coastal areas in particular made gains in the percentage of households cultivating HYV rice. The percentage of households cultivating wheat increased significantly from 4.3 percent to 14.4 percent, though all of the increase was in the inland areas. A higher percentage of households in inland areas, continue to grow a greater diversity of crops than coastal households, while coastal households have shown modest gains in the production of oilseeds and commercial vegetables.

Table 19: Agricultural production, by region

Indicator	**Baseline**			**Endline**			**Sig.**
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of households with any agricultural production in the previous season	45.4	23.2	35.2	38.8	22.6	35.0	
n (unweighted)	1,189	1,018	2,207	1179	1140	2319	
Mean number of crops cultivated	2.3	1.4	2.0	2.4	1.7	2.3	
Crops cultivated (percent of agricultural households)							
Rice (Local)	48.0	74.4	56.1	37.3	57.8	40.5	***
Jute	45.8	0.4	31.9	43.9	0.0	37.1	*
Pulses	30.6	24.0	28.6	35.8	17.1	32.9	
Rice (HYV)	29.2	8.1	22.8	58.7	51.6	57.6	***
Oilseeds	30.4	2.7	21.9	29.5	7.4	26.1	
Rice (LIV)	16.4	16.7	16.5	2.8	6.6	3.4	***
Vegetables (commercial)	8.8	6.2	8.0	9.4	19.8	11.0	*
Wheat	6.2	0.0	4.3	17.0	0.0	14.4	***
Other	5.0	1.6	3.9	1.5	2.3%	1.7	***
Spices	3.6	0.8	2.7	1.3	0.4	1.2	*
Sweet potato	1.0	1.2	1.0	0.2	3.5	0.7	
Fruits (commercial)	0.6	0.8	0.7	0.7	3.9	1.2	
Groundnuts	0.4	0.8	0.5	0.2	0.4	0.2	
Maize	0.0	0.0	0.0	0.2	0.8	0.3	

n (unweighted)	540	238	777	458	258	716

3.4.1 Crop production

Table 20 shows yields of key crops by areas and for the overall sample. Overall, there is a significant increase in the yields in kilograms (kg) per hectare for four key crops – jute, local rice, local improved variety (LIV) rice, and HYV rice since the baseline.

The most significant increase is for LYV rice, which increased by 2,665 kg per hectare. HYV rice yields have increased by 1,399 kg per hectare. Local rice yields increased by 1,087 kg per hectare, and jute production went from 1,778 kg per hectare to 2,118 kg per hectare, an increase of 340 kg per hectare. Both regions showed gains in yields. Overall production for three of the four crops is higher in inland areas, while households in coastal communities produce more LYV rice.

Table 20: Agricultural production, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Rice (HYV)	2,893	2,473	2,849	4,288	3,995	4,248	***
Rice (LIV)	1,890	1,989	1,919	3,536	7,056	4,584	***
Rice (Local)	2,249	1,925	2,117	3,332	2,754	3,204	***
Jute	1,782	463	1,778	2,118	-	2,118	***
Maize	n/a	n/a	n/a	3,088	1,976	2,815	
Pulses	n/a	n/a	n/a	812	1,171	840	
Oilseeds	n/a	n/a	n/a	605	1,441	641	
n (unweighted)	540	238	777	458	258	716	

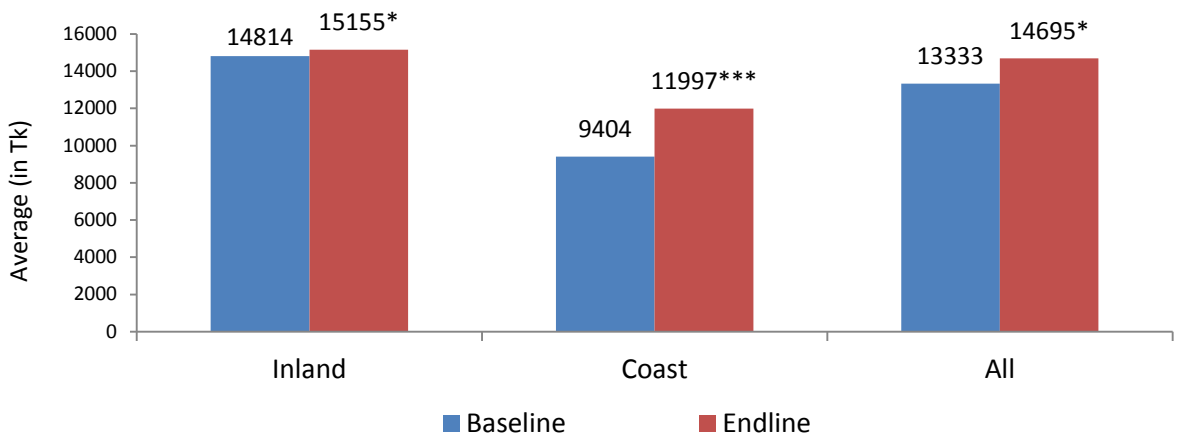
n/a: not collected at baseline

IPTT Indicator IM3: ***Gross margin per unit of land, kilogram, or animal of selected product (crops/animals/fish production)***

Error! Reference source not found. below reports mean gross margin for agriculture, defined as the value of all agricultural products sold by the household minus the reported annual cost of purchased agricultural inputs.[23] This measure is consistent with the computation for gross margin for agriculture computed in the baseline survey. There was no statistically significant change between baseline and end line for the full sample. The average gross profit for all households in the program area of 14,695 Tk. fell just short of the LOA target of 14,994 Tk.

[23]Households with negative gross profit margins, that is cash input costs that are higher than sales from crops, were excluded from the calculation for this indicator. We view households that are running negative gross profits as structurally different (with respect to crop marketing) from those that have positive gross profits, thus only included those with positive gross profits in order to maintain a valid comparison.

Figure 9: Average gross margin (Tk.) for crop production by region



Note: *Gross profits are presented as deflated, real values.*

3.4.2 Access to financial support

Households in the survey area experienced a significant and steep decline in access to agricultural financial support and government subsidies between baseline and endline. Table 21 indicates that 92.7 percent of households have no access to agricultural financial support, a decrease of 13.2 percentage points from the baseline. Only 2 percent of households have access to a government subsidy for agriculture – a substantial drop from the baseline, when 15.8 percent of households had access to a government subsidy.

Inland communities experienced a much greater drop-off in government subsidies compared to coastal communities. There is a similar decline among inland communities in access to agricultural financial support, whereas coastal households with no access to agricultural financial support report a modest three percent decrease.

Table 21: Percentage of households with access agricultural financial support, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
None	74.2	91.4	79.5	93.4	88.4	92.7	***
Government subsidy	21.4	3.1	15.8	1.7	3.1	2.0	***
Agricultural loan	4.2	3.1	3.9	2.2	4.3	2.5	
A company provided advance inputs	0.6	0.8	0.7	1.3	3.1	1.6	
Other	0.0	1.6	0.5	1.5	1.2	1.5	
n	540	238	777	458	258	716	

3.4.3 Agricultural labor, inputs, and practices

The mean number of improved agricultural production techniques used by households during the agricultural season increased significantly from 2.8 practices to 5.3 practices between the baseline and endline surveys (Table 22). Both inland and coastal households have adopted new practices, with inland households adopting slightly more improved practices. The percent of farming households that ever received training on improved food production technologies also saw a significant increase from 10.7 percent to 14.5 percent of all farming households.

The survey shows that there is a significant increase in the use by households of 10 out of 15 of the improved practices investigated by the survey, a rise of 66 percent (Table 22). Both the inland and

coastal areas surveyed show a similar increase in the percent of households adopting improved practices. The improved practice adopted by the highest percentage of households is using 2-3 seedlings per hill for rice (66.3 percent versus 19.3 at baseline). The second most popular practice is maintaining proper spacing, used by 63.9 percent of households against 22.1 percent at baseline. Over one-half (52.6 percent) of the households surveyed use organic fertilizers, compared to 31 percent at baseline.

Other improved practices adopted by nearly one-quarter of households include intercropping/relay cropping, and integrated pest management (IPM) (Table 22). The percentage of households using these two practices nearly quadrupled, from approximately seven to five percent of households at baseline, respectively, to 24.6 percent and 22.9 percent of households. Nearly one-fifth (19.1 percent) of households have adopted the use of green manure, an increase of 16.3 percentage points. A smaller but still significant percentage of households (17.3 percent) now practice conservation agriculture versus only 2.2 percent at baseline. The percentage of households that do not use any improved practice is very low, and shows a significant decrease from 7.3 percent at baseline to 2.8 percent of households at the time of the endline survey.

Balanced fertilizer use is the only improved practice that shows a significant decrease in application. It declined from 74.9 percent of households at baseline to 68 percent of households at endline, though it is still used by more than two-thirds of households.

Table 22: Improved agricultural production techniques used last agricultural season, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of farming households that have ever received any training on improved food production technologies	10.6	11.0	10.7	13.7	18.6	14.5	*
Mean number of improved practices used in the last season	2.8	2.9	2.8	5.3	4.9	5.3	***
Improved agricultural practice utilized (% agricultural households							
1. Balanced fertilizer use	75.2	74.3	74.9	68.8	63.6	68.0	**
2. Weed control	62.6	65.4	63.4	58.5	59.7	58.7	
3. Use improved seed	41.8	31.5	38.7	45.0	38.4	44.0	*
4. Use organic fertilizers	31.0	31.1	31.0	51.7	57.0	52.6	***
5. Maintain proper spacing	18.2	31.1	22.1	64.4	61.2	63.9	***
6. Use 2-3 seedlings per hill for rice	15.6	27.6	19.3	66.8	63.2	66.3	***
7. Improved post-harvest technique	11.4	7.4	10.2	4.6	7.0	5.0	***
8. Intercrop/relay cropping	8.0	3.9	6.7	25.8	18.2	24.6	***
9. Use IPM	4.4	7.0	5.2	24.0	17.1	22.9	***
10. Use recommended seed storage	1.6	5.4	2.8	14.6	14.3	14.6	***
11. Green manure	2.6	3.1	2.8	19.4	17.1	19.1	***
12. Conservation agriculture	3.2	0.0	2.2	17.0	18.6	17.3	***
13. Other	1.2	0.0	0.8	0.7	0.8	0.7	
14. Use of quality seeds				60.7	47.3	58.6	
15. None	6.8	8.6	7.3	2.8	2.3	2.8	***
N	540	238	777	458	258	716	

Table 23 reports the agricultural inputs purchased during the season prior to the baselines and endline surveys. There is a significant increase in the percent of households using ploughing inputs, from 65.3 percent to 87.7 percent. There is also a significant rise in the use of herbicides, increasing from 38.5 percent at baseline to half all households at endline. Seedlings have become a popular

item for purchase among more than one-half (58.4 percent) of households. In addition, the purchase of saplings, though made by slightly less than one-fifth of households, has also increased significantly.

The data also reflects a significant decline in the use of critical agricultural inputs of fertilizer(balanced fertilizer use), pesticides, and irrigation water by households. The purchase of fertilizer declined from 94.9 percent of all households to 70.4 percent; however, this decrease may have been offset by the increase in the use of organic fertilizer (Table 23). Pesticide use has also decreased, with 64.7 percent of households using pesticides versus 84.2 percent at baseline. As with fertilizer use, this decrease may be offset by an increase in the use of IPM or balanced fertilzer use, as noted earlier and in Table 22. Finally, the purchase of water for irrigation has significantly fallen off, reduced to 11.4 percent of households at endline from 43.8 percent at baseline. While the adoption of conservation agriculture techniques may reduce the need for irrigation, it may not provide a full explanation for the decrease in the purchase of water inputs.

Table 23: Agricultural inputs purchased last season, by region (percent of households)

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Fertilizer	94.6	95.7	94.9	74.9	45.7	70.4	***
Pesticides	80.4	93.0	84.2	63.3	72.5	64.7	***
Ploughing	65.8	64.2	65.3	88.0	86.0	87.7	***
Irrigation water	54.2	20.2	43.8	12.0	8.1	11.4	***
Improved seed	46.8	30.0	41.7	44.5	35.3	43.1	
Use of weedicides (Herbicides)	39.0	37.4	38.5	47.6	63.2	50.0	***
Seedlings	18.2	13.2	16.7	61.1	43.4	58.4	***
Saplings	4.2	7.4	5.2	16.8	19.0	17.1	***
None	1.8	1.2	1.6	1.1	0.4	1.0	
N	540	238	777	458	258	716	

3.4.4 Crop storage

The percentage of households storing their crops has increased significantly from little over one-half (57 percent) to 85.9 percent (Table 25). In coastal areas, the percent of households storing crops has nearly doubled in coastal areas, from 46.4 percent to 80.6 percent. However, the majority of households continue to use rudimentary methods of crop storage, using bags to store their crops either on the floor or elevated from the floor. There is a modest increase in the use of covered containers.

Table 24: Agricultural crop storage, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of households with any agricultural production that stored crops	65.5	46.4	57.0	86.9	80.6	85.9	***
Storage method used (percent)							
Bag on floor inside household	43.3	65.9	51.6	31.9	49.0	34.4	***
Gola (bamboo storage pot)	54.7	12.8	39.3	57.8	18.7	52.1	***
Other covered container	19.8	25.2	21.8	17.1	26.9	18.5	
Bag elevated inside household	7.8	13.8	10.0	29.9	42.3	31.7	***
At a separate storage facility	2.0	0.0	1.3	2.3	2.9	2.4	
Other	0.4	0.0	0.3	8.3	1.0	7.2	***
N	486	281	767	398	208	606	

3.4.5 Homestead gardens

As noted in the baseline report, it is a common practice in the survey area to grow vegetables on a small homestead garden for household consumption, and to generate income from sales of excess vegetables. Vegetables from homestead gardens can greatly enhance household nutrition and dietary diversity, and homestead gardens have the added advantage of requiring relatively small amounts of land to cultivate enough vegetables to meet household needs. There was no significant change detected from baseline in the percent of households cultivating a homestead garden in the year prior to the endline. However, there is a positive change in the diversity of vegetables grown, which increased from three to four crops on average per garden at baseline to six crops at the endline.

Table 25 shows that households continue to grow a diverse mix of vegetables, with the most popular vegetables being bottle gourd, beans, brinjal, yellow pumpkin, *pul shak*, *lal shak*, green chili, and tomatoes.

Table 25: Homestead garden production, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of households cultivating a homestead garden in the previous year	37.6	49.1	42.9	41.3	53.1	44.1	
N	1,189	1,018	2,207	1,176	1,140	2,319	
Average number of crops cultivated in garden	3.2	4	3.7	6.0	5.7	5.9	***
Main crops cultivated (Percent of gardening households):							
1. Bottle gourd	68.8	65.3	66.9	67.1	72.4	68.7	
2. Bean	47.8	59.4	54.0	48.5	67.4	53.9	
3. Brinjal/Egg plant	33.7	48.4	41.5	45.2	53.6	47.6	**
4. Pumpkin (yellow)	25.0	37.2	31.5	32.4	47.6	36.8	*
5. *Pul shak*/Indian spinach	36.3	23.3	29.4	52.8	30.7	46.4	***
6. *Lal shak*/Red amaranth	19.0	38.2	29.1	35.3	42.6	37.4	***
7. Green chili	12.5	22.0	17.5	26.7	21.0	25.1	***
8. Tomato	12.7	17.6	15.3	35.7	32.1	34.7	***
9. Radish	9.1	19.4	14.6	17.5	28.1	20.5	***
10. Cauliflower	12.7	10.8	11.7	19.5	5.6	15.5	*
11. *Data shak*	10.1	8.8	9.4	23.4	14.7	20.9	***
12. *Chichinga*	7.5	7.3	7.4	14.2	9.9	12.9	***
13. Cucumber	1.4	8.8	5.3	6.2	15.0	8.7	**
14. Spinach	n/a	n/a	n/a	29.4	21.7	27.1	
15. Potato/*Kesur*	n/a	n/a	n/a	21.4	20.7	21.2	
16. *Knolkhol*	n/a	n/a	n/a	20.9	6.9	16.9	
17. Bitter gourd (*Korolla*)	n/a	n/a	n/a	18.5	11.7	16.5	
18. Ladies finger	n/a	n/a	n/a	16.8	15.4	16.4	
19. Coriander leaf/ Black seed/Ginger	n/a	n/a	n/a	10.3	18.8	12.7	
20. Drum stick	n/a	n/a	n/a	14.6	1.3	10.8	
21. *Kangkong*	n/a	n/a	n/a	8.0	6.8	7.7	
22. Sweet potato/yams	n/a	n/a	n/a	7.8	6.0	7.3	
23. Carrot/Turnip	n/a	n/a	n/a	6.8	7.1	6.9	
24. Onion	n/a	n/a	n/a	7.2	3.0	6.0	
25. Garlic	n/a	n/a	n/a	4.5	1.5	3.6	
26. *Potol*	n/a	n/a	n/a	0.6	2.8	1.2	
27. Others	n/a	n/a	n/a	9.2	10.1	9.5	
n	449	502	951	487	605	1092	

n/a: Not collected in baseline report

The use of improved gardening practices has increased threefold from baseline, with the mean number of improved practices increasing from 1.6 to 5.1 (Table 27). This reflects a significant increase in the adoption of improved practices in both inland and coastal areas. The gardening practices used by the highest percentage of households are stalking/sticking/trellis, organic fertilizer, improved pit/heap systems. Significant gains were also made in the percentage of gardening households using quality seed, plant thinning, relay/multiple cropping, pruning and mulching. Project gains are further reflected by data showing that while nearly 30 percent of households used no improved gardening practices at baseline, this has decreased to three percent at endline.

Table 26: Improved gardening techniques used last year, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Mean number of improved gardening practices utilized	1.4	1.8	1.6	5.1	5.0	5.1	***
Improved gardening practice utilized (Percent of gardening households):							
Organic fertilizer	40.0	47.1	43.7	57.1	72.2	61.4	***
Stalking/sticking/trellis	18.6	23.2	21.0	72.7	82.5	75.5	***
Quality seed	17.3	23.0	20.3	41.9	38.5	40.9	***
Improved pit/heap systems	14.7	18.4	16.6	55.0	46.4	52.6	***
Compost preparation	6.5	11.0	8.9	21.4	17.0	20.1	***
Thinning	6.7	9.0	7.9	47.4	41.3	45.7	***
Improved bed system	6.3	9.4	7.9	25.7	25.5	25.6	***
Pruning	4.6	7.7	6.2	31.8	27.3	30.5	***
Non-chemical pesticides	5.3	3.1	4.2	19.5	13.1	17.7	***
Relay cropping/multiple cropping	16.2	25.0	20.9	39.8	39.8	39.8	***
Multi storied cropping	0.5	1.7	1.1	7.6	10.9	8.5	***
Bagging	0.0	0.6	0.3	5.5	9.3	6.6	***
Artificial pollination	0.0	0.4	0.2	2.5	4.3	3.0	***
Mulching	0.0	0.2	0.1	23.4	21.7	22.9	***
Other	0.0	0.2	0.1	0.0	2.6	0.8	*
None	34.5	25.2	29.6	3.3	2.1	3.0	***
Improved variety	n/a	n/a	n/a	28.1	23.8	26.9	
Balanced fertilizer	n/a	n/a	n/a	27.1	21.0	25.3	
n	540	238	777	487	605	1092	

n/a: Not reported in baseline report

3.4.6 Aquaculture and open-water fisheries

Small ponds and larger water bodies are found in most villages in the survey area, with some forms of aquaculture taking place in ponds, including *ghers* which are modified paddy fields with built-up retaining dykes.

While there were no significant gains in the percentage of households rearing any fish between the baseline and endline surveys, households are using, on average, two additional improved fishing practices since the baseline (Table 27). Households in inland communities have a slightly higher adoption rate of improved practices; on average, inland households are using two and a half additional improved practices versus coastal communities that are using one additional improved practice. The improved practices adopted by the highest percentage of households include testing water color to determine if sufficient food is available or water chemistry is unbalanced (increased by 41.9 percentage points); species selection (increased by 35.5 percentage points); and maintaining optimal stocking density (increased by 28.7 percent).As above, the percentage of households adopting these practices was higher in inland communities surveyed than in coastal communities.

Table 27: Fisheries production, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of households rearing any fish	19.3	35.6	26.8	25.4	33.2	27.2	
N	1,189	1,018	2,207	1179	1140	2319	
Average number of improved fishing practices used	3.1	3.3	3.2	5.6	4.3	5.2	***
Improved fishing practice used (Percent):							
1. Using poly culture	50.2	65.6	59.7	70.6	56.6	66.5	*
2. Pond cleaning	49.3	57.3	54.2	68.6	68.8	68.6	***
3. Providing fish seed	55.9	52.9	54.1	62.2	65.9	63.3	**
4. Liming	47.4	52.7	50.6	68.9	60.8	66.6	***
5. Providing supplementary feed	35.2	44.5	40.9	54.5	35.2	48.9	**
6. Growth monitoring	29.1	29.5	29.4	29.1	26.7	28.4	
7. Employing fish disease management	12.7	5.9	8.5	29.1	9.0	23.3	***
8. Maintaining stocking density	7.0	8.7	8.0	42.1	23.5	36.7	***
9. Testing water color to determine if food	8.0	5.3	6.4	54.2	33.9	48.3	***
10. Species selection	2.8	0.5	1.4	44.8	17.7	36.9	***
11. Other	0.5	0.3	0.3	0.0	1.1	0.3	
12. None	12.7	7.9	9.7	7.0	6.9	7.0	
n	230	362	592	299	378	677	

3.4.7 Livestock and poultry

Livestock rearing is a very common activity in the survey area. Table 28 shows that the percent of household rearing any poultry or livestock has declined from 85.9 percent to 75.2 percent of all households, while the mean number of improved livestock practices in use has tripled, from less than one to 2.3 practices. Both inland and coastal communities show approximately the same degree of change in these areas.

The greatest increase in improved practices was in the percentage of households using improved animal housing (from 0.1 percent to 21.8 percent); stall feeding (from 12 percent to 30.6 percent), and supplementary feed for poultry (from 8.7 percent to 20.4 percent). There is no significant change in vaccination rates, and a little over one-third of households are vaccinating their livestock against disease.

The endline survey shows that a greater number of households are adopting some kind of improved livestock rearing practices. The percentage of households using no improved practices declined by over 15 percentage points; this change is more pronounced in the coastal areas, where the percentage of households not using any improved practice declined by 25.2 percentage points versus only 12 percentage points among inland households in the survey. However, 40 percent of households were still not using improved practices at endline.

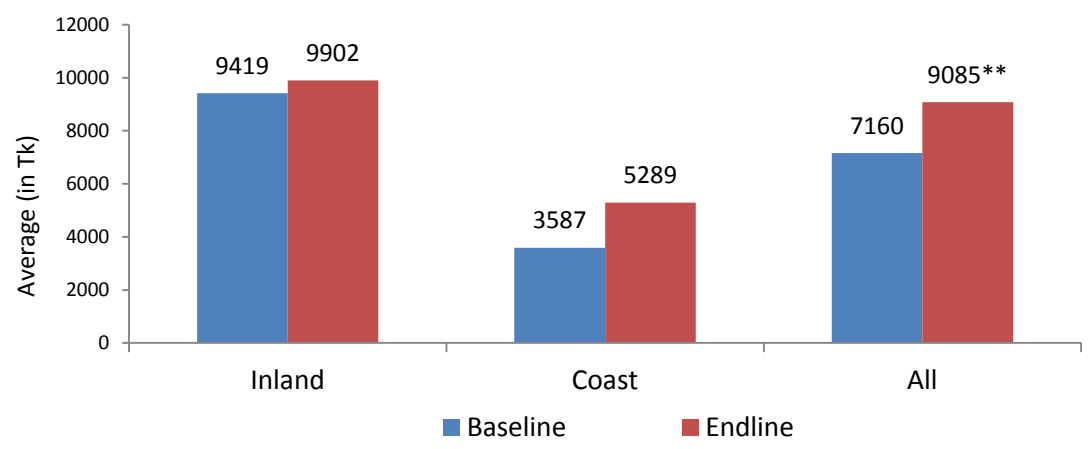
Table 28: Livestock production, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of households rearing any poultry or livestock	82.7	89.7	85.9	73.1	82.0	75.2	***
n	1,189	1,018	2,207	1,179	1,140	2,319	

Mean number of improved livestock practices used	0.7	0.6	0.7	2.4	2.3	2.3	***
Improved livestock practice used (percent):							
1. Vaccination	36.1	36.8	36.4	33.1	49.8	37.4	
2. Stall feeding	13.6	10.2	12.0	30.7	30.1	30.6	***
3. Supplementary poultry feed	6.1	11.5	8.7	20.1	21.4	20.4	***
4. Growth monitoring	3.4	3.4	3.4	2.4	9.7	4.3	
5. Fattening	2.3	1.2	1.8	6.3	3.7	5.6	***
6. Artificial insemination	2.4	0.5	1.5	9.2	4.4	7.9	***
7. Improved breeding	1.8	0.2	1.0	9.7	6.2	8.8	***
8. Improved animal housing	0.1	0.0	0.1	20.6	25.0	21.8	***
9. Other	0.3	0.9	0.6	0.5	9.8	2.9	***
10. None	55.7	54.7	55.2	43.7	29.5	40.0	***
N	981	912	1,893	862	935	1,797	

Along with the adoption of improved livestock practices, households in the survey area report that the average gross profit margin for livestock production increased by 1,925 Tk., a 27 percent increase, from baseline to endline (Figure 10). The positive deviance was driven by sharp gains in gross profits in the coastal region, a 47 percent increase from baseline (5,289 Tk.), although average gross profits for coastal households remain roughly half of those earned on average by inland households.

Figure 10: Average gross profit (Tk.) for livestock production by region



Note: *Gross profits are presented as deflated, real values.*

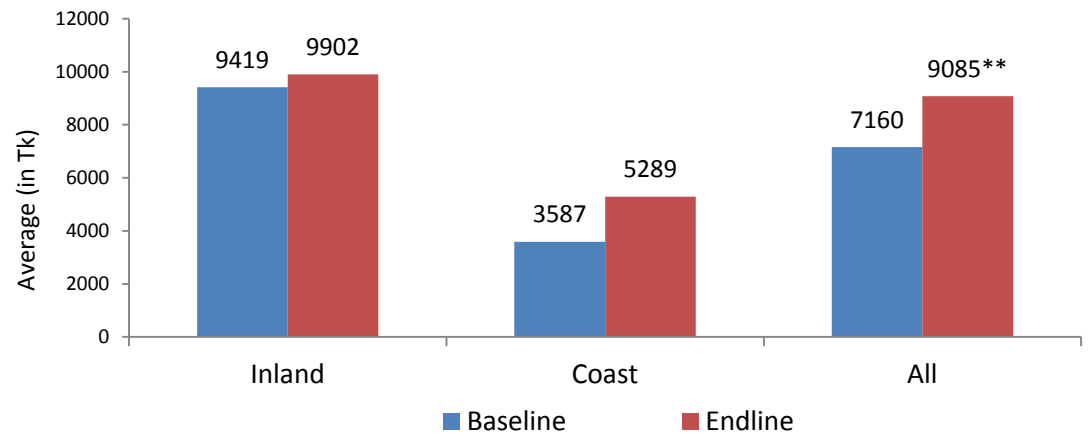
Table 29: Livestock production, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of households rearing any poultry or livestock	82.7	89.7	85.9	73.1	82.0	75.2	***
n	1,189	1,018	2,207	1,179	1,140	2,319	
Mean number of improved livestock practices used	0.7	0.6	0.7	2.4	2.3	2.3	***

Improved livestock practice used (percent):							
11. Vaccination	36.1	36.8	36.4	33.1	49.8	37.4	
12. Stall feeding	13.6	10.2	12.0	30.7	30.1	30.6	***
13. Supplementary poultry feed	6.1	11.5	8.7	20.1	21.4	20.4	***
14. Growth monitoring	3.4	3.4	3.4	2.4	9.7	4.3	
15. Fattening	2.3	1.2	1.8	6.3	3.7	5.6	***
16. Artificial insemination	2.4	0.5	1.5	9.2	4.4	7.9	***
17. Improved breeding	1.8	0.2	1.0	9.7	6.2	8.8	***
18. Improved animal housing	0.1	0.0	0.1	20.6	25.0	21.8	***
19. Other	0.3	0.9	0.6	0.5	9.8	2.9	***
20. None	55.7	54.7	55.2	43.7	29.5	40.0	***
N	981	912	1,893	862	935	1,797	

Along with the adoption of improved livestock practices, households in the survey area report that the average gross profit margin for livestock production increased by 1,925 Tk., a 27 percent increase, from baseline to endline (Figure 10). The positive deviance was driven by sharp gains in gross profits in the coastal region, a 47 percent increase from baseline (5,289 Tk.), although average gross profits for coastal households remain roughly half of those earned on average by inland households.

Figure 11: Average gross profit (Tk.) for livestock production by region



Note: *Gross profits are presented as deflated, real values.*

Table 30 shows the mean number of animal assets owned per household by animal type and region. The mean number of animal assets has shown a small but significant decline for most livestock since the baseline.

Table 30: Mean number of animal assets owned, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Cows	1.60	0.99	1.32	0.98	0.91	0.97	***

Buffalo	0.00	0.03	0.01	0.01	0.01	0.01	***
Goats	0.51	0.35	0.44	0.40	0.32	0.38	***
Sheep	0.04	0.01	0.03	0.02	0.02	0.02	***
Chickens	4.11	7.87	5.85	3.10	4.18	3.36	***
Duck	1.64	1.99	1.80	1.83	2.29	1.94	***
Pigs	0.01	0.00	0.00	0.05	0.01	0.04	***
Pigeon	0.59	0.72	0.65	1.22	1.08	1.19	***
Rabbit	0.00	0.00	0.00	0.03	0.03	0.03	***
Billy goat	0.01	0.00	0.01	0.00	0.02	0.01	***
Quail	0.00	0.00	0.00	0.02	0.04	0.03	***
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319	

Table 31 shows the percent of households owning animal assets. Ownership of cows declined significantly from 46.2 percent of households surveyed at baseline to 40.8 percent of households at endline. The percent of household owning chickens also declined, from 75.7 percent to 63.4 percent. Ownership of pigeons increased from 9.8 percent to 14.8 percent.

Table 31: Percent of households owning animal assets, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Cows	54.1	36.9	46.2	42.0	37.0	40.8	***
Buffalo	0.0	1.3	0.6	0.1	0.4	0.1	*
Goats	20.0	16.2	18.2	17.7	12.5	16.5	
Sheep	1.1	0.1	0.6	0.6	0.4	0.6	
Chickens	69.4	83.1	75.7	60.6	72.4	63.4	***
Duck	42.6	46.6	44.4	43.9	48.8	45.0	
Pigs	0.4	0.1	0.2	1.0	0.2	0.8	**
Pigeon	8.7	11.1	9.8	14.8	15.1	14.8	***
Rabbit	0.2	0.1	0.1	0.5	0.4	0.5	*
Billy goat	0.5	0.4	0.5	0.2	1.6	0.5	
Quail	0.2	0.1	0.1	0.6	1.1	0.7	**
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319	

3.4.8 Government services for livestock and agricultural production

Table 32 gives the percentage of households that have government agricultural and livestock services available to the community. There have been significant increases in the percent of households that have services available from the Department of Fisheries (by 6.4 percentage points). There is a smaller but significant increase (2.6 percentage points) in the percentage of households that have services available from the Bangladesh Agricultural Research Institute (BARI). The percentage of households receiving services from the Bangladesh Rice Research Institute (BRRI) is small at 2.6 percent, but increased by a significant amount from 0.1 percent at baseline.

The percent of households that have services available to them from the Government land office (*Tohoshil*) declined significantly from nearly half (47.1 percent) of households to slightly more than one-third (35.9 percent) of households. Services from the Bangladesh Agricultural Development Corporation (BADC) seed department declined as well, although a small percentage of households have access to those services to begin with.

Table 32: Government agricultural and livestock services available in the community, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Dept. of Agricultural extension	52.5	53.8	53.1	51.9	53.9	52.4	
Government land office (*Tohoshil*)	46.6	47.8	47.1	34.6	39.9	35.9	***

Dept. of Livestock	44.5	50.0	47.0	48.7	52.5	49.6	
Dept. of Fisheries	34.1	42.0	37.7	43.4	46.4	44.1	***
BADC seed department	14.0	14.2	14.1	13.0	7.6	11.7	*
BARI	0.5	0.3	0.4	3.2	2.3	3.0	***
BRRI	0.2	0.1	0.1	2.6	2.4	2.6	***
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319	

Despite the availability of government agricultural and livestock services, the percentage of households in the survey that use these government services is quite low. The service most utilized by program area households are BADC seed department services, however the utilization rate is still low at only 10.8 percent of all households surveyed (Table 33). Granted, BADC seed department service use has also seen the greatest increase since the baseline, 10.1 percentage points. The second most used service by households are those offered by the Department of Agricultural Extension. While the increase in usage of those services by households is significant, once again the utilization rate at endline is still low at little more than 10 percent of all households surveyed. There were similar significant but small increases in the percent of households using Department of Fisheries and Department of Livestock services. Once again, the use of these services by households increased significantly since baseline but constitute only around five percent of households by the time of the endline study.

The percentage of households using Government land office (*Tohoshil*) has declined significantly, from 7.2 percent of households to 4.9 percent. This is in line with the declining availability of services from this office shown in Table 32.

Table 33: Government services used in the last six months, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Dept. of Agricultural extension	9.4	5.1	7.4	10.8	10.1	10.6	***
Government land office	7.7	6.7	7.2	5.6	2.8	4.9	**
Dept. of fisheries	1.7	1.2	1.5	4.8	2.5	4.2	***
Dept. of livestock	1.3	0.8	1.1	5.2	9.8	6.4	***
BADC seed dept.	0.9	0.4	0.7	12.5	1.1	10.8	***
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319	

3.5 Market Access and Use

IPTT Indicator OC8: ***% of agricultural smallholders reporting increased market access and use as a result of PROSHAR intervention***

Figure 12: Percent of agricultural smallholders reporting increased market access and use as a result of PROSHAR intervention, by gender and region

Market access was measured both for input and output markets. This indicator would ideally be measured by collecting information from a sample of producer groups. Instead, the data presented here was collected from the population-based sample by filtering households that produce agricultural products. Therefore, the sample is very small (less than 50 households) to draw any statistically valid conclusions about this indicator. Note also that the change in sampling strategy from baseline to endline may have influenced the findings, as the random walk method used in the baseline may be biased toward more accessible households. It would more appropriate to track this indicator through annual monitoring with an adequate sample of agricultural smallholders.

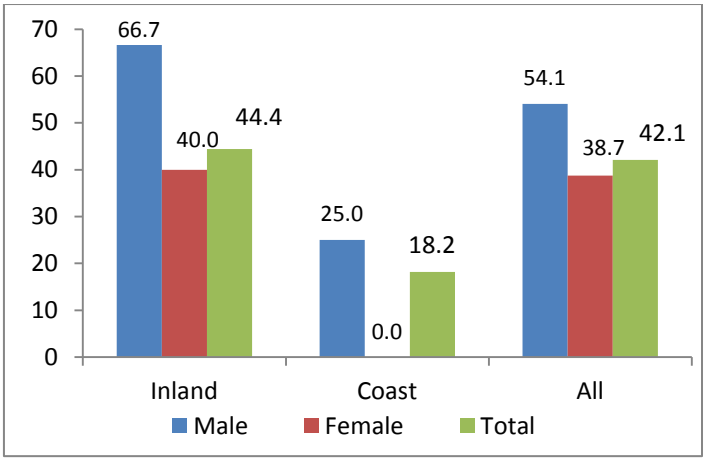


Table 34 shows the varying degrees of access to different markets, measured as the time it takes to reach markets by foot. As the distance to a market for buying inputs or selling goods increases, transportation costs for the household increase and profits decrease. The amount of time a household must invest in reaching the market also affects time available for other productive activities.

The data indicate that there has not been a significant change in the distance to local food markets since baseline, with the exception of a slight increase (from 6.3 percent to 7.9 percent) in the percentage of households that are one to two hours away from a food market. There is also no significant change in the distance to a market for selling handicrafts.

The majority of households are 30 minutes to one hour from markets where they can buy or sell agricultural goods. There has been a significant decrease (from 32.3 percent to 22.4 percent) in households that are 30 minutes to one hour from markets where they sell agricultural products. Conversely, the percent of households that are one to two hours by foot from these same markets increased significantly (from 11.2 percent to 18.5 percent) in coastal communities from baseline to endline. There is also a significant increase for a small percentage of households (from 2.2 percent to 4.7 percent) that must travel more than two hours to sell their agricultural products. Similarly, the percentage of households that must travel one to two hours to purchase agricultural inputs increased form 11.7 percent to 15.6 percent. Again, these differences may reflect the change in sampling strategy, with the baseline possibly biased toward households with easier access to markets.

Table 34: Access to markets, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Distance to local food market							
Less than 30 minutes	65.1	60.9	63.2	64.5	58.3	63.1	
30 minutes to 1 hour	29.3	31.0	30.1	26.4	34.5	28.4	
1-2 hours	5.2	7.5	6.3	8.4	6.1	7.9	*
More than 2 hours	0.4	0.6	0.5	0.6	1.1	0.7	
n (unweighted)	1,157	1,001	2,158	1,173	1,138	2,311	
Distance to market for selling handicrafts							
Less than 30 minutes	84.0	54.5	65.2	46.3	12.1	41.6	

30 minutes to 1 hour	16.0	27.3	23.2	14.9	18.2	15.4	
1-2 hours	0.0	13.6	8.7	9.0	3.0	8.1	
More than 2 hours	0.0	4.5	2.9	6.0	3.0	5.6	
Sell at the household**				23.9	63.6	29.4	
n (unweighted)	25	44	69	67	33	100	
Distance to the market to sell agricultural products							
Less than 30 minutes	51.1	63.4	54.3	30.0	22.0	28.9	
30 minutes to 1 hour	32.8	30.8	32.3	23.9	13.5	22.4	***
1-2 hours	13.6	4.7	11.2	20.9	4.2	18.5	***
More than 2 hours	2.5	1.2	2.2	5.5	0.0	4.7	*
Sell at the household[24]				19.7	60.2	25.6	
n (unweighted)	472	172	644	493	259	752	
Distance to purchase agricultural inputs							
Less than 30 minutes	54.1	50.0	52.6	49.0	45.6	48.4	*
30 minutes to 1 hour	32.4	36.1	33.8	33.0	40.1	34.3	
1-2 hours	11.9	11.4	11.7	16.8	10.6	15.6	**
More than 2 hours	1.6	2.5	1.9	1.2	3.7	1.7	
n (unweighted)	691	404	1,095	655	461	1,116	

The data show a significant shift in the mode of transport used by households to reach markets (Table 35). At baseline, over half of households (55.9 percent) traveled by foot to markets. Now the primary mode of transport to markets is by rickshaw/van, used by 83.4 percent of households. Overall, only a small percentage of households (7.7 percent) now reach markets by foot, a decline of 48.2 percentage points. Inland communities are more likely to use rickshaw/van transportation, though their use has also increased in coastal communities. One-third of households in coastal communities still reach markets by foot, but this has declined by half, as previously two-thirds of households in coastal communities walked to markets.

Other significant modes of transport are used by a much smaller percentage of household. The use of bicycles and motorcycles has decreased, and there is a small increase in the use of "other" modes of transportation.

The data show a significant shift in the mode of transport used by households to reach markets (Table 35). At baseline, over half of households (55.9 percent) traveled by foot to markets. Now the primary mode of transport to markets is by rickshaw/van, used by 83.4 percent of households. Overall, only a small percentage of households (7.7 percent) now reach markets by foot, a decline of 48.2 percentage points. Inland communities are more likely to use rickshaw/van transportation, though their use has also increased in coastal communities. One-third of households in coastal communities still reach markets by foot, but this has declined by half, as previously two-thirds of households in coastal communities walked to markets.

Other significant modes of transport are used by a much smaller percentage of household. The use of bicycles and motorcycles has decreased, and there is a small increase in the use of "other" modes of transportation.

Table 35: Primary mode of transport to markets, by region

Indicator	Baseline	Endline	Sig.

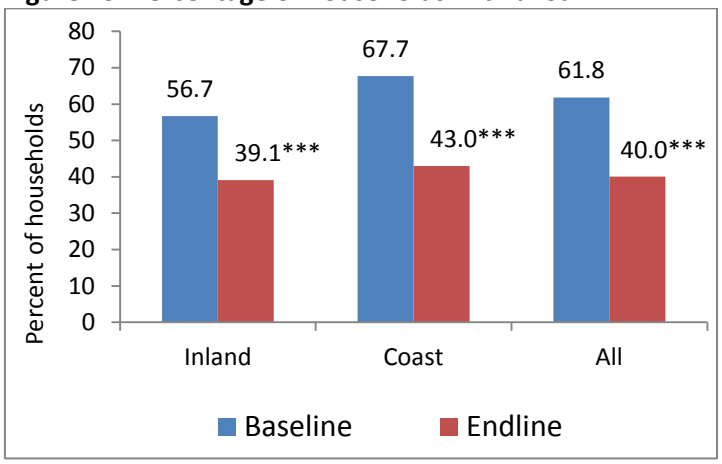
[24] During field testing it was found that many households with handicraft and agricultural production sell products from their house directly. This information was not collected separately in the baseline and it is assumed that it was included in the "less than 30 minutes" category. The hypothesis testing was done combining these two categories to compare with the baseline.

	Inland	Coast	All	Inland	Coast	All	
Rickshaw/Van	60.4	50.0	56.6	85.2	61.8	83.4	***
Foot	50.0	66.5	55.9	5.6	32.4	7.7	***
Bicycle	7.1	3.2	5.7	0.0	0.0	0.0	***
Car/Truck	2.1	1.5	1.9	2.6	1.0	2.4	
Boat	2.3	1.0	1.8	0.3	3.9	0.5	*
Other	1.5	0.5	1.1	6.4	0.0	5.9	***
Motorcycle	0.5	2.2	1.1	0.0	1.0	0.1	***
n (unweighted)	618	406	1024	392	102	494	

3.6 Credit

Indebtedness of households in the program area decreased 21.8 percentage points from baseline (61.8 percent) to endline (40.0 percent, **Error! Reference source not found.**). Households typically borrow as a means of coping with limited resources during the lean season or when faced with a shock such as illness or natural disaster. With this in mind, the large decrease in household borrowing could be viewed as a positive sign, if in fact borrowing is declining as a coping strategy.

Figure 13: Percentage of households with a loan



Additional information regarding loan sources and reasons for borrowing in Table 36 and Table 37 below, can help shed light on the drivers of the reported decreases in borrowing among households in the program area. Ideally, program area households would be borrowing more often from formal sources and less from NGOs and informal sources. Borrowing source is often a function of socio-economic status, as formal sources of credit require collateral or proof of collateral (often in the form of land), thus, poor landless households are only able to access credit from NGOs and informal sources.

Results in Table 36 show households have decreased reliance on informal sources of credit (friend/relative, neighbor, mohajan, money lender, etc.) from baseline to endline. Also the share of households receiving loans from banks and other commercial lending institutions has decreased, from 32 percent at baseline to 18 percent at endline. Households have reduced the range of different sources of credit, and at the time of endline most loans are from NGOs and CBOs.

Table 36: Loan sources, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	All	Inland	Coast	All	
NGO/CBO	75.5	74.3	74.9	78.3	60.2	73.7	
Bank/formal lending institution	27.4	36.6	32.0	16.5	20.8	17.6	***
Friend/relative	25.9	27.7	26.8	3.5	15.1	6.5	***
Neighbor	13.4	16.3	14.9	1.7	6.1	2.9	***
Mohajan	12.0	15.6	13.8	7.6	13.3	9.0	***
Trader/grocer	2.2	11.6	7.0	0.2	3.3	1.0	***
Money lender	2.1	6.0	4.1	0.4	1.0	0.6	***

Dadon dar	1.8	3.3	2.6	0.4	2.7	1.0	**
Informal savings group	2.6	0.5	1.5	1.5	1.2	1.4	
Other	1.3	1.7	1.5	2.4	0.4	1.9	
Pawnshop	0.8	2.1	1.5	0.0	1.2	0.3	**
n (unweighted)	674	689	1,363	461	490	951	

Decreases in borrowing coincided with large decreases in borrowing for the purposes of consumption smoothing, emergencies, and/or loan repayment (Table 37). Households that report borrowing for household consumption dropped from 27.2 percent to 7.1 percent, for loan repayment dropped from 24.2 percent to 14.4 percent, and for payment of medical treatment from 17.4 to 9.2 percent.

While nearly all reported reasons for borrowing fell from baseline to endline, as would be expected given the large drop in borrowing over the same timeframe, the downward trend in borrowing for productive purposes decreased less than for non-productive purposes. Borrowing to set up a small business dropped to 17.1 percent from 27.4 percent, for purchase of agricultural inputs fell to 10.4 percent from 14.6 percent, and for productive asset purchases dropped to 14.2 percent from 18.5 percent. Borrowing for housing maintenance was unchanged at approximately 14 percent.

Table 37: Reasons for borrowing, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Starting small business	20.6	34.1	27.4	18.0	14.3	17.1	***
Household consumption	21.6	32.8	27.2	6.1	10.0	7.1	***
Loan repayment	19.0	29.3	24.2	13.7	16.5	14.4	***
Purchase of other productive assets	19.7	17.2	18.5	13.4	16.3	14.2	**
Pay for treatment/medicine	14.9	19.8	17.4	7.6	13.9	9.2	***
Purchase agricultural inputs	20.3	9.1	14.6	10.6	9.6	10.4	**
Housing/repair	11.5	15.8	13.7	15.8	10.0	14.3	
Other	4.3	8.6	6.5	3.0	5.7	3.7	**
Purchase of non-productive assets	4.8	6.7	5.8	3.3	4.1	3.5	*
Livestock purchases	7.4	4.0	5.7	5.4	3.5	4.9	
Land purchases	4.0	7.2	5.6	5.4	8.2	6.1	
Wedding	6.1	3.7	4.9	3.3	3.3	3.3	
Education	4.5	3.1	3.8	5.0	3.1	4.5	
Legal dispute/expenses	0.8	2.1	1.5	0.4	2.0	0.8	
Rental of house/shop	1.8	1.1	1.4	0.9	0.6	0.8	
Bride price/dowry	1.4	0.4	0.9	2.2	0.2	1.7	
Migration	1.0	0.4	0.7	1.5	1.8	1.6	*
Purchase agricultural tools	0.3	0.1	0.2	0.7	0.0	0.5	
Religious event	0.2	0.1	0.1	0.7	0.0	0.5	
Funeral	0.0	0.1	0.1	0.4	0.2	0.4	
n	674	689	1,363	461	490	951	

The median amount borrowed increased 42 percent to 22,649 Taka (Table 38). Households in the coastal region borrowed more on average (18,532 taka) than households in the inland region (34,599 taka). The mean level of indebtedness increased substantially (by 75 percent), from 19,740 taka at baseline to 34,599 at endline. On a positive note, the average interest rate on household borrowings fell substantially from 18.2 percent to 13.9 percent.

Table 38: Loan information, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Mean amount borrowed	21,810	33,700	27,818	27,552	44,195	31,816	***
Median amount borrowed	14,000	20,000	16,000	18,532	34,599	22,649	***

n (unweighted)	674	689	1363	461	490	951	
Mean amount owed	15,250	24,120	19,740	22,649	18,532	34,599	***
n (unweighted)	671	688	1359	461	490	951	
Mean percentage of principal owed	68.8	68.5	68.7	66.2	75.3	68.5	
n (unweighted)	670	688	1358	461	490	951	
Mean interest rate	19.3	17	18.2	14.4	12.6	13.9	***
n (unweighted)	671	688	1359	461	490	951	

3.7 Economic distress indicators

Migration, sales of labor in advance, and reliance on informal credit are three indicators being used to monitor economic distress in the program area. Results are mixed with respect to levels of economic distress for surveyed households, as some indicator values increased while others decreased.

Migration continues to be a prevalent strategy used to cope with or avoid economic distress in the program area (Table 39). One in four households (25.5 percent) reported that a household member had migrated in the previous 12 months, however this proportion was unchanged from the baseline (23.1 percent). A more extreme form of coping, selling labor forward, increased slightly from baseline (5.8 percent) to 7.4 percent.

Encouragingly, the use of informal loans and emergency asset divestment decreased sharply (Table 39). Households reporting taking out a loan from an informal lender in the previous 12 months fell from 35.7% at baseline to to 12.8% of households at endline. Only 7.6 percent of households reported engaging in emergency asset sales, down from 24.0 percent of households at baseline.

Table 39: Migration and other distress behavior, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of household with any member migrate in last 12 months	20.5	26.1	23.1	22.3	35.5	25.5	
Percent of household with any member sell labor in advance in the last 12 months	4.6	7.1	5.8	6.9	9.1	7.4	*
Percent of household with any member take out loan from non-formal sources in last 12 months	32.3	39.6	35.7	10.9	19.1	12.8	***
Percent of household with any member sell assets in last 12 months in order to be able to purchase or pay for household urgent need	26.8	20.7	24.0	7.6	7.5	7.6	***
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319	

3.8 Social services and organizations

An important factor contributing to community resilience is access and usage of social services. Table 40 shows that access to a wide range of social services, including health care, education, and local government services, increased substantially over the life of the program. Access to primary health services increased roughly 10 percent, with 89.0 percent of all households surveyed reporting access at endline. The percentage of households reporting Grammo Shalish and Union Parishad access increased to 80.2 and 71.0 percent, respectively, compared to baseline results of 58.5% and 61.4%. The largest increase by any service category is reported for access to pre-school services, increasing from 32.1 percent of households at baseline to 67.9 percent at endline.

Table 40: Basic social services available in the community, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	

Basic social services available in the community (Percent of household)							
Primary school	94.8	97.5	96.0	97.4	96.9	97.3	*
Family planning services	86.9	86.5	86.7	93.7	93.2	93.6	***
Primary health care services	77.7	85.7	81.4	88.8	89.6	89.0	***
Union Parishad	59.3	63.9	61.4	72.4	66.2	71.0	***
Grammo Shalish	57.5	59.6	58.5	81.9	74.8	80.2	***
Post office	50.9	59.4	54.8	68.2	59.8	66.2	***
Emergency shelter	11.1	81.7	43.6	26.9	92.2	42.5	
Pre-school	29.8	34.9	32.1	67.3	69.7	67.9	***
Social welfare	25.2	25.9	25.5	19.8	14.6	18.6	***
n (unweighted)	1,189	1,018	2,207	1197	1140	2319	

Table 41 indicates that access to immunization and family planning services remain high: over 90 percent of households in the program area are covered by these government services. Access to women's and youth services grew markedly over the life of the program, however still remains relatively low: households reporting access to services from the Department of Women's Affairs grew from 5.4 percent to 19.5 percent, and those reporting access to services offered by the Department of Youth Development grew from 5.0 percent to 11.8 percent.

Table 41: Government services available in the community, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Government services available (Percent of household)							
Government immunization services	92.8	93.8	93.3	94.7	93.8	94.4	
Government family planning	82.8	85.6	84.1	90.9	89.0	90.5	***
Department of social welfare	21.5	24.3	22.8	17.3	12.5	16.1	***
Department of disaster management	5.2	30.1	16.7	13.8	44.8	21.2	***
Department of cooperatives/BRDB	10.3	8.5	9.5	11.6	10.7	11.4	*
Dept. of women's affairs	6.0	4.8	5.4	20.6	16.0	19.5	***
Department of youth development	4.4	5.7	5.0	11.5	12.8	11.8	***
n (unweighted)	1,189	1,018	2,207	1179	1140	2319	

While in many cases, access to government services was widespread and/or growing, usage appears low and is in some cases declining (Table 42). Households reporting usage of government immunization services decreased over program life from 40.5 percent to 16.6 percent. This could be due to substitution by private health providers. Use of government family planning services in the program area fell slightly from 41.0 to 37.7 percent. The usage rate of all other government services was extremely low, not greater than 1.3 percent.

Table 42: Government services used in the last six months, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Government services used (Percent of household)							
Government family planning	41.4	40.5	41.0	39.2	32.8	37.7	*
Government immunization services	38.5	42.9	40.5	17.2	14.6	16.6	***
Dept. of social welfare	3.0	3.6	3.3	1.4	1.1	1.3	***
Dept. of cooperatives/BRDM	0.8	0.0	0.4	1.3	0.1	1.0	*
Dept. of youth development	0.2	0.1	0.1	0.1	0.1	0.1	
Dept. of women's affairs	0.2	0.0	0.1	0.7	0.9	0.7	**
N/A	34.9	32.0	33.6	2.7	0.4	2.2	***

n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319

Table 43 reports participation in a range of social safety-net programs offered by the GOB. At baseline, the age allowance program, a monthly pension payment to those aged 60 and above, had the highest rate of participation (7.0 percent) and was virtually unchanged at endline (6.0 percent). Receipt of the widow allowance, grew negligibly from 1.8 percent to 3.0 percent. Baseline qualitative results characterized both of these services as attempts to buy voter loyalty through patronage. Participation in the Vulnerable Group Feeding (VGF) program, an emergency mechanism targeted to vulnerable populations, grew dramatically. Participation in VGF at baseline was 1.6 percent, growing to 26.3 percent at endline.

Table 43: Participation in government programs, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Participating in Government programs (Percent of household)							
Age allowance	7.5	6.3	7.0	5.9	6.3	6.0	
Government VGD	2.0	3.1	2.5	4.0	6.5	4.6	***
Widow allowance	1.2	2.4	1.8	3.4	2.1	3.0	**
Government CFW	1.5	2.1	1.7	0.8	1.3	0.9	*
Government VGF	1.1	2.2	1.6	24.2	32.6	26.3	***
100 days work	1.0	1.5	1.2	1.8	1.3	1.7	
NGO CFW	0.5	1.2	0.8	1.0	6.9	2.5	***
Disability allowance	0.6	0.5	0.6	0.6	0.6	0.6	
Other	0.6	0.2	0.4	7.3	0.8	5.6	***
Community based savings	0.4	0.1	0.2	0.6	0.3	0.5	
NGO FFW	0.0	0.2	0.1	0.5	4.8	1.6	***
None	84.3	81.5	83.0	50.0	36.7	46.6	***
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319	

3.9 Participation in Community Groups

Overall participation in community groups fell in the program area, particularly in the coastal region (Table 44). At baseline, 56.2 percent of all households surveyed reported belonging to any community group and fell to 40.1 percent of households at endline. In the coastal region the proportion fell by nearly half, from 59.0 percent of households to 29.6 percent of households. Most of this drop appears to be driven by declining membership in savings and credit groups. Across all households sampled, membership in saving/credit groups fell from 54.1 percent to 34.5 percent.

Membership in community agriculture and community health groups exhibited strong growth, however overall levels of membership in these groups remains quite low. Membership in community agriculture groups grew from 3.1 percent to 5.1 percent of all households sampled, while membership growth in community health groups was even stronger, growing from 1.1 percent to 4.5 percent. Notably, women's participation in community savings groups and health groups is particularly robust, at 69.7 percent and 87.6 percent, respectively.

Table 44: Group participation and membership, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Membership in any community based group	**53.7**	**59.0**	**56.2**	**43.4**	**29.6**	**40.1**	***
Member in savings/credit group (Percent)	***51.1***	***57.6***	***54.1***	***38.3***	***22.6***	***34.5***	

Percent of the members							
Primarily men	24.3	25.5	24.9	22.6	19.8	22.2	
Primarily women	66.1	60.1	63.1	68.1	78.3	69.7	**
Both men and women	9.6	14.5	12.0	9.3	1.9	8.2	**
n	563	636	1199	451	258	709	
Member in community agriculture group (Percent)	***3.8***	***2.2***	***3.1***	***5.3***	***4.6***	***5.1***	**
Percent of the members							
Primarily men	85.7	75.0	82.2	72.6	46.2	66.9	*
Primarily women	11.9	16.7	13.5	25.8	50.0	31.0	**
Both men and women	2.4	8.3	4.3	1.6	3.8	2.1	
n	42	24	66	62	52	114	
Member in community health group (Percent)	***1.2***	***0.9***	***1.1***	***4.9***	***3.0***	***4.5***	***
Percent of the members							
Primarily men	23.1	30.0	25.8	6.9	20.6	9.1	*
Primarily women	76.9	50.0	66.3	89.7	76.5	87.6	*
Both men and women	0.0	20.0	7.9	3.4	2.9	3.4	
n	13	10	23	58	34	92	
Member in PTA/SMC (Percent)	***4.0***	***4.5***	***4.2***	***3.2***	***5.2***	***3.7***	
Percent of the members							
Primarily men	65.9	84.0	74.8	65.8	64.4	65.3	
Primarily women	29.5	10.0	19.9	31.6	32.2	31.8	
Both men and women	4.5	6.0	5.3	2.6	3.4	2.9	
n	44	50	94	38	59	97	
n (unweighted)	1,189	1,018	2,207	1,179	1,140	2,319	

3.10 WOMEN'S EMPOWERMENT

In order to assess gender roles and attitudes, the surveys asked several questions regarding decision-making, freedom of movement, income generation, alignment with patriarchal values, and women's participation in community groups. Research shows that women's decision-making power is directly and intricately linked to household food security outcomes. "Women with low status tend to have weaker control over household resources, tighter time constraints, less access to information and health services, poorer mental health, and lower self-esteem. These factors are thought to be closely tied to women's own nutritional status and the quality of care they receive, and, in turn, to children's birth weights and the quality of care the children receive."[25]

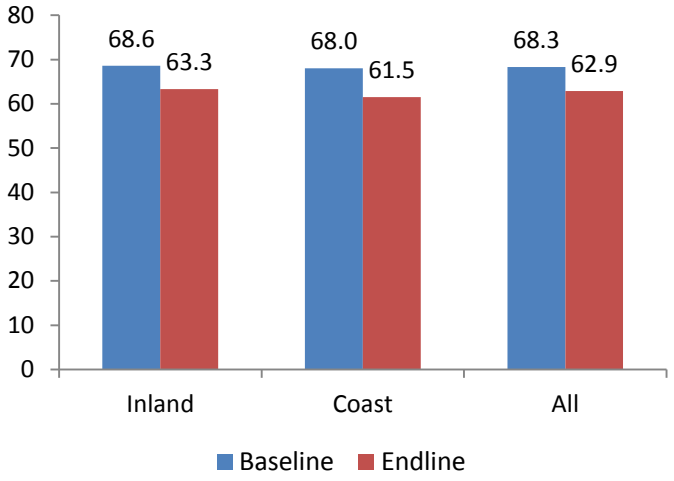
For thirteen common household decisions, women were asked to report whether they can decide alone, can decide with their husband or other adult male, whether their husband makes the decision after discussion with them, or whether they are involved in the decision at all. The respondent could also note when a particular decision was not applicable. The women's responses were aggregated into a single index of decision-making power, by assigning score values from 1 for "least power" to 4 for "most power" for their responses. The scores used were as follows: "Can decide alone" (score=4); "Can decide with husband or other adult male family member (3); "Husband makes decision after discussion with wife" (2); and "Not involved" (1). The overall decision-making score[26] is the mean over the total number of decisions, out of 13 possible, that the woman felt was applicable to her situation.

[25] Smith, Lisa C. et al. 2000. *The Importance of Women's Status for Child Nutrition in Developing Countries.* International Food Policy Research Institute (IFPRI).
[26] The baseline mean score was recalculated using appropriate sampling weight.

The women empowerment scores were converted into an index by dividing the sum of individual decision-making scores by the highest possible score (i.e., total number of decisions multiplied by 4) and calibrated to 100. Higher index values indicate more empowerment in decision making.

Women's empowerment, as measured by the women's empowerment index, fell to 62.9 for all households sampled (Figure 14). It should be noted that there was a large increase in the number of households indicating that many decisions were "not applicable" for their respective household (Table 45). "Not applicable" responses are effectively thrown out of the index. Because of this change in how respondents interpreted the questions, the comparability of the index between baseline and endline, as currently calculated, is limited.

Figure 14: Women's empowerment index in household-level decision making



While the value of the composite index decreased from baseline to endline, there were some encouraging signs with respect to the empowerment of women with respect to some of the particular decisions that comprise the index. For instance, the proportion of women that can make decisions on their own to buy small food items/groceries/toiletries (51.8 percent at endline) and clothing for herself or children (31.6 percent at endline) increased dramatically. The proportion of women making decisions on their own regarding their own or their children's healthcare (17.0 percent at endline), and family planning decisions (14.8 percent at endline), also exhibited strong growth.

Table 45: Women's decision-making by, region

Indicator	Percent of women														
	Can decide alone			Can decide with husband or other adult male			Husband makes decision after discussion with wife			Not involved in decision			Not applicable		
	Base	End	Sig	Base	End	Sig	Base	End	Sig	Base	End	Sig	Base	End	Sig
Buying small food items, groceries, toiletries	31.6	51.8	***	10.8	8.4	**	51.3	34.9	***	5.9	4.6		0.5	0.2	
Buying clothing for herself or her children	12.7	31.6	***	18.2	10.3	***	61.0	48.0	***	6.0	6.5		2.1	3.6	**
Spending money that she has earned	9.8	10.7		6.4	1.0	***	20.2	8.1	***	5.8	3.0	***	57.8	77.2	***
Buying or selling major household assets	3.0	2.8		17.1	8.8	***	66.5	29.4	***	8.3	7.4		5.2	51.7	***
Buying or selling jewelry	2.2	1.8		15.1	3.0	***	50.8	14.6	***	9.2	3.5	***	22.8	77.1	***
Use of loans or savings	2.8	3.9	*	12.9	6.7	***	62.7	42.6	***	7.1	5.3	*	14.5	41.5	***
Expenses for children's education	7.7	12.8	***	10.6	6.7	***	56.2	46.9	***	2.2	2.2		23.3	31.3	***
Expenses for children's marriage	1.7	0.9	*	8.7	3.1	***	31.6	11.2	***	3.6	0.8	***	54.4	84.0	***
Decision over child's marriage	1.7	0.8	*	8.8	3.3	***	35.2	11.8	***	3.1	0.9	***	51.2	83.2	***
Medical expenses for herself or her children	9.5	17.0	***	16.0	13.1	***	71.1	63.1	***	1.5	2.5	*	2.0	4.4	***
Expenses for family planning	5.7	14.8	***	9.8	1.0	***	65.3	43.9	***	1.6	1.6		17.6	38.7	***

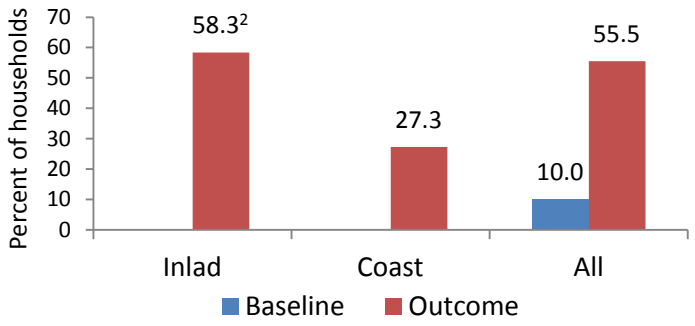
Table 45: Women's decision-making by, region

Indicator	Percent of women														
	Can decide alone			Can decide with husband or other adult male			Husband makes decision after discussion with wife			Not involved in decision			Not applicable		
	Base	End	Sig	Base	End	Sig	Base	End	Sig	Base	End	Sig	Base	End	Sig
(contraceptives)															
To move to shelter during time of disaster	4.8	1.5	***	14.3	5.6	***	48.1	13.3	***	8.3	6.2	**	24.6	73.4	***
Actively participate in *shalish* decision making	1.4	1.1		3.9	0.4	***	5.3	2.2	***	29.6	16.2	***	59.8	80.1	***
n (unweighted)	2198	2199		2198	2199		2198	2199		2198	2199		2198	2199	

IPTT Indicator OC7: *% of producer groups with women in leadership positions*

Figure 15 shows the percentage of women who hold a leadership position within a producer group. Encouragingly, this proportion is relatively high at endline (55.5 percent), although it should be noted that the sample size is extremely small (n=64). More useful information regarding women's participation and roles within producer groups could be collected from annual monitoring data (collected solely from beneficiaries) or directly from the producer groups.

Figure 15: Percentage of producer groups with women in leadership position, by region[1]



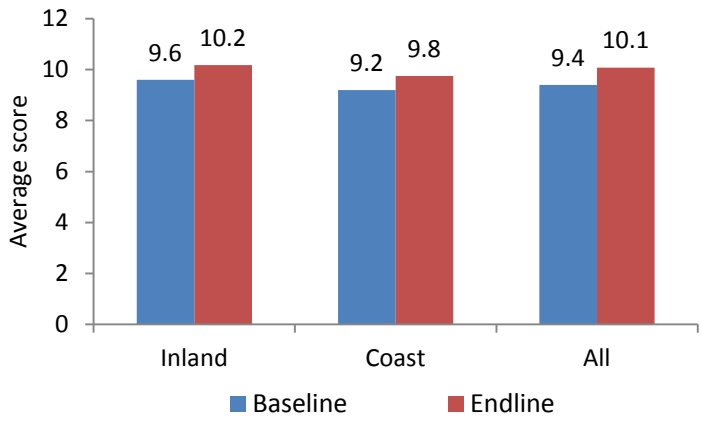
[1]A producer group survey is more appropriate to get actual estimate of this indicator. It was estimated based on household level responses
[2]Baseline information available only at the project level

Another measure of women's empowerment is their ability to move freely throughout public spaces. This was measured by whether or not women are able to travel at all to various common destinations (markets, health centers, friends' homes, and mosques/shrines) and whether or not they are able to travel alone. To create an index of women's mobility, the following categories of response were used:

Figure 16: Average women's mobility score, by region

permitted to go alone (score=3); permitted to go accompanied by someone else (score=2); never permitted to go (score=1). The index value for each woman is the sum of the scores over the four types

of places (max=12). There was no observed change in this index between baseline and endline, however overall, the level is high 10.1 out of a maximum of 12 (**Error! Reference source not found.**).



The proportion of women responding they are able to travel to market and the mosque/shrine increased (Table 46). At baseline, 66.3 percent of women reported being able to travel to market, increasing to 77.7 percent at endline. Women reporting they are able to go to mosque increased from 43.9 percent to 55.1 percent, mainly driven by a sharp increase in women's ability to do so in the coastal region. Of those women that report being able to travel to various places, in the majority of cases they are free to do so alone – ranging from 84.5 percent of women respondents to 97.0 percent at endline.

Table 46: Percentage of women able to travel, by destination and by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Ability to travel (Percentage of women)							
To market	67.0	65.5	66.3	79.3	72.5	77.7	***
To health center or doctor	87.5	88.3	87.9	91.2	87.6	90.4	***
To a friend's home	96.5	97.1	96.8	95.8	97.1	96.1	
To mosque/shrine	54.0	32.0	43.9	57.4	47.3	55.1	***
n (unweighted)	1,188	1,016	2,204	1,179	1,140	2,319	
Ability to travel (Percentage of women)[1]							
To market	74.5	79.9	77.0	85.0	82.7	84.5	***
To health center or doctor	71.5	75.2	73.2	87.8	84.4	87.0	***
To a friend's home	94.3	94.3	94.3	96.9	97.6	97.0	***
To aosque/shrine	89.4	85.3	88.0	94.2	90.1	93.3	***

Table 47:Percent of women engaged in livelihood activities, by region

[1]The n's in the bottom half of the table are different for each destination; each n is the subset of the women able to travel to that destination at all (accompanied or alone).

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of women engaged in livelihood activity	16.7	18.2	17.4	14.3	9.5	13.2	***
n (unweighted)	1,189	1,016	2,205	1,134	1,067	2,201	
Percent of these women earning any cash income	89.7	86.2	88.0	98.1	96.0	97.8	***
n (unweighted)	204	188	392	162	101	263	

Table 47 Table 47 shows that the percentage of women engaged in a livelihood activity decreased from 17.4 percent to 13.2 percent. This result was driven by a large decrease in the coastal region, from 18.2 percent to 9.5 percent. However on a more encouraging note, of those women that engaged in a livelihood activity, nearly all at endline (97.8 percent) reported earning cash income.

Table 48 exhibits women's agreement with statements that enforce patriarchy and alternatively with statements that do not enforce patriarchy. The results demonstrate positive shifts towards less

patriarchal attitudes by women in the program area. Large reductions were found at endline in the proportion of women who believe important family decisions should only be made by men (16.6 percent at endline), that the husband should make family planning decisions (11.1 percent), and that it is better to send a son instead of a daughter to school (3.1 percent). One area that did not show meaningful improvement is with respect to domestic violence, where 86.4 percent of women still believe that a wife should tolerate violence to keep the family together.

When women were presented with statements framed as not supporting patriarchy, their attitudes exhibited similar trends in improvement. Where earlier, two-thirds of women agreed that a wife has the right to express an opinion distinct from her husband's, at endline 82.9 percent of women responded affirmatively. The percentage of women agreeing that a woman should be allowed to work outside the home if she chooses grew from 72.9 percent to 89.1 percent. There was no change in the proportion of women believing that a husband should help with chores when the wife works outside the house; however, a strong majority of women, 80.2 percent, agree with this statement.

Table 48: Percent of women who agree with various statements revealing patriarchal attitudes about family life, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of women who agree with statements that enforce patriarchy							
a) The important decisions in the family should be made only by the men of the family	36.2	37.3	36.7	13.8	25.8	16.6	***
b) A wife should tolerate being beaten by her husband in order to keep the family together	89.4	93.1	91.1	87.6	82.8	86.4	***
c) It is the husband who has the right to make decision on family planning	45.3	44.2	44.8	10.1	14.5	11.1	***
d) It is better to send a son to school than it is to send a daughter	17.3	17.8	17.6	2.9	3.8	3.1	***
Percent of women who agree with statements that do not enforce patriarchy							
a) If the wife is working outside the home, then the husband should help her with household chores	83.4	81.0	82.3	81.8	74.7	80.2	
b) A married woman should be allowed to work outside the home if she wants	75.1	70.4	72.9	89.9	86.1	89.1	***
c) The wife has a right to express her	66.3	65.4	65.9	82.8	82.9	82.8	***

opinion even when she disagrees with her husband						
n (unweighted)	1,189	1,016	2,205	1134	1067	2201

Trends in the normalization of domestic violence improved considerably in the program area (Table 49). The percent of women that agree violence against them is justified for not obeying elders, arguing with their husband, or going out without telling their husband dropped from between 52.8 and 62.5 percent to between 15.1 and 17.7 percent. Where at baseline nearly one in three women believed domestic violence was justified for refusing sex or neglecting children, less than five percent of women agree with this statement at endline. The only case in which women's acceptance of domestic violence worsened is in the instance that women burn the food, with 30.1 percent of women surveyed agreeing that violence is justified for this reason, up from 20.4 percent.

Table 49: Normalization of domestic violence, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of women who agree a husband is justified in hitting or physically abusing his wife							
She does not obey elders	63.2	61.9	62.5	14.7	16.3	15.1	***
She argues with him	53.2	55.5	54.3	16.8	15.0	16.3	***
She goes out without telling him	55.4	50.2	52.8	18.1	16.6	17.7	***
She refuses to have sex with him	29.4	35.7	32.5	4.3	5.4	4.6	***
She neglects the children	30.9	31.0	30.9	3.2	4.7	3.5	***
She burns the food	18.9	21.9	20.4	31.4	26.0	30.1	***
n (unweighted)	1,102	1,105	2,207	1,134	1,067	2,201	

As outlined in Table 50, women's rate of membership in groups is growing, but still limited in absolute level. The percentage of women that report attending *shalish* meetings grew from around one percent to 10.8 percent. Also, the percentage of women participating in women's groups grew from close to zero to 3.1 percent – a positive but still very small change.

Table 50: Membership in women's groups, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of women with memberships in mother's group	0.4	0.4	0.4	11.8	6.8	10.7	***
n (unweighted)	1,110	921	2,031	1,134	1067	2,201	
Percent of women with memberships in women's group	0.5	0.5	0.5	3.3	2.6	3.1	***
n (unweighted)	1,188	1,016	2,204	1,134	1,067	2,201	
Percent of women attending *shalish* meeting	1.0	1.3	1.1	12.6	4.7	10.8	***
n (unweighted)	1,188	1,016	2,204	1,134	1,067	2,201	

4.0 Strategic Objective 2: Health of pregnant and lactating women and children under 5 (with particular attention to children under 2) improved

The nutrition and health component of PROSHAR sought to contribute to improvements in antenatal care (ANC), maternal and infant feeding practices, and child health care related to immunization and treatment of diarrhea and ARI. This section discusses the survey findings relative to the SO2 indicators, describing changes in knowledge and practices in health-seeking behaviors.

4.1 Potable Water

As shown in Table 51, for the sample as a whole, household access to improved water sources improved by 4.1 percentage points between baseline and endline; this result was highly significant (p<.001). Most notably, in the overall sample hand tube access saw a highly significant increase of 15.2 percentage points: while access decreased on the coast, it increased by 14.3 percentage points in inland areas. There are interesting changes in certain types of access to potable water that are not consistent with the overall trend toward improved access: there were a statistically significant decrease of 11.4 percentage points in access to pond sand filters, and access to deep tube wells in inland areas decreased by 12.2 percentage points, though this change was not significant.

Table 51: Primary water sources, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of households with access to an improved water source*	97.7	75.3	87.4	96.1	76.7	91.5	***
Primary water source							
Deep tube well	49.7	1.4	27.4	37.5	3.3	29.3	
Pond sand filter	0.3	55.2	25.6	1.0	56.3	28.2	*
Hand tube	35.3	14.0	25.4	49.6	11.7	40.6	***
Pond	2.3	23.5	12.1	3.9	22.3	8.3	***
Shallow tube well	12.4	2.7	7.9	6.4	0.9	5.1	***
Rainwater harvesting	0.0	1.6	0.7	0.3	3.4	1.0	
River/canal	0.0	1.1	0.5	0.0	1.1	0.3	
Piped water	0.0	0.4	0.2	0.6	0.2	0.5	
Other	0.0	0.2	0.1	0.8	0.9	0.8	**
N	1,189	1,018	2,207	1,179	1,140	2,319	

At endline, almost three-quarters of sampled households had tested their tube wells for contamination compared to 65.2 percent at baseline (Table 52). Another positive finding is that of those households that tested, only 5.5 percent found the tube well to be contaminated at endline, a reduction from 10.7 percent at baseline. Of the contaminated wells, a very high percentage (86.8 percent) in the endline sample contained arsenic, though the numbers are very small relative to the overall sample. It is notable that the absolute number of arsenic wells was nearly halved, from 93 at baseline to 46 at endline. The data indicate that arsenic contamination is a much greater problem in inland areas.

Table 52: Tube well testing and contamination, by region

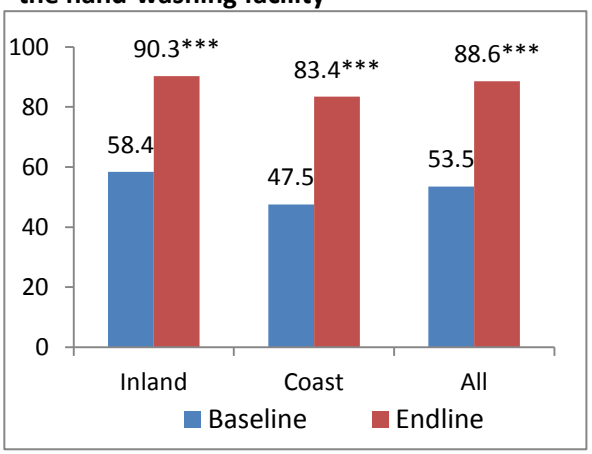
Indicator	Baseline	Endline	Sig.

	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of households with tube wells as their primary water source that have had them tested	63.7	74.5	65.2	70.5	81.2	71.0	**
n (unweighted)	1,157	184	1,341	1,102	181	1,283	
Percent of tested tube wells that are contaminated	11.8	5.1	10.7	5.8	0.7	5.5	**
n (unweighted)	746	138	884	777	147	924	
Percent of contaminated tube wells that are marked red (arsenic-contaminated)	46.5	42.9	45.7	86.7	100.0	86.8	**
n (unweighted)	86	7	93	45	1	46	

IPTT Indicator OC25: ***% of households with soap and water at a hand washing station commonly used by family members.***

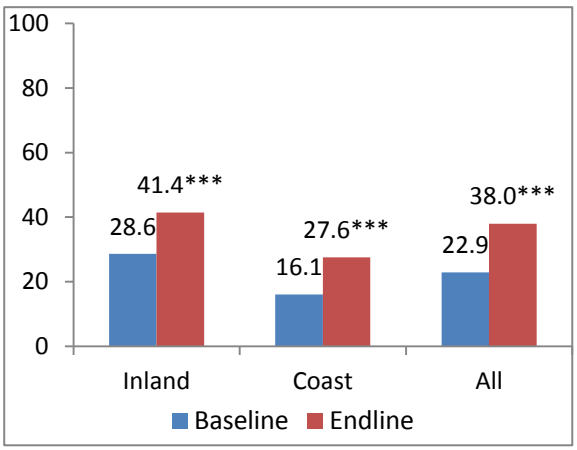
Error! Reference source not found. and **Error! Reference source not found.** provide data regarding the availability of water and a cleaning agent at hand-washing facilities. Overall, there was a significant improvement (p<.001) in the percentage of households with access to water at their hand-washing facility, from 53.5 percent to 88.6 percent: an increase of 35.1 percentage points.

Figure 17: Percent of households with water at the hand-washing facility



For both regions, the availability of a cleaning agent lags behind: at endline, it is still more common to have access to water alone compared to both water and a cleaning agent. Nevertheless, the data indicate an improvement at endline, with 38 percent of households having access to both, compared to just 22.9 percent at baseline.

Figure 18: Percent of households with cleaning agent and water at the hand-washing facility



Convenience of hand-washing facilities is presumed to encourage their use, and availability of cleaning agents is presumed to promote good hygiene. For this reason, the baseline and endline surveys included questions about the proximity of hand-washing facilities within or near the home, and about what kinds of cleaning agents, if any, were available.

The data shown in Table 53 suggest improvements in the convenience of hand-washing facilities to critical spaces for hygienic practices – near toilets and kitchen areas. At baseline, only 6.5 percent of all households were able to wash hands within 10 paces of the kitchen or cooking space; at endline, this increased to 17.6 percent. The percentage of households with hand washing facilities near toilets around one-third at both baseline and endline, though it was slightly higher at endline. Coastal areas showed a notable change in this respect, with a 13.3 percentage points increase from baseline to endline (of coastal households, 23.3 percent at baseline versus 36.8 percent at endline were able to wash hands near

the toilet).Conversely, but consistent with this positive trend, the percentage of overall households whose hand-washing facilities were located farther away from critical spaces (elsewhere in the home or yard, or outside the yard), decreased (7 and 13.9 percentage points, respectively). At the same time, at endline, still 12.3 percent of households had no specific place for washing hands, compared to 5.7 percent at baseline; the data indicate that this was more of a problem in inland areas. The data show that cleaning agents, especially bar soap, were far more available at endline, with over half of endline households having some kind cleaning agent available at the hand-washing facility compared to less than a third at baseline.

Table 53: Hand-washing facilities, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Location of hand-washing facilities							
Inside/within 10 paces of the toilet facilities	35.9	23.3	30.1	32.3	36.8	33.4	*
Inside/within 10 paces of the kitchen/cooking place	6.6	6.4	6.5	21.2	6.3	17.6	***
Elsewhere in home or yard	29.8	31.1	30.4	21.1	30.8	23.4	***
Outside yard	22.5	32.9	27.2	12.0	17.5	13.3	***
No specific place	5.2	6.3	5.7	13.5	8.6	12.3	***
No permission to see	0.0	0.1	0.0	0.0	0.0	0.0	
n (unweighted)	**1,189**	**1,007**	**2,196**	**1,158**	**1,130**	**2,288**	
Percent of household with cleaning agent at the hand-washing facility							
None	63.8	80.0	71.2	43.0	54.3	45.7	***
Bar soap	17.7	6.3	12.5	43.9	30.7	40.8	***
Detergent (powder/liquid/paste)	0.3	0.1	0.2	4.8	3.8	4.5	***
Liquid soap (including shampoo)	0.0	0.0	0.0	3.2	1.3	2.7	
Ash or clay	18.2	13.7	16.1	15.7	14.0	15.3	
n (unweighted)	**1,127**	**943**	**2,070**	**1,002**	**1033**	**2,035**	

Mothers and primary caregivers play an important role in child care and household food preparation, hence the project was interested to measure changes in their hygienic practices. The endline data show dramatic improvements in handwashing compared to 31.9 percent at baseline, 84.7 percent (Figure 19) of all mothers/caregivers reported washing their hands at three or more “critical times” defined as before eating, after defecation, after cleaning a child that has defecated, before cooking/preparing food, and before breastfeeding or feeding a child. At endline, 20.7 percent of all mothers/caregivers reported washing their hands at all five critical times (Figure 20), a highly significant improvement given that no households in either inland or coastal regions had met this standard at baseline. Table 54 provides detailed data on specific hand washing practices: it shows that the largest change, in terms of percentage point increase, was in the prevalence of washing hands before preparing food: 37.6 of all households at baseline compared to 67.8 percent at endline, an increase of 30.2 percentage points.

Figure 19: Percent of mothers/caregivers washing hands at three of more critical times, by region

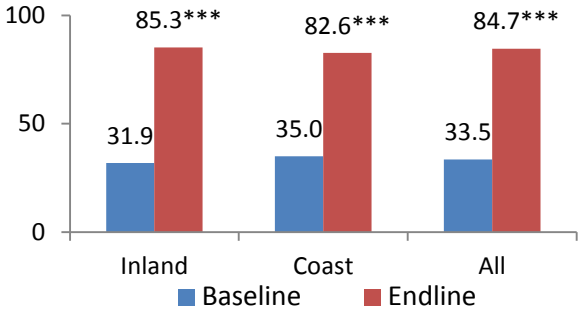


Figure 20: Percent of mothers/caregivers washing hands at all five critical times, by region

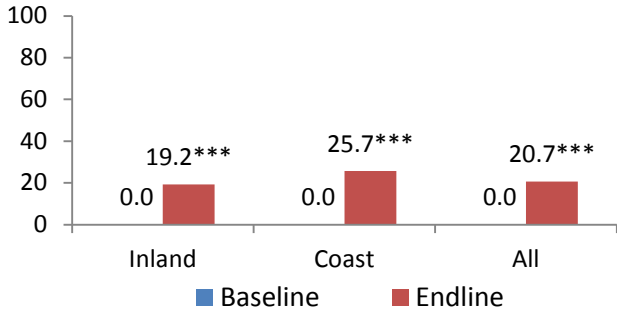


Table 54: Caregiver hand-washing practices, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Self-reported times of hand-washing							
Before eating*	89.2	91.4	90.3	98.1	97.2	97.9	***
After defecation/urination*	87.3	90.3	88.8	90.4	79.2	87.8	
After eating	65.3	62.9	64.1	83.3	74.3	81.3	***
When my hands are dirty	52.1	56.9	54.6	39.7	34.0	38.4	***
After cleaning a child that has defecated*	53.1	49.8	51.4	53.2	60.4	54.9	
Before cooking or preparing food*	36.2	39.0	37.6	68.6	65.3	67.8	***
Before praying	19.2	23.6	21.5	5.8	18.1	8.6	***
After cleaning the toilet or potty	20.7	15.0	17.7	35.3	42.4	36.9	***
Before breastfeeding or feeding a child*	8.0	6.0	7.0	49.4	59.0	51.6	***
Other	0.0	0.4	0.2	0.6	0.0	0.5	
n (unweighted)	230	246	476	156	144	300	

** Indicates a critical time*

Access to toilets was already nearly universal at baseline, ranging from 97.3 to 97.7 percent of households (Figure 21). This improved by about one percentage point for both inland and coastal regions. Table 55 provides a breakdown of the types of toilet facilities accessed by sampled households. The majority of the sample at both measurement times used ring slab/offset latrines, and there was an improvement in terms of the frequency of broken seals, especially on the coast. Interestingly, the percentage of households with ring slab toilets with unbroken seals decreased inland, while it increased on the coast. The second-most-common type of toilet was a covered pit latrine, used by 15.2 percent of endline households compared to just 3.2 percent at baseline.

Figure 21: Percent of households with access to toilet facility

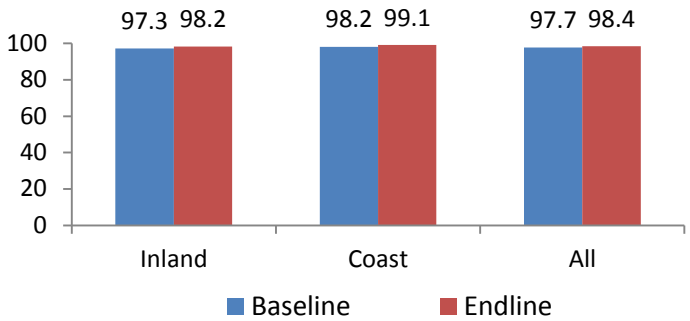


Table 55: Access to toilet facilities and type by, region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Toilet facility used:							
Ring slab/offset latrine (seal unbroken)	33.5	24.6	29.4	21.6	36.2	25.1	**
Ring slab/offset latrine (seal broken)	49.8	64.7	56.7	47.9	39.3	45.9	***
Pit latrine (covered)	2.9	3.7	3.2	16.7	10.7	15.2	***
Pit latrine (uncovered)	2.2	2.4	2.3	2.8	5.1	3.3	*
Septic latrine	7.8	1.5	4.9	8.2	4.9	7.4	**
Hanging/open latrine	2.1	2.6	2.3	1.5	2.7	1.8	
Locally adopted hygienic latrine	1.8	0.5	1.2	1.4	1.1	1.3	
n (unweighted)	1,156	999	2,155	1,158	1130	2,288	

Table 56 provides data on toilet use and functioning. While nearly all observed latrines at both baseline and endline showed signs that they were being used, the data indicate that functionality decreased in both inland and coastal areas, and overall from close to universal functioning (94.6 percent) at baseline to just over one-third functioning (76.4 percent) at endline. This conflicts a bit with the data that show improvements in effective water seals, so it may be that the problems lie with some other component. In terms of hygienic practices, the data indicate improvements in cleanliness, with 69.1 percent of latrines having a clean surrounding area compared to just 35.7 percent at baseline.

Table 56: Toilet cleanliness and functioning, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of HHs allowing observation of latrine	100.0	99.1	99.6	100	100	100	**
n (unweighted)	1,155	997	2,152	1,158	1130	2,288	
Percent of latrines that are functioning	95.3	93.7	94.6	77.3	73.7	76.4	***
n (unweighted)	1,154	989	2,143	1,158	1130	2,288	
Percent of latrines that show signs of use	99.2	99.4	99.3	97.2	94.5	96.5	***
n (unweighted)	1,154	987	2,141	1,158	1130	2,288	
Percent of latrines with a clean surrounding area	41.9	28.4	35.7	71.0	63.1	69.1	***
n (unweighted)	1,153	986	2,139	1,158	1130	2,288	
Percent of latrines with unbroken water seal	49.1	30.0	40.3	60.1	45.1	56.5	***
n (unweighted)	1,155	987	2,142	1,158	1130	2,288	

Both surveys collected data on how households dispose of child feces, another important indicator of hygiene practices. When children are allowed to openly defecate, the chance of disease transmission increases.[27]

Table 57 presents the data regarding feces disposal of children age 0-23 months old. They show improvements in the percentage of children using the toilet (27 percent at endline versus 14.9 at baseline); this positive trend is consistent with the finding that a smaller percentage of children

[27] Hernandez, Orlando and Tobias, Scott (2010). *Access and behavioral outcomes indicators for water, sanitation, and hygiene*. USAID Hygiene Improvement Project, Academy for Educational Development.

defecate in the house or yard (21.8 percent at endline versus 43.7 percent at baseline). Similarly, there was a highly significant (p<.001) reduction in the percentage of households that disposed of feces in the bush, from 42.1 percent at baseline to 18.9 percent at endline. The data also show that more households are using toilets for feces disposal, and in fact, this was the most common practice for feces disposal at endline (30.3 of households); by contrast, at baseline, throwing feces into the bush was the most common practice, so this is a positive behavior change. However, at endline, a larger percentage of households are throwing feces into waterways (24.7 percent versus just 14.9 percent at baseline), a result significant at the p<.01 level. For households that "washed or rinsed away" feces, the data suggest improved hygienic practices because a far lower percentage are throwing feces into waterways (38.2 percent at endline versus 60.2 percent at baseline), and a far higher percentage are disposing of feces in toilets (23.6 percent at endline versus 3.6 at baseline).

Table 57: Disposal of child's feces by region

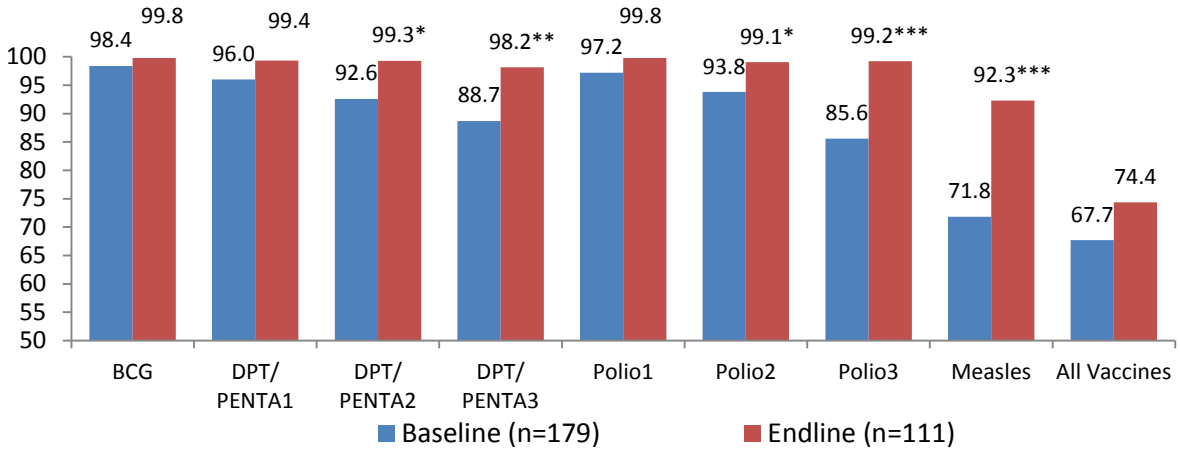
Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Location of child's last defecation							
Went in house/yard	40.9	46.3	43.7	22.9	18.2	21.8	***
Went in his/her clothes	35.2	32.5	33.8	43.3	43.4	43.3	**
Used potty	14.3	15.4	14.9	26.8	28.0	27.0	***
Went outside of house/yard	5.2	4.5	4.8	5.7	6.3	5.9	
Used latrine	3.9	1.2	2.5	1.3	3.5	1.8	
Used washable diaper	0.4	0.0	0.2	0.0	0.7	0.2	
N	230	246	476	157	143	300	
Location of feces disposal (for last defecation)							
Outside of yard (thrown away in bush/outside of house)	43.7	40.7	42.1	18.7	19.6	18.9	***
Dropped into toilet facility	15.3	27.2	21.5	29.0	34.8	30.3	*
Washed or rinsed away	18.3	16.3	17.3	20.0	21.7	20.4	
Thrown into waterway	16.6	13.4	14.9	26.5	18.8	24.7	**
Buried	3.5	1.2	2.3	0.6	1.4	0.8	
In sink or tub	1.7	0.4	1.1	1.3	0.7	1.2	
Put into container for trash	0.4	0.8	0.6	0.6	0.7	0.7	
In yard	0.4	0.0	0.2	0.0	1.4	0.3	
N	160	160	320	155	138	293	
If "washed or rinsed away", location of water disposal							
Thrown into waterway	54.8	65.9	60.2	38.7	36.7	38.2	**
Outside of yard	42.9	26.8	34.9	35.5	43.3	37.4	
Dropped into toilet facility	2.4	4.9	3.6	25.8	16.7	23.6	***
In yard	0.0	2.4	1.2	0.0	0.0	0.0	
Put into container for trash	0.0	0.0	0.0	0.0	3.3	0.8	
N	42	41	83	31	30	61	

4.3 Child Vaccination and Illness

4.3.1 Vaccination

Child immunization is essential to reducing child vulnerability to preventable diseases such as tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis, and measles. The World Health Organization recommends that full vaccination occur by the time a child is one year old.[28] In order to interpret the following figures on vaccination, it is necessary to explain a change that affected the collection, analysis, and presentation of data on certain vaccinations. The baseline survey collected data on DPT 1, 2, and 3 vaccination (among other vaccinations, which are also reported below). DPT is for diphtheria, pertussis (whooping cough), and tetanus. Recently the Government of Bangladesh started pentavalent vaccination in most areas. Pentavalent vaccination combines five individual vaccines: the three covered by DPT, plus haemophilus influenza type B and hepatitis B. The endline survey collected data on DPT and added pentavalent vaccination, which was not collected at baseline but is relevant to comparing vaccination rates for the three diseases the two combination vaccines have in common (diphtheria, pertussis, and tetanus.) The data presented as "DPT/PENTA" in Figure 22 and Figure 23 indicate DPT vaccination at baseline, and DPT or pentavalent vaccine at endline, the comparable component vaccines from baseline to endline being diphtheria, pertussis, and tetanus; these figures also show the data for BCG, polio, measles, and all vaccines. Figure 22 presents the data for children under two years old who received vaccinations within the WFO standard of before the first birthday, while Figure 23 shows data for under-twos who were vaccinated sometime between birth and the second birthday. The data indicate an improvement not only in the percentage of children receiving all vaccines before age two (an increase from 73.4 percent of the sample at baseline to 82.5 percent at endline) (Figure 23), but in the percentage who received all vaccinations per the WHO standard (67.7 percent at baseline compared to 74.4 percent at endline). Compliance with the recommended vaccinations and schedule improved for all vaccine types, with the most notable improvement for measles vaccinations in the first year: 92.3 percent of

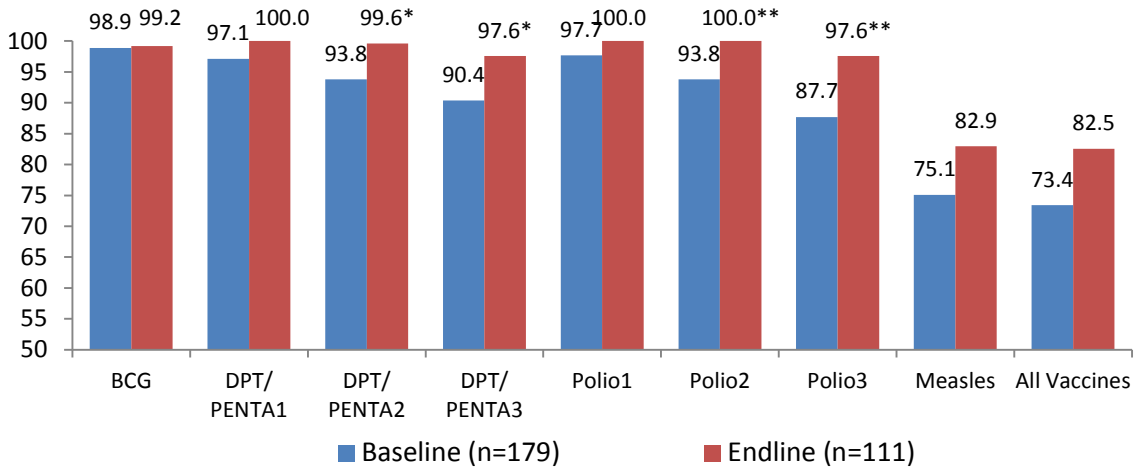
Figure 22: Child immunizations (before reaching first birthday) for children age 12-23 months, by survey round



under-twos at baseline compared to 71.8 at endline, a difference of 20.5 percentage points.

[28] NIPORT (National Institute of Population Research and Training), Mitra and Associates, and Macro International (2009). *Bangladesh Demographic and Health Survey 2007.* National Institute of Population Research and Training, Mitra and Associates, and Macro International, Dhaka, Bangladesh and Calverton, Maryland, USA.

Figure 23: Child immunizations (anytime) for children age 12-23 months, by survey round



4.3.2 Childhood illness

IPTT Indicator OC21: ***Percent of children 6-59 months with diarrhea treated with Oral Rehydration Therapy (ORT)***
IPTT Indicator OC23: ***Percent of children aged 6-23 months of age with diarrhea continuously fed during illness***

The baseline and endline surveys collected and analyzed data on diarrhea treatment for children 0-23 months of age. The IPTT was revised in 2013 to include indicators for children 6-23 months and 6-59 months; therefore the endline survey expanded data collection and analysis to include diarrhea indicators for children 24-59 months. Note that the sample sizes for the diarrhea-related indicators for children 0-23 months are very small, ranging from 24 to 49, depending on the specific indicator (for most the endline n is just 24 or 25), and thus insufficient to allow a generalizable analysis.

Results presented in Table 58 show there is an increase in diarrheal prevalence from 8.0 percent at baseline to 10.6 percent at endline among the children 0-23 months. All of the breastfeeding mothers responded that their children with diarrhea continued breastfeeding. There is a decrease both in providing more or same amount of drinks and foods. However, offsetting these decreases, there was a significant increase in provision packet saline (5.9 percent at baseline to 54.9 percent at endline) as treatment for the children with diarrhea. Overall, children 6-59 months with diarrhea treated with ORT has increased from 17.9 at baseline to 27.4 percent at endline. Percent use of ORT is two-fold higher (41.7 percent) than in inland (23.1 percent).

Table 58: Diarrhea prevalence among children 0-23 months and care seeking practices by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of children age 0-23 months suffering from diarrhea in the 2 weeks prior to the survey	5.7	10.2	8.0	10.3	11.4	10.6	
n (unweighted)	229	221	437	126	105	231	
Caring practices for children afflicted with diarrhea							
Amount given to child to drink (Percent)							
Less	--	--	28.9	75.0	58.3	70.9	**
Same	--	--	53.2	16.7	25.0	18.7	**
More	--	--	17.9	8.3	16.7	10.4	
N			38	12	12	24	

Amount given to child to eat (Percent)							
Less	--	--	41.9	84.6	63.6	80.1	**
Same	--	--	45.5	7.7	36.4	13.9	*
More	--	--	12.6	7.7	0.0	6.0	
N			38	13	11	24	
Percent of breastfed children that continued breastfeeding	--	--	97.4	100.0	100.0	100.0	
n (unweighted)	--	--	437	126	105	231	
Diarrhea treatment provided (Percent)							
Packet saline	--	--	5.9	53.8	58.3	54.9	***
Pill/capsule/syrup	--	--	44.3	53.8	58.3	54.9	
Plain drinking water	--	--	45.9	46.2	25.0	41.3	
Nothing	--	--	33.3	0.0	16.7	3.8	**
Home-made (sugar/salt) saline	--	--	17.9	7.7	8.3	7.8	
n (unweighted)			38	13	12	25	
Percent of children 6-59 months with diarrhea treated with Oral Rehydration Therapy (ORT)	--	--	17.9	23.1	41.7	27.4	
n (unweighted)	--	--	38	13	12	25	

IPTT Indicator OC24: ***Percent of children 0-23 months who had symptoms of Acute Respiratory Infection (ARI) that sought advice or treatment from trained health care provider***

ARI is often characterized by a cough with rapid or difficult breathing and a problem in the chest or in the chest with a blocked nose.

The prevalence of ARI among children 0-23 months in last 2 weeks of the survey has increased from 8.2 percent at baseline to 15.4 percent at endline (Table 59). The percent of children with ARI whose caregivers sought treatment has decreased from 94.9 percent at baseline to 87.4 percent at endline. There is a significant increase in seeking treatment or advice from a trained health care provider has increased from 37.0 percent at baseline to 81.1 percent at endline.

Table 59: Acute respiratory infection prevalence and treatment by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of children age 0-23 months suffering from suspected ARI in the two weeks prior to the survey	7.9	8.5	8.2	14.6	18.1	15.4	**
n (unweighted)	228	246	474	158	144	302	
Percent of afflicted children whose caregivers sought treatment	--	--	94.9	91.3	76.9	87.4	
n (unweighted)			40	23	26	49	
Percent of children 0-23 months who had symptoms of Acute Respiratory Infection (ARI) that sought advice or treatment from trained health care provider[a]	--	--	37.0	82.6	76.9	81.1	***
n (unweighted)			40	23	26	49	
Location of consultation							
Private physician	--	--	24.2	23.8	10.0	20.6	
Dispensary	--	--	18.4	19.0	45.0	25.2	

Hospital (private, public)	--	--	17.6	9.5	50.0	19.1
VHW	--	--	16.0	9.5	10.0	9.6
Other	--	--	10.7	4.8	0.0	3.6
Clinic (NGO, private, gov't)	--	--	10.2	23.8	5.0	19.4
Health center	--	--	2.9	4.8	5.0	4.8
n (unweighted)			38	21	20	41

a. Trained providers include hospitals, VHW, clinic and health centers

4.4 ANTHROPOMETRICS

Reducing malnutrition among children under five years of age is a key goal of PROSHAR, and measuring changes is a prime focus for evaluating the impact of the project. To this end, data were collected on the height, weight and age of all children under five years of age during the baseline and the endline surveys. Child malnutrition is primarily measured using three indicators, stunting, wasting and underweight.

The first, stunting, is a result of inadequate growth of the fetus and child and results in a failure to achieve expected length compared to a healthy, well-nourished child of the same age. It is an indicator of past growth failure and associated with long-term factors including chronic insufficient protein and energy intake, frequent infection, and sustained inappropriate feeding practices. It is calculated by first combining height and age data to compute a child's height-for-age z-score (HAZ). If the z-score is less than -2 standard deviations below the median of an adequately nourished reference population, the child is considered to be stunted.

The second measure of malnutrition is wasting, or weight-for-height (WHZ). If the z-score is less than -2 standard deviations below the median of an adequately nourished reference population, the child is considered to be wasted, suffering from current or acute undernutrition resulting from failure to gain weight or actual weight loss.

The third measure is underweight or weight-for-age (WAZ), which identifies children who are of inadequate weight compared to a healthy, well-nourished child of the same age. It is a measure that reflects both stunting and wasting, reflecting both past (chronic) and/or acute undernutrition.[29]

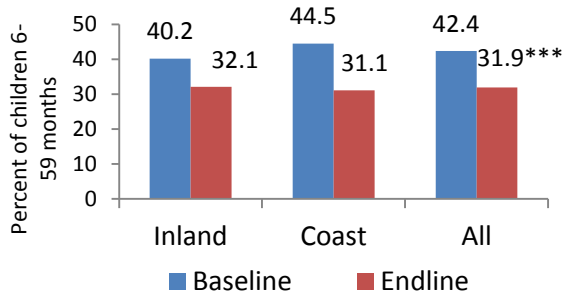
The reference population for calculating the malnutrition prevalence reported here is that used to develop the WHO 2006 child growth standards. These standards are based on a multi-country study of children with optimal infant and child feeding practices and living in households with minimal health, environmental, and economic constraints on growth.[30] Note that prevalence of stunting and wasting are only calculated for all children 6-59 months and underweight for all children 0-59 months following USAID indicator guidelines and baseline analysis.

IPTT Indicator IM4: *Prevalence of stunted children under five years of age*

Figure 24: Percent children of age 6-59 months stunted by region

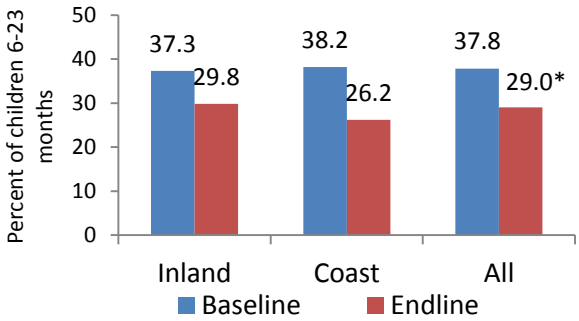
[29] See Cogill, Bruce (2003). *Anthropometric indicators measurement guide.* Food and Nutrition Technical Assistance Project, Academy for Educational Development, Washington, D.C.

[30] de Onis, Mercedes, Cutberto Garza, Cesar G. Victora, Maharaj K. Bhan, and Kaare R. Norum, guest editors (2004). The WHO Multicentre Growth Reference Study (MGRS): Rationale, planning, and implementation. Food and Nutrition Bulletin 25(supplement 1):S3-S84.



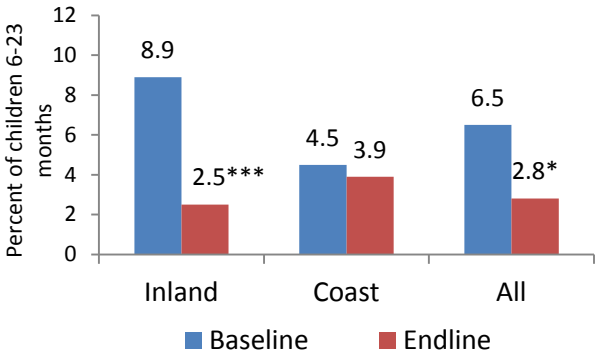
There has been significant reduction in the stunting rate in the PROSHAR intervention area over the five years of project implementation. The stunting rate among children 6-59 months has decreased by 42.5 percent over the five years, to 31.9 percent at endline (**Error! Reference source not found.**), while the decrease rate is little lower among children 6-23 months, from 37.8 at baseline to 29.0 percent at endline (**Error! Reference source not found.**). The reduction in stunting rates were significantly higher in Coast communities than the Inland communities.

Figure 25: Percent children of age 6-23 months stunted by region



Overall, the wasting rate shows significant improvements in Global Acute Malnutrition (GAM). The rate has decreased from 9.1 percent in baseline to 4.9 percent in endline among children 6-59 months (Figure 27). Significant reduction was found in the inland communities while the reduction rate is smaller among the children from coastal communities. Wasting is an indicator of short-term nutritional status and is strongly affected by the current availability of adequate food at the household level. The reduction in wasting rates indicates that Inland communities had less food insecurity than the Coast region.

Figure 26: Percent children of age 6-23 months wasted by region



IPTT Indicator IM5: *Prevalence of underweight children under five years of age*

The underweight rate measures the combination of both past chronic and current acute malnutrition and it reflects the changes in measured in both the stunting and wasting indicators. The project has surpassed the LOA target (24.4 percent LOA target vs 19.0 percent in endline) on this composite indicatorFigure 29) (Figure 29). Children of less than five years in the inland communities were found 12 percentage point reduction (29.5 percent at baseline to 17.5 percent at endline) while it was 9.2-percentage point (33.2 percent at baseline to 24.0 percent at endline) in the coastal communities (Figure 29).

Figure 27: Percent children of age 6-59 months wasted (GAM) by region

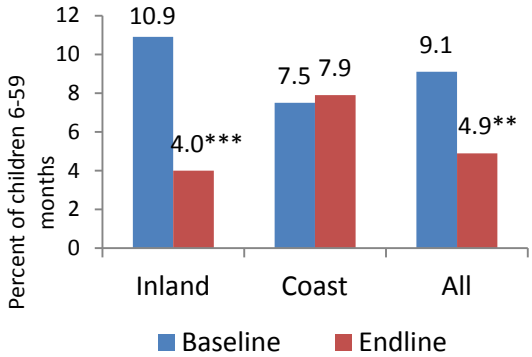


Figure 29: Percent children of age 0-23 months underweight by region

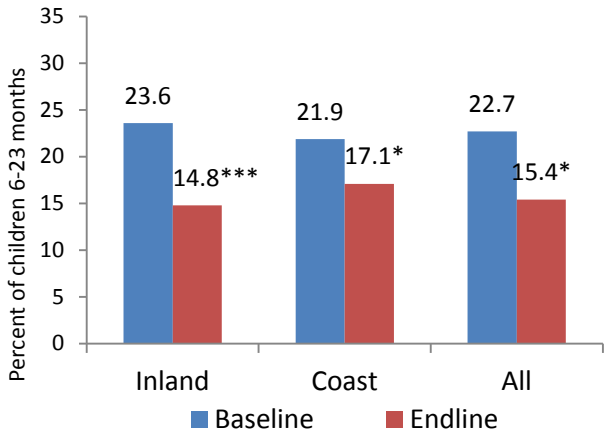
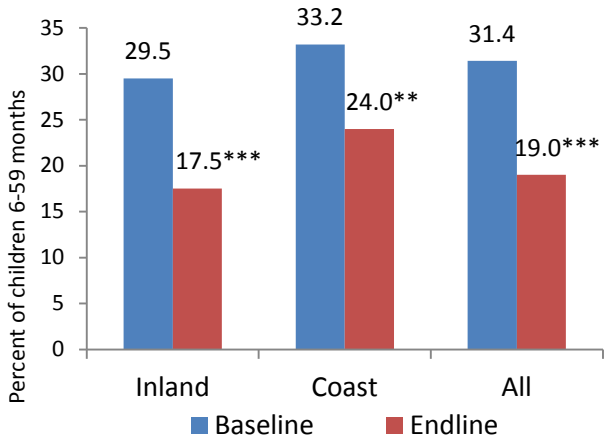


Figure 28: Percent children of age 0-59 months underweight by region



Anthropometric indicators by sex

The gender disaggregated data provided in Table 60, shows that the reduction in malnutrition rate is higher among female children than the male children for all three anthropometric indicators. The reduction was found in female children 12.7-percentage points in stunting, 5.0-percentage points in wasting and 12.9-percentage points in underweight while the reduction rate is 8.3, 3.3 and 11.6 respectively among the male children.

Table 60: Anthropometric indicators, by sex

Indicator	Baseline			Endline		
	Boy	Girl	**All**	Boy	Girl	**All**
Percent children of age 6-59 months stunted by sex	39.5	45.3	42.4	31.2**	32.6***	31.9***
n	517	539	1056	352	325	677
Percent children of age 6-59 months wasted by sex	8.6	9.6	9.1	5.3	4.6**	4.9**
n	517	539	1056	352	325	677
Percent children of age 0-59 months underweight by sex	29.3	33.4	31.4	17.7***	20.5***	19.0***
n	572	598	1170	385	369	754

4.5 Infant and Young Child Feeding Practices

Child nutritional status is directly related to IYCF practices. Using the indicators created by the WHO (2008), IYCF practices were measured in PROSHAR project areas. The indicators of interest include: children breastfed within first hour of birth, exclusive breastfeeding among children under 6 months old, indicators measuring the complementary feeding practices for children age 6-23 months (minimum acceptable dietary diversity, an indicator of dietary quality, a minimum acceptable meal frequency for solid, semi-solid or soft foods, and a minimal acceptable diet).[31] The last two child feeding indicators presented in this section are prevalence of iron and Vitamin A supplementations.

[31] The definitions and calculation methods for these first four indicators are given in WHO (2008). *Indicators for assessing infant and young child feeding practices. Part I: Definitions.* World Health Organization, Geneva.

IPTT Indicator OC13: ***Prevalence of exclusive breastfeeding of children under six months of age***

Figure 31 Figure 31 and Figure 30 show Figure 30 significant increases in early initiation of breast milk and exclusive breast feeding practices over the course of the project. The endline data shows that more than 80 percent of the mothers of children 0-23 months of age in the coastal communities responded that they started breastfeeding of their toddlers within first hour of birth while 72 percent of mothers responded similarly in the inland communitiesFigure 30. Overall, the early initiation of exclusive breastfeeding has increased substantially, from 38.2 percent at baseline to 74.2 percent at endlineFigure 31.

Mothers of children 0-5 months in the inland communities are more likely to practice exclusive breastfeeding (80.0 percent) than mothers in the coastal communities (58.1 percent). For the project area as a whole, exclusive breastfeeding has increased significantly from 41.4 percent at baseline to 73.8 percent at endline, which is far above the project LOA target of 60 percent.

Figure 31: Percent of children age 0-5 months exclusively breastfed

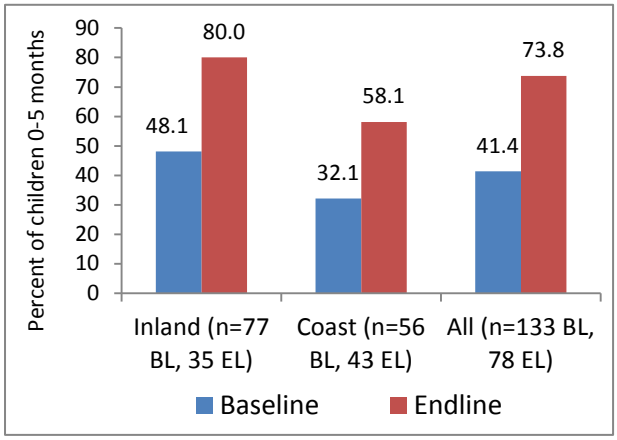
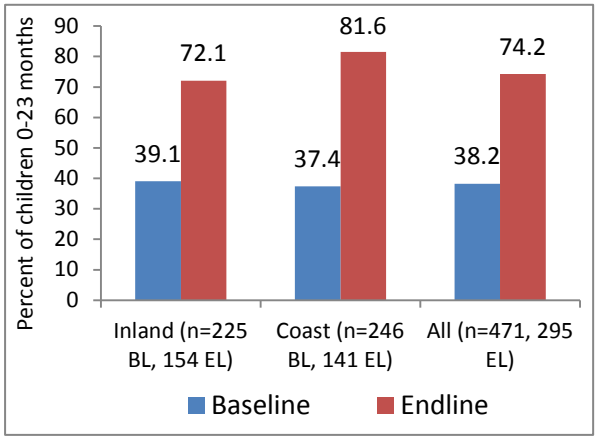
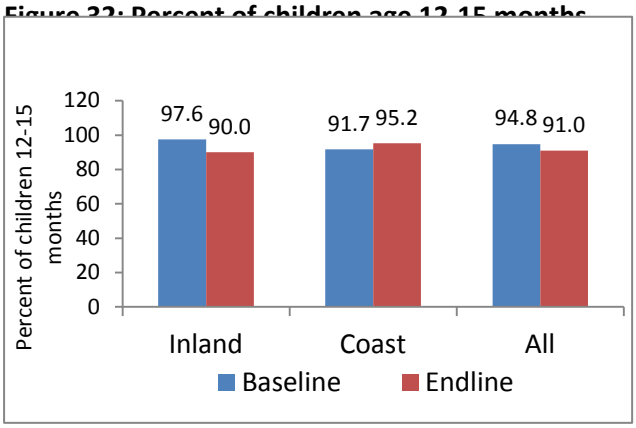


Figure 30: Percent of children age 0-23 months breastfed within first hour of birth



Most of the mothers of children 12-15 months in both inland and coastal communities responded that they continued breastfeeding of their toddlers (Figure 32). The Figure 32 shows that the continuation rate of breastfeeding has slightly decreased in the inland communities from 97.6 percent at baseline to 90.0 percent while a slight increase was found in the coastal communities (91.7 percent at baseline to 95.2 percent at endline).

Figure 32: Percent of children age 12-15 months



and WHO (2008). *Indicators for assessing infant and young child feeding practices. Part II: Measurement.* World Health Organization, Geneva

IPTT Indicator OC20: ***Percent of children 6-23 months of age with appropriate infant and young feeding practices (Minimum Acceptable Diet)***

Complementary child feeding practices for children age 6-23 months, three standard indicators were measured: minimum dietary diversity, minimum meal frequency and minimum acceptable diet. The minimum dietary diversity indicator identifies whether a child has consumed at least four foods from the following seven food groups in the last 24 hours

- Grains, roots and tubers
- Legumes and nuts
- Dairy products (milk, yogurt and cheese)
- Flesh foods (meat, fish, poultry and liver/organ meats)
- Eggs
- Vitamin-A rich fruits and vegetables
- Other fruits and vegetables.
-

Figure 33: : Percent of children age 6-23 months with minimum dietary diversity

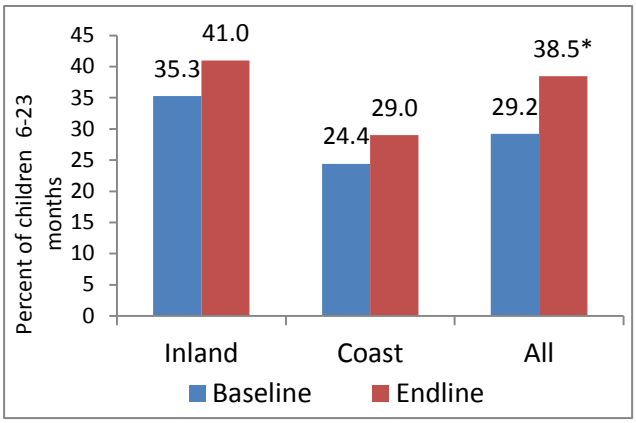


Figure 33 shows that the mothers/caregivers of children 6-23 months in Inland communities are providing more diversified diets to their toddlers than in the Coast communities. The percent of children 6-23 months with minimum acceptable diet diversity has increased from 35.3 percent at baseline to 41.0 percent in endline in the Inland communities and 24.4 percent to 29.0 percent in the Coast communities. Overall, the percent of children with minimally acceptable diet increased by 9.3, and this change is statistically significant.

The minimum meal frequency indicator is defined as the proportion of breastfed and non-breastfed children age 6-23 months who receive solid, semi-solid or soft foods the minimum number of times (2+ times for 6-8 months old breast fed children, 3+ times for breastfed children age 9-23 months and 4+ times for non-breastfed children).

Figure 35 shows that the overall minimum meal frequency among children 6-23 months has decreased from 56.2 percent from baseline to 51.8 percent at endline. The rate has decreased in

Figure 35: Percent of children age 6-23 months with minimum meal frequency

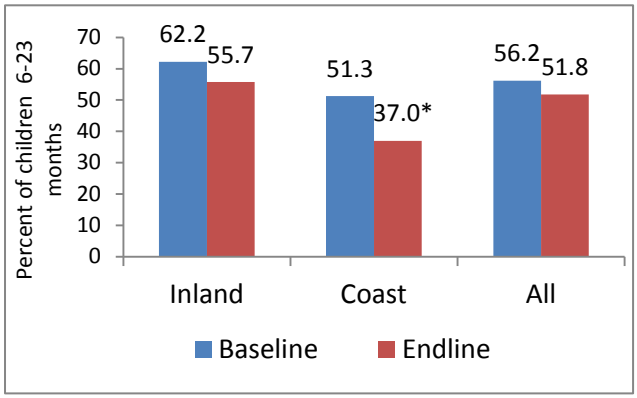
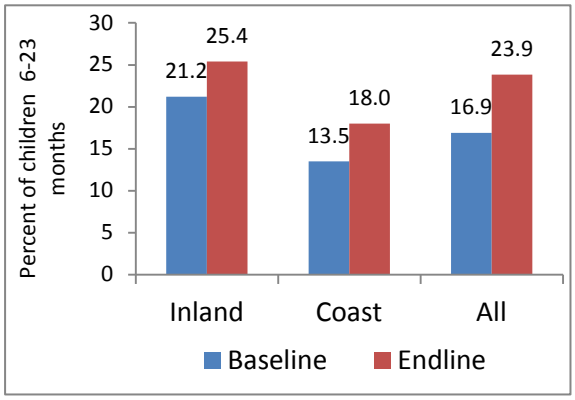


Figure 34: Percent of children age 6-23 months with minimum acceptable diet



both inland and coast communities but the reduction is significantly higher (14.3 percentage point)

in the coastal communities. An in-depth qualitative analysis would be useful for validating these findings.

Minimum Acceptable Diet (MAD) is a composite indicator of minimum diet diversity and minimum meal frequency. A child of age 6-23 month is considered to have a "minimum acceptable diet" if he or she has both a minimum dietary diversity and a minimum meal frequency.

Overall, the Figure 34 shows significant increase in the percent of children 6-23 with MAD from 16.9 percent at baseline to 23.9 percent at endline. The rate is slightly higher (4.5 percentage point) in coast than the inland (4.2 percentage points) (Figure 34).

4.6 Antenatal (ANC) and Postnatal Care (PNC)

4.6.1 Antenatal Care

PROSHAR is positioned to work with the existing health system to strengthen support to PLW and the baseline study sought to gain insight of current utilization of these services by mothers of children age 0-23 months.

Figure 36: Percent of mothers of children age 0-23 months obtaining any ANC by region

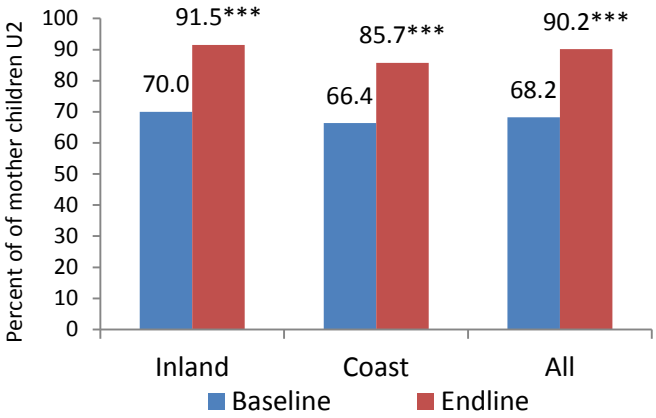


Figure 36 shows, overall, the utilization of ANC services by pregnant women has increased significantly from 68.2 percent at baseline to 90.2 percent at endline. The patterns of increase are similar between the Inland and Coast Regions.

In Table 61, the mothers in Inland communities are most likely to visit to the CHW (57.9 percent at endline) while the mothers in the Coast are to the doctors (64.2 percent at the endline). Overall, the mothers from both Inland and Coast communities are most likely to go the government health facilities. There is a decrease in using government hospital (35.9 percent at baseline to 27.9 percent at endline) but significant increase (9.5 percent at baseline to 21.0 percent endline) in other government health facilities (satellite clinics, community clinics, union health facilities, MCWC etc.). The increase of use of private hospital or clinic for ANC services was found both in inland and coast (overall, from 18.3 percent at baseline to 27.4 percent at endline)

Table 61: Antenatal care service provider and places by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of mother with ANC provider							
CHW	49.0	47.7	48.2	57.9	50.0	56.1	
Doctor	51.7	37.5	44.6	55.7	64.2	57.6	**
Nurse/midwife	10.1	22.2	16.3	15.0	13.3	14.6	
Other	1.3	1.7	1.5	2.1	4.2	2.6	
TBA	0.7	0.0	0.3	0.0	0.8	0.2	
Percent of mother with location of ANC services							
Government hospital	34.5	37.4	35.9	26.4	33.3	27.9	*
Other home	22.3	16.7	19.5	18.6	17.5	18.3	
Private hospital/clinic	21.6	14.9	18.3	28.6	23.3	27.4	**

Home	7.4	19.5	13.5	14.3	13.3	14.1	
Other private health facility	12.8	10.3	11.6	3.6	10.8	5.2	**
Other government health facility	11.5	7.5	9.5	22.1	16.7	21.0	***
Other	0.7	0.0	0.3	0.7	0.0	0.6	
NGO Facility	0.0	0.0	0.0	15.0	10.8	14.1	***
n	160	160	320	140	120	260	

Sufficient number of ANC visits is important not only for maternal health care but equally important for postnatal care (PNC), newborn care, immunization, child care and IYCF practices. The mothers with at least 3 to 4 ANC visits are assumed to adequately educated for PNC, newborn care, immunization and IYCF. Table 62 shows significant increase in the rate of both at least 3 ANC visits (32.3 Percent at baseline to 59.1 percent at endline) and at least 4 ANC visits (17.3 percent at baseline to 46.4 percent at endline). The increase rate of mothers receiving at least 4 ANC visits is equal (27.5 percentage point increase) is the same in Inland and Coast communities

Accurate detection of pregnancy in first trimester is difficult in the rural communities and providing ANC checkups is sometimes not useful in the first trimester of pregnancy. Conversely, a mother cannot get adequate care and proper education if she receives ANC in the third trimester. Table 56 shows there is significant increase in receiving ANC services in the second trimester (43.9 percent at baseline to 61.5 percent at endline) and decrease in third trimester (29.6 percent at base line to 10.6 at endline).

Table 62: **Number and timing of antenatal care visits by region**

Indicator	**Baseline**			**Endline**			**Sig.**
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of women with 3+ ANC visits	35.7	29.7	32.3	60.8	53.6	59.1	***
Percent of women with 4+ ANC visits	20.2	14.6	17.3	47.7	42.1	46.4	***
N	221	267	488	153	140	293	
Timing of ANC visits							
First trimester	25.3	26.9	26.1	25.7	35.8	27.9	
Second trimester	47.4	40.6	43.9	63.6	54.2	61.5	***
Third trimester	27.3	32.5	29.9	10.7	10.0	10.6	***
N	154	160	314	140	120	260	

Sufficient food intake and daytime rest is equally important for the maternal health and fetus development during pregnancy. Table 63 shows significant increase in taking more food (23.4 percent at baseline to 49.5 percent at baseline) and more daytime resting (29.4 percent as baseline to 70.9 percent at endline). The increase rate of food intake among the mothers in the inland communities (24.7 percentage point increase) was found significantly higher than the mothers in the coastal communities (14.1 percentage point increase). Daytime resting has increased significantly in both of the communities, which is slightly lower in the coastal communities (43.6 percentage point increase in inland vs 41.5 percentage point increase in coast).

Table 63: **Information on caring practices for mothers during pregnancy by region**

Indicator	**Baseline**			**Endline**			**Sig.**
	Inland	Coast	**All**	Inland	Coast	**All**	
Amount of food taken during pregnancy							
More	27.5	19.5	23.4	54.2	33.6	49.5	***
Less	29.7	43.6	36.8	22.9	43.6	27.6	**
Same	42.8	36.9	39.8	22.9	22.9	22.9	***
Amount of daytime rest taken during pregnancy							

More	31.6	27.4	29.4	75.2	56.4	70.9	***
Less	26.3	25.3	25.8	7.8	18.6	10.3	***
Same	42.1	47.3	44.8	17.0	25.0	18.8	***
N	229	241	470	153	140	293	

Vitamins and micro-nutrient supplementations are important during pregnancy and the post-partum period. A mother should be ensured post-partum vitamin A within six weeks after the delivery. The percentage of receiving post-partum vitamin A has increased from 34.6 percent at baseline to 57.3 percent at endline. The rates increased significantly among the mothers of children 0-23 months in both Inland and Coast. The increase rate is higher (30 percentage points) than the coast (12 percentage points).

Iron deficiency is a common problem in rural Bangladesh. Iron supplementation is equally important during the pregnancy (both mother and fetus) and after the delivery for the nutrition of the mothers. It was found that 74.3 percent mothers took iron/folic acid during their last pregnancy at endline which is a significant increase (35.9 percentage points) compared to the baseline figure 41.5 percent Table 64. There is an increase (53.3 percent at baseline to 70.6 percent at end line) of taking of iron/folic acid for 1-2 months during pregnancy while decrease both for 3-4 months and 5-6 months.

Table 64: Information on vitamin and minerals supplementation of mothers during pregnancy by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of mothers who took vitamin A within six weeks of delivery	28.8	40.1	34.6	58.8	52.1	57.3	***
Percent of mothers who took iron/folic acid during pregnancy	41.5	35.5	38.4	76.5	67.1	74.3	***
n	229	241	470	153	140	293	
Number of months taking folic acid							
1-2 months	55.2	51.2	53.3	71.8	66.0	70.6	***
3-4 months	30.2	33.7	31.9	28.2	34.0	29.4	
5-6 months	13.5	11.6	12.6	0.0	0.0	0.0	***
More than 6 months	1.0	3.5	2.2	0.0	0.0	0.0	*
n	96	86	182	117	94	211	

4.6.2 Delivery and postnatal care

Bangladesh has achieved significant reduction in the maternal mortality rate. However, the rate of deliveries assisted by trained and skilled service providers is still low. The PROSHAR project worked to educate mothers on proper delivery care and postnatal care (PNC) and linking to the quality service providers at the community level. Table 65 reveals that the percent of mothers whose last delivery was assisted by a trained health professional has increased significantly from 33.5 percent at baseline to 57.5 percent at endline. The increase rate is slightly higher in Inland than the Coast. The percent of deliveries assisted by nurse/midwife has from increased 22.7 at baseline to 37.3 percent at endline, by doctors from 17.6 at baseline to 39.3 percent at endline, CHW from 3.9 percent at baseline to 11.2 percent at endline. Conversely, assisted TBA has significantly decreased from 57.1 percent at baseline to 37.1 percent at endline. Assisted friends/relatives reduced slightly from 46.1 percent at baseline to 44.5 percent at endline. Mothers in Coast communities are most likely be assisted by TBA (54.3 percent) or friends/relatives (53.6 percent) while the mothers in the Inland are to the doctors (41.8 percent) at the endline.

Table 65: Child delivery practices for mothers of children under two years by region

Indicator	Baseline	Endline	Sig.

	Inland	Coast	All	Inland	Coast	All	
Percent of mothers whose last delivery was assisted by a trained health professional*	38.6	28.6	33.5	62.1	42.1	57.5	***
Delivery assistant							
TBA	50.0	63.7	57.1	33.3	54.3	38.1	***
Friend/relative	42.0	50.0	46.1	41.8	53.6	44.5	
Nurse/midwife	27.4	18.3	22.7	39.9	28.6	37.3	***
Doctor	24.1	11.5	17.6	41.8	30.7	39.3	***
CHW	1.9	5.7	3.9	12.4	7.1	11.2	***
Nobody	1.4	1.5	1.5	0.0	0.7	0.2	
Other	0.5	0.0	0.2	0.0	0.0	0.0	
N	229	241	470	153	140	293	

**Trained health professionals include doctors, nurses, midwives and CHWs*

Table 66 shows that, there is significant increase in mothers receiving any PNC , from 34.3 percent at baseline to 64.5 percent at endline. The percent of mothers obtaining PNC increased more in Inland communities than in Coast. Postnatal care service from both CHW and nurse/midwife has increased while there is slight increase in postnatal care from doctors.

Table 66: Postnatal care practices by region

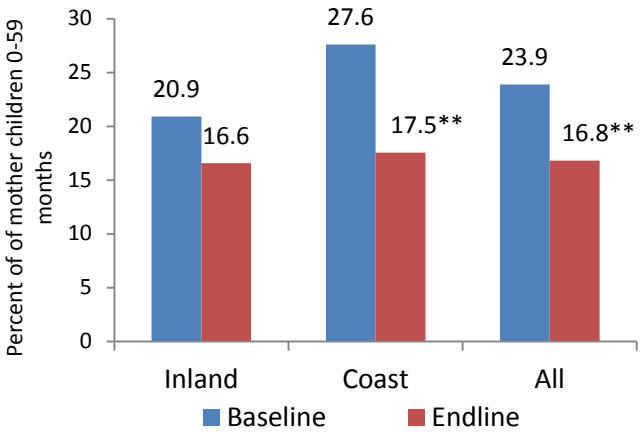
Indicator	Baseline			Endline			Sig.
	Inland	Coast	All	Inland	Coast	All	
Percent of mothers obtaining any PNC	32.5	36.0	34.3	67.3	55.0	64.5	***
N	228	242	470	153	140	293	
Source of PNC							
Doctor	59.8	53.3	56.3	61.2	53.2	59.6	
CHW	18.3	19.6	19.0	23.3	26.0	23.8	
Nurse/midwife	18.3	17.4	17.8	30.1	26.0	29.3	*
Other	2.4	4.3	3.4	1.9	2.6	2.1	
Friend/relative	0.0	4.3	2.3	1.9	0.0	1.6	
TBA	0.0	0.0	0.0	7.8	13.0	8.8	***
Nobody	1.2	1.1	1.1	0.0	0.0	0.0	
n	82	92	174	103	77	180	
Percent of women (who received any PNC) receiving PNC from qualified health professional within 2 days of childbirth	49.3	44.8	46.9	97.1	97.4	97.1	***
n	75	87	162	103	77	180	

4.7 FEMALE NUTRITIONAL STATUS AND FOOD CONSUMPTION

IPTT Indicator IM6: % chronic malnutrition (energy deficient) of ever-married women 15-49 (BMI < 18.5mm)

Data were collected on the weight and height of mother of children 0-59 months to gain an understanding of malnutrition among females of reproductive age. The data were used to calculate the percent of women who are underweight, often referred to as "chronically undernourished". A woman is defined to be underweight if her body mass index (BMI)

Figure 37: Percent of ever married women



(weight divided by height-squared) is less than 18.5.

Figure 37 shows there has been a significant decrease in women's underweight prevalence from 23.9 percent at baseline to 16.8 percent at endline. The underweight prevalence has decreased from 27.6 at baseline to 17.5 at endline among the women in the coast and from 20.9 at baseline to 16.6 percent at endline among the women in inland. The reduction rate was double in the coast region than inland region.

Consumption of food groups that are rich in protein, vitamin A and iron is essential for better nutrition of the women of reproductive age (15-49 years). The mothers of the children were asked about their consumption of different food or food groups in last 24 hours of the day of survey. Table 67 shows, there is significant increase in the consumption of protein (fish, meat and egg), milk/dairy products and green leafy vegetables.

It was also found similar pattern of food consumption in both inland and coast. More mothers from the Inland communities took meat, fish and milk/dairy food than the mothers in the Coast

Table 67: Mother's (children 0-23 months) food consumption by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of mothers consumed foods in last 24 hours							
Fats/oils	99.1	98.8	98.9	93.5	94.3	93.7	***
Rice/other grains	98.7	95.9	97.2	98.7	99.3	98.8	
Other vegetables	97.8	96.7	97.2	94.1	95.7	94.5	
Tubers	86.0	79.7	82.7	94.1	87.1	92.5	***
Fish	76.0	53.5	64.5	76.5	68.6	74.7	**
Green leafy vegetables	42.8	40.1	41.4	50.3	37.1	47.3	
Other fruits	37.1	19.9	28.3	41.8	27.9	38.6	**
Milk/dairy	23.1	14.9	18.9	30.1	12.1	26.0	*
Eggs	21.4	15.4	18.3	33.3	31.4	32.9	***
Pulses	23.6	12.0	17.6	27.5	27.1	27.4	**
Pumpkin/carrots	19.7	13.3	16.4	8.5	7.9	8.4	**
Sugar/honey	15.7	13.7	14.7	38.6	62.1	44.0	***
Meat	14.0	8.7	11.3	25.5	12.9	22.6	***
Papaya/mango	5.7	3.7	4.7	4.6	7.1	5.2	
n (unweighted)	230	241	471	153	140	293	

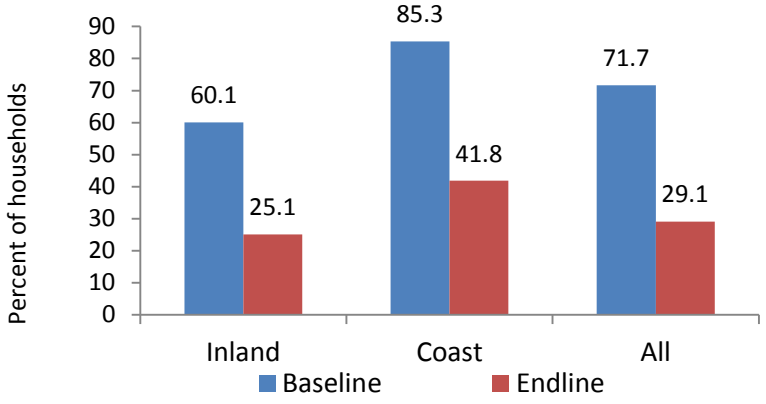
5.0 Strategic Objective-3 (SO3): Institutions and households prepared to respond effectively to shocks

5.1 Household Experience of Disasters and Disaster Risk Planning

As an integral part of food security interventions in the high-risk environment of Bangladesh, PROSHAR plans to implement a disaster risk reduction program to enable people to adjust to the threats of natural disasters, minimize their negative impact and respond more effectively. The endline survey included a range of questions related to the experiences of recent disasters, their current natural disaster preparedness, and their ability to resume livelihood activities similar to the baseline. Some additional questions were also added for better explanation of household level preparedness and awareness.

The prevalence of households experiencing a disaster within the previous 12 months declined sharply (Figure 38). Over all households surveyed, 29 percent reported experiencing a disaster in the previous year compared to 72 percent at baseline. Those reporting experiencing a disaster in the previous four years fell as well, to 58 percent from 88 percent at baseline (Figure 39).

Figure 38: Percent of households experiencing a disaster in the last 12 months



Optimistically, households in the program area are being less affected by disasters (Table 68). The proportion of respondents reporting stress, loss of assets, and/or loss of livelihoods declined dramatically. Those reporting loss of home from a disaster occurring in the previous 4 years is 28 percent compared to 52 percent at program initiation. Stress, anxiety, and fear declined to 5 percent from 38 percent. And, while nearly one in three households reported loss of assets and livelihoods at baseline resulting from disasters, at endline only 13 percent and 4 percent, respectively, reported the same.

Figure 39: Percent of households experiencing a disaster in the last four years, by region

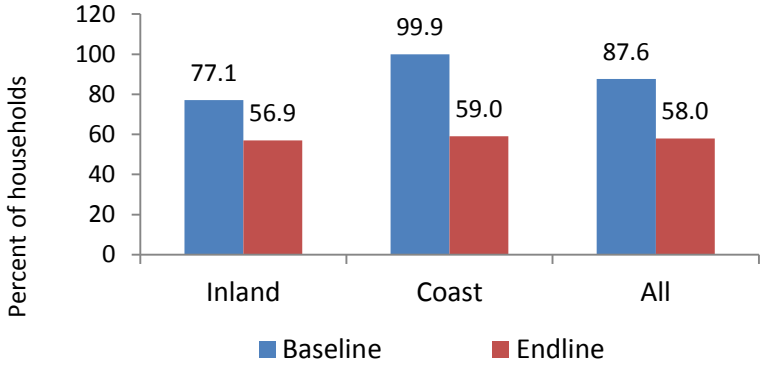


Table 68: Impact of disasters that occurred in last four years, by region

Indicator	Baseline			Endline			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of with impacts							
Loss of home	49.4	53.3	51.5	31.7	16.8	28.1	***
Stress/anxiety/fear	31.6	44.0	38.1	5.2	5.1	5.2	***
Loss of other asset	18.4	51.3	35.7	11.2	18.7	13.0	***
Loss of livelihood	17.3	45.6	32.2	3.1	6.7	4.0	***
Loss of field crops	29.8	29.3	29.5	14.2	11.1	13.4	***
Loss of livestock	4.7	27.7	16.8	2.7	8.2	4.0	***
Poor/low yield	8.6	5.8	7.1	0.6	4.8	1.6	***
Loss of water supply	1.3	10.5	6.1	1.5	4.5	2.2	***
Other	2.6	5.1	3.9	0.4	0.3	0.4	***
Physical disability/injury	1.1	2.8	2.0	0.0	0.4	0.1	***
DNK	3.8	0.0	1.8	0.1	0.0	0.1	***
Loss of family member	0.1	1.1	0.6	0.1	0.1	0.1	*
Having to care for others	0.0	0.4	0.2	0.0	0.4	0.1	

Additional HH members	0.0	0.3	0.1	0.1	0.1	0.1
N	915	1016	1931	671	673	1344

SO3 programming was primarily targeted to households in the coastal region that are particularly vulnerable to disasters and this is reflected in differences seen between the coastal and inland regions for SO3 indicators. For all households surveyed, 18 percent received disaster preparedness training, however over one in three (35 percent) received training in the coastal region. Overall, 37 percent of households report receiving an early warning signal before the last disaster. Nearly half of all households are aware of disaster response plan in their community, with 2 in 3 households reporting the same in the coastal region (Figure 40).

Table 69 below demonstrates the awareness of community members with respect to the identity of those who provided disaster preparedness training and actively provided support during disasters. There was little change over the life of the program in the source s identified as providing support before and during diasters. Most of the support for these activities reportedly comes from union or village disaster preparedness committees (41 percent) and disaster volunteers (41 percent). Interestingly, one source of support that declined substantially from baseline is support from NGOs, declining from 55 percent to 24 percent.

Figure 40: Percentage of households with disaster preparedness indicators, by region

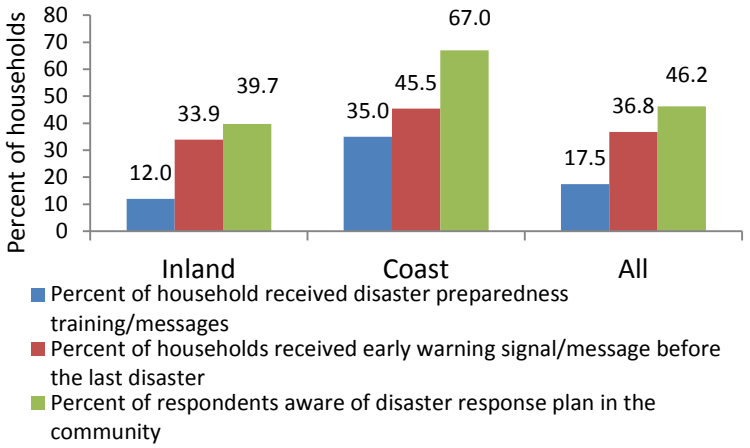


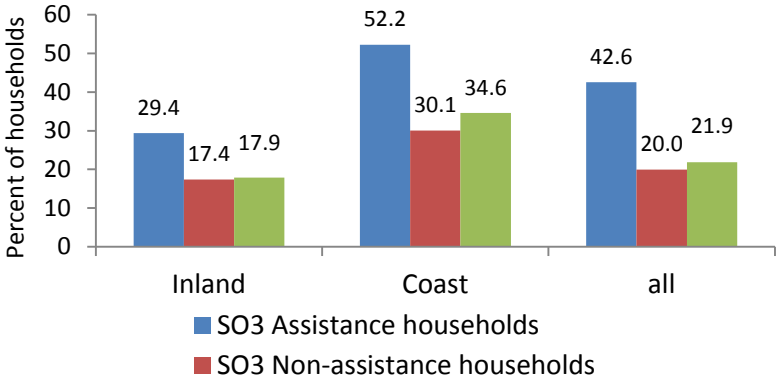
Table 69: Awareness of community members trained to help during disasters

Indicator	Received SO3 assistance			Not received SO3 assistance			Sig.
	Inland	Coast	**All**	Inland	Coast	**All**	
Percent of household are aware of the community members who trained to help during disasters							
CPP volunteers	2.6	30.8	19.2	16.0	19.0	17.1	
Union parishad chairman/ member	28.2	13.4	19.5	28.8	11.5	22.4	
NGOs	48.7	59.3	54.9	19.6	31.3	23.9	***
Teacher	15.4	5.8	9.8	13.2	6.2	10.6	
Students	7.7	0.0	3.2	6.4	1.5	4.6	
Village leaders	15.4	7.6	10.8	13.2	5.1	10.2	
Union/village disaster management Committee	38.5	41.9	40.5	42.8	38.0	41.0	
Disaster volunteers	17.9	51.7	37.8	32.4	56.5	41.3	
Other (specify)	0.0	0.6	0.3	2.4	0.2	1.6	
n (unweighted)	39	172	211	250	453	703	

A household level disaster preparedness index was computed based on 6 basic household level preparedness plan (evacuation of vulnerable members, visit shelter center in normal time, identify safe shelter center, plan for dry food, plan to protect HH valuables/assets and identify safe shelter for livestock. To compute the index, each of the six preparedness activities were given score "1" if the household has that particular plan. The mean household level disaster preparedness score were obtained by computing the sum of scores and divided by highest possible score i.e., six. The mean

score was then calibrated to 100 to get the household level disaster preparedness index. This information was not available in baseline. So, the index values are presented in Figure 41 disaggregated by the region and the status of household of receiving SO3 assistance. As expected the overall level of disaster preparedness is higher in the Coast than Inland, as the Coast is more exposed to disasters. Also , the level of preparedness is much higher for household receiving SO3 assistance than those not receiving assistance, in both Coast and Inland areas.

Figure 41: Household-level disaster preparedness, by region and assistance status



6.0 Additional Analysis by Vulnerability Group and Project Participation

Following the analytical methodology applied in the baseline study, a vulnerability profile was constructed using quantitative data to determine key demographic, socio-economic, food security, and other characteristics. TANGO selected three indicators which together could best explain vulnerability to food insecurity. The three indicators, or variables, are:

a) Number of months of adequate food provisioning (food security)
b) Dietary diversity (number of food groups acquired in week)
c) Household assets (value of assets in *taka*)

Using Principal Component Analysis (PCA), TANGO extracted components from these three variables to explain the most variation. Based on a thorough exploration of various socio-economic and food security variables, this model was the "best-fit" that explained the most variation in the quantitative data. In the baseline analysis the principal factor was broken into three groups using cluster analysis. In order to have consistently defined groups across the two survey rounds, a slightly different categorization process has been adopted for the final evaluation results. Specifically, the principal factor from both the baseline and final surveys was broken into three equal groups, or terciles, from the ranked values of the principal factors. The lowest tercile comprises households that are the most vulnerable (have the lowest number of months of food provisioning, the lowest dietary diversity, and the fewest household assets), and the households in the highest tercile are the least vulnerable. Table 70 shows the demographic characteristics of the households in the three vulnerability groups. There are clear patterns in the demographic characteristics of households by vulnerability categories; more vulnerable households have smaller households, are more likely to be female-headed, and have higher dependency ratios than less vulnerable households. Variations of other characteristics will be described in following tables below.

Table 70: Household demographic characteristics by vulnerability category

Indicator/ Vulnerability category	Survey round		Diff	Sig.	n (unweighted)	
	Baseline	Endline			Baseline	Endline
Average family size						
Most vulnerable	4.6	4.2	-0.4	***	734	741
Moderate	4.7	4.4	-0.3	***	735	742
Least vulnerable	5.3	4.9	-0.4	***	735	742
All households	4.9	4.5	-0.4	***	2,207	2,319
Percent of female-headed households						
Most vulnerable	9.2	6.3	-2.9	*	734	741
Moderate	5.5	2.7	-2.7	**	735	742
Least vulnerable	4.5	2.0	-2.4	**	735	742
All households	6.3	3.6	-2.7	***	2,207	2,319
Average dependency ratio						
Most vulnerable	0.88	0.74	-0.1	***	734	741
Moderate	0.82	0.71	-0.1	***	735	742
Least vulnerable	0.71	0.66	0.0	***	735	742
All households	0.81	0.70	-0.1	***	2,207	2,319

Because the sample of households for this final evaluation is drawn randomly from households in the PROSHAR intervention areas, the sample will have households that participate in various PROSHAR activities, and households that do not participate directly with any PROSHAR activities. Furthermore, the proportions of sampled households that participate in different types of project intervention will reflect the proportions in the population in the entire intervention area. Table 71 provides information about households that participate in interventions under SO1 and SO2, as well as households that participate in interventions under both SO1 and SO2. We have not included SO3 in these comparisons, because the interventions under SO3, unlike SO1 and SO2, are mostly directly toward local government and community-level organizations, not at households. Thus many of SO3 interventions are public goods, that confer benefits to all households residing in the communities being supported. Non-participant households are distributed approximately equally across the three vulnerability categories, similar the overall population. Participants in SO1 are more heavily in the most vulnerable category, and less represented in the least vulnerable category. This reflects the targeting strategy that PROSHAR follows for SO1 interventions. Households participating in SO1 and SO2 fall more predominantly in the moderate vulnerability category than the overall population, presumably reflecting the non-targeted nature of SO2 and targeted strategy followed for SO1. Finally, those households participating only in SO2 are more likely to fall into the least vulnerable category. This is consistent with the fact that more vulnerable households that participate in SO2 are also more likely to also participate in SO1, so falling into the combined participation category.

Table 71: Percent of Households by vulnerability category, by PROSHAR project participation category

PROSHAR project participation category	Vulnerability Category			n (unweighted)
	Most	Moderate	Least	
Non-participant	33.1	32.7	34.2	1,476
SO1 only	38.0	33.4	28.6	383
SO2 only	24.4	29.0	46.6	270
Both SO1 and SO2	23.1	43.1	33.7	96
All Household	32.4	32.8	34.9	2,225

n (unweighted)	741	742	742

The project baseline survey conducted in January, 2011, estimated that, on average, 70 percent of households are most or moderate vulnerable. The project also undertook a separate vulnerability analysis[32] to identify most vulnerable unions within the project intervention area, to guide the targeting of livelihood interventions. The geographic targeting analysis was conducted considering the following factors: road access conditions, ANC coverage, health facility coverage of the population, market accessibility, environmental hazards and socio-economic status. The 23 unions in the PROSHAR intervention area were categorized in three groups: i) most vulnerable (7 unions), ii) moderate vulnerable (10 unions), and least vulnerable (6 unions), based on a scoring system of the individual factors. Within these most vulnerable unions, 77 percent all households are targeted for SO1 intervention, on the assumption that this is the percentage of vulnerable households within that union. Remaining participants were targeted from other unions considering the households that have less than 10 decimals of land. Table 72 shows the breakdown of household vulnerability, as measured by the combination of household food security indicators, by the project-defined vulnerability categories of unions at endline. There is little correspondence between these two categorizations of vulnerability. The unions defined by the project as most vulnerable have the lowest proportion of vulnerable households, while the unions categorized as moderate or least vulnerable have higher proportions of vulnerable households. This result indicates that the community-level characteristics used to define vulnerable unions is not highly correlated with household level vulnerability measures, at least at the particular point in time when the survey was conducted. These endline results also support the hypothesis that the project interventions in the targeted unions have been successful in reducing the vulnerability of households within those targeted unions, by providing pathways for households in these more vulnerable areas to overcome limitations imposed by the inaccessibility and poorer infrastructures in those targeted areas.

Table 73 provides information about the percentage of households in the project defined vulnerability categories that participate in SO1 and SO2 interventions. The figures in this table demonstrate the targeting, particularly of SO1 interventions toward the most vulnerable unions. Without explicit targeting, we would expect to see SO1 participant households distributed proportionately across the three categories of union, with approximately one-third of participants in each of the three categories. In fact over 40 percent of SO1 participants are in the most vulnerable unions. Less than one-quarter of SO1 participants are in the least vulnerable unions.

Table 72: Household distribution, by project defined union vulnerability category, endline

Household vulnerability category	Project defined union vulnerability Category		
	Most	Moderate	Least
Most	29.7	35.1	31.9
Moderate	31.2	32.8	35.8
Least	39.1	32.1	32.3
All	100.0	100.0	100.0
n (unweighted)	1,086	857	282

Table 73: Percent of Households by project defined union vulnerability category, by PROSHAR project participation category, endline

PROSHAR project participation category	Vulnerability Category (Project defined)				n (unweighted)
	Most	Moderate	Most+	Least	

[32] Revision of livelihoods strategy within the ACDI/VOCA funded program for strengthening household access to resources (PROSHAR), July 19, 2012

			moderate		
SO1 only	42.4	34.3	76.7	23.3	396
SO2 only	31.4	43.5	74.9	25.1	281
Both SO1 and SO2	44.8	41.8	86.5	13.5	102
All participant households	38.5	38.7	77.2	22.8	779

Indicators of project impacts with respect to food security – nutritional status, economic status and women's empowerment – are broken down by both household vulnerability category and by project participation category in

Table **74**. All of these food security indicators are negatively associated with household vulnerability status; more vulnerable households have lower values of all these indicators than less vulnerable households. Also, all the food security indicators have improved between the two survey rounds, and the improvements are observed in all three vulnerability categories. In general, households in the most vulnerable category showed the greatest percentage increases in the impact indicators from baseline to endline. For example in the case of nutritional indicators, only the lowest category had a statistically significant reduction in prevalence of stunting and underweight from baseline to endline. Per-capita income increased by 80 percent for the most vulnerable group, compared with just over 30 percent increase for the least vulnerable group. The MAFHP indicator increased by over 30 percent for the most vulnerable group, compared with a seven percent increase for the least vulnerable group. The one exception to this pattern is the HDDS, where the increase for the most vulnerable group was only three percent, compared with eight percent for the least vulnerable group. Further qualitative analysis can address this anomaly of the different pattern of HDDS compared with the other impact indicators by vulnerability category.

The breakdowns of the indicators by participation category in the endline survey round generally do not show any significant differences between non-participants and participants in either SO1 or SO2 (some differences are statistically significant but very small in magnitude). Thus, this very simple comparison analysis does not point to changes in these impact indicators that can by directly attributable to project interventions. However these results are consistent with a conclusion that PROSHAR has supported broad general trends of improvements in household food security conditions within the project intervention area.

One exception to this general pattern is monthly per-capita income, where the increase in income the overall average baseline value is actually greater for non-participants than participants in SO1. However, this result is likely to be at least partially explained by the selection bias from targeting of SO1 support. In particular, it is quite likely that the baseline incomes of SO1 participants were lower than non-participants, so their incomes may have actually increased more than for non-participants. However, it is not possible to detect this differences since the baseline incomes of households by project participation category are not available.

Table 74: Impact indicators by survey round, vulnerability category, and project participation category

Indicator	**Survey round**		**Diff**	**Sig.**	**n** (unweighted)	
	Baseline	**Endline**			**Baseline**	**Endline**
MAHFP						
All households	9.0	10.6	1.6	***	2,204	2,319
Vulnerability category						
Most	6.7	8.8	2.1	***	734	741
Moderate	9.1	11.2	2.1	***	735	742
Least	11.1	11.8	0.7	***	735	742

Table 74: Impact indicators by survey round, vulnerability category, and project participation category

Indicator	Survey round		Diff	Sig.	n (unweighted)	
	Baseline	Endline			Baseline	Endline
Participation[1]						
Non-participant		10.6				1,540
SO1 only		10.4		+++		396
SO2 only		11.0		+++		281
Both SO1 and SO2		10.8		+++		102
HDDS						
All households	6.6	7.2	0.6	***	2,204	2,227
Vulnerability category						
Most	5.1	5.5	0.4	***	734	741
Moderate	6.7	6.9	0.2	***	735	742
Least	8.1	9.0	0.9	***	735	742
Participation[1]						
Non-participant		7.1				1,478
SO1 only		7.0		+++		383
SO2 only		7.6		+++		270
Both SO1 and SO2		7.6		+++		96
HHS						
All households	0.51	0.29	-0.2	***	2,204	2,319
Vulnerability category						
Most	1.05	0.71	-0.3	***	734	741
Moderate	0.41	0.14	-0.3	***	735	742
Least	0.09	0.03	-0.1	***	735	742
Participation[1]						
Non-participant		0.29				1540
SO1 only		0.39		+++		396
SO2 only		0.19		+++		281
Both SO1 and SO2		0.13		+++		102

[1]*Significance test for difference with non-participant*
+++ p<0.001, ++ p<0.01, + p<0.05

Table 74 (continued): Impact indicators by survey round, vulnerability category, and project participation category

Indicator	Survey round		Diff	Sig.	n (unweighted)	
	Baseline	Endline			Baseline	Endline
Prevalence of stunted children under five years (6-59 months) of age						
All households	42.4	31.9	-10.5	***	1,056	677
Vulnerability category						
Most	47.5	35.1	-12.4	**	373	208
Moderate	40.9	33.4	-7.5		333	210
Least	27.5	28.0	0.5		341	258
Participation[1]						
Non-participant		33.4				291
SO1 only		31.0				52
SO2 only		31.6				250

Table 74 (continued): Impact indicators by survey round, vulnerability category, and project participation category

Indicator	Survey round		Diff	Sig.	n (unweighted)	
	Baseline	Endline			Baseline	Endline
Both SO1 and SO2		28.4				84
Prevalence of underweight children under five years (0-59 months) of age						
All households	31.4	19.0	-12.4	***	1,170	754
Vulnerability category						
Most	33.0	18.1	-14.9	***	420	232
Moderate	28.6	24.2	-4.4		381	230
Least	21.2	15.5	-5.7		375	291
Participation[1]						
Non-participant		20.4				336
SO1 only		21.6				62
SO2 only		18.4				270
Both SO1 and SO2		15.0				86
Monthly per capita income (in Taka)						
All households	1,401	2,206	804.5	***	2,207	2,073
Vulnerability category						
Most	940	1,691	750.9	***	734	667
Moderate	1,217	2,079	861.9	***	735	661
Least	2,142	2,831	688.5	***	735	652
Participation[1]						
Non-participant		2,319				1,359
SO1 only		1,873		+++		363
SO2 only		2,067		+++		258
Both SO1 and SO2		2,289				93

[1] *Significance test for difference with non-participant*
+++ p<0.001, ++ p<0.01, + p<0.

Table 74 (continued): Impact indicators by survey round, vulnerability category, and project participation category

Indicator	Survey round		Diff	Sig.	n (unweighted)	
	Baseline	Endline			Baseline	Endline
Value of assets (in Tk)						
All households	49,291	71,729	22,437	***	2,207	2,317
Vulnerability category						
Most	19,846	29,199	9,353	***	734	741
Moderate	34,233	48,755	14,521	***	735	742
Least	92,444	134,116	41,672	***	735	742
Participation[1]						
Non-participant		76,386				1,538
SO1 only		54,647		+++		396
SO2 only		76,348				281
Both SO1 and SO2		55,062		+++		102
Women empowerment index on decision making						
All households	42.0	31.2	-10.8	***	2,198	2,199
Vulnerability category						
Most	41.7	30.0	-11.7	***	729	724
Moderate	41.6	32.4	-9.2	***	734	730
Least	42.7	31.2	-11.5	***	735	737
Participation[1]						
Non-participant		30.4				1452
SO1 only		32.9		+++		380
SO2 only		31.7		+++		270
Both SO1 and SO2		34.0		+++		97
Women empowerment index on mobility						
All households	9.4	10.1	0.7	***	2,204	2,201
Vulnerability category						
Most	9.3	10.1	0.7	***	734	724
Moderate	9.4	10.0	0.6	***	735	731
Least	9.5	10.2	0.7	***	735	738
Participation[1]						
Non-participant		10.1				1,454
SO1 only		10.3		+++		380
SO2 only		9.8		+++		270
Both SO1 and SO2		10.4		+++		97

[1]*Significance test for difference with non-participant*
+++ p<0.001, ++ p<0.01, + p<0.

Table 75 reports on differences in some key outcome (behavior change) indicators related to SO1 from baseline to endline, and at endline comparing between participants and non-participants in SO1 interventions. The results in this table indicate a contribution of project interventions under SO1 to changes in livelihood practices. The first panel provides information about yields of HYV rice. Yields increased substantially from baseline to endline. Furthermore, the yields of farmers that participated in SO1 are significantly higher (by almost 30 percent) than non-participant farmers. In addition, yields increased proportionately more in the most vulnerable unions as defined by the project than in the vulnerable unions. This result suggests that the more intensive support to SO1 interventions in the most vulnerable unions helped households in those targeted unions to increase yields. The remaining panels in the table reveal a similar pattern, the average number of improved practices adopted by households increased from baseline to endline, and the average number of

practices adopted by SO1 participants is higher than for non-participants. One important result to highlight is that the number of improved practices adopted by non-participant households also increased substantially from baseline to endline. These increases may represent spillover effects from direct project participants to their neighbors.

The results broken down by project-defined union vulnerability categories shows that adoption of homestead production practices (gardening practices) was highest in the most vulnerable unions. This is consistent with the project strategy to establish a larger number of producer groups in the most vulnerable unions. Conversely, the increase of (commercially oriented) agricultural practices was greatest in the least vulnerable unions, perhaps because the relatively better access and infrastructure conditions in these unions favor commercial agriculture in comparison with the more vulnerable unions.

Table 75: Key SO1 outcome indicators by participation

Indicator	Survey round		Diff	Sig.	n (unweighted)	
	Baseline	Endline			Baseline	Endline
Yield of high yield variety (HYV) rice (kg/ha)						
All households	2,849	4,248	1,399	***	173	402
Non-participant		3,954				295
SO1 participant		5,122	1,168	+++		107
Project defined union vulnerability category						
Most	2,530	4,237	1,707	***	55	161
Moderate	2,742	3,744	1,002	***	57	158
Most + Moderate	2,640	3,960	1,320	***	112	319
Least	3,222	5,044	1,821	***	61	83
Yield of local variety of rice (kg/ha)						
All households	2,117	3,204	1,088	***	433	320
Non-participant		3,194				252
SO1 participant		3,239				68
Project defined union vulnerability category						
Most	2037	3,116	1,079	***	199	147
Moderate	2095	3,203	1,108	***	154	142
Most + Moderate	*2063*	*3,160*	1,097	***	*289*	*319*
Least	2334	3,473	1,138	***	80	31

Table 75 (continued): Key SO1 outcome indicators by participation

Average number of improved agriculture practices adopted					
All households	3.0	5.3	2.3 ***	756	699
Non-participant		5.2			531
SO1 participant		5.5	0.3 +++		168
Project defined union vulnerability category					
Most	3.2	5.1	1.9 ***	319	272
Moderate	2.9	5.2	2.3 ***	281	306
Most + Moderate	3.0	5.1	2.1 ***	600	578
Least	2.8	5.8	3.0 ***	156	121
Average number of improved gardening practices adopted					
All households	1.6	5.1	3.5 ***	961	1,092
Non-participant		4.9			798
SO1 participant		5.5	0.5 +++		294
Project defined union vulnerability category					
Most	1.8	5.6	3.7 ***	530	619
Moderate	1.4	4.7	3.3 ***	308	382
Most + Moderate	1.6	5.1	3.5 ***	838	1,001
Least	1.2	4.6	3.4 ***	123	91
Average number of improved livestock practices adopted					
All households	0.7	2.3	1.7 ***	1,899	1,144
Non-participant		2.3			854
SO1 participant		2.4	0.1 +++		290
Project defined union vulnerability category					
Most	0.7	2.2	1.5 ***	980	633
Moderate	0.6	2.3	1.7 ***	682	404
Most+Moderate	0.7	2.3	1.6 ***	1,662	1,037
Least	0.6	2.6	2.0 ***	237	107
Average number of improved fishery practices adopted					
All households	3.2	5.2	2.0 ***	606	630
Non-participant		5.2			454
SO1 participant		5.5	0.3 +++		176
Project defined union vulnerability category					
Most	3.3	5.3	2.0 ***	366	376
Moderate	3.2	5.3	2.2 ***	207	207
Most + Moderate	3.2	5.3	2.1 ***	573	583
Least	3.0	4.8	1.8 ***	33	47

[1]*Significance test for difference with non-participant*
+++ p<0.001, ++ p<0.01, + p<0.05

Similar information is provided for outcome indicators relevant for SO2 interventions in Table 76. The patterns are also similar; general improvements in the indicators from baseline to endline, and recommended practices are more widely adopted by SO2 participants than non-participants. The only exceptions are number of children vaccinated, where differences cannot be detected because of very small sample size, and the percentage of underweight women. These results also support the conclusion that project interventions have been successful in promoting improved practices in the area of MCHN. As in the case of SO1, adoption of improved practices has increased for non-participant households. With the exceptions of vaccination and minimal acceptable diet, the outcome indicators also improved substantially for non-participants from baseline to endline.

Table 76: Key SO2 outcome indicators by SO2 participation

Indicator	Survey round		Diff	Sig.	n (unweighted)	
	Baseline	Endline			Baseline	Endline
Percent of mothers washing hands at least 3 critical times						
All households	33.5	84.7	51.2	***	476	300
Non-participant		82.0				146
SO2 participant		86.7	4.7			154
Percent of children receiving all vaccines before first birthday						
All households	67.7	74.4	6.7		179	111
Non-participant		67.2				37
SO2 participant		77.1	9.9			74
Percent of all children 0-6 months exclusively breastfed						
All households	41.4	73.8	32.4	***	133	78
Non-participant		74.6				56
SO2 participant		72.0	-2.6			22
Percent of all children 6-23 months with minimal acceptable diet						
All households	16.9	23.9			394	222
Non-participant		16.0				89
SO2 participant		28.1	12.1	+		133
Percent of mothers obtaining any ANC						
All households	68.2	90.2	22.0	***	471	293
Non-participant		86.3				153
SO2 participant		93.9	7.6	+		140
Percent of women taking vitamin A during pregnancy						
All households	34.6	57.3	22.7	***	470	293
Non-participant		42.2				140
SO2 participant		60.6	18.4	++		153
Percent of mothers who took iron/folic acid during pregnancy						
All households	38.4	74.3	35.9	***	470	293
Non-participant		63.8				140
SO2 participant		82.0	18.2	+++		153
Percent of ever married women underweight						
All households	23.9	16.8	7.1	**	471	675
Non-participant		17.1				361
SO2 participant		16.5	0.6			314

[1] *Significance test for difference with non-participant*
+++ p<0.001, ++ p<0.01, + p<0.05

7.0 Summary and Recommendations

Comparison of baseline with endline values of project impact and outcome indicators demonstrates that the PROSHAR project surpassed targets for all SO1 and SO2 impact indicators measuring household nutrition and food security status. Household level achievements under SO3 were also very substantial, with 18 percent of surveyed households reporting having received training, and almost 50 percent of households aware of disaster response plans in their communities (two-thirds of households in the more disaster-prone Coast communities).

While many of the project impact indicators, along with the childhood stunting goal indicator, improved dramatically over the life of the program, further analysis of achievement disaggregated by project participation showed few significant differences in these impact measures between project participants and non-participants. A possible cause of these observed results for MCHN indicators may be explained by the existence of government programs and projects supported by non-governmental organizations that have been providing similar support and services to the rural poor in Bangladesh over several years. This is not to say that PROSHAR MCHN programming was not useful or effective, as it certainly was invaluable to the villages, households, mothers, and children that received program support. However, attribution of positive program effects is difficult when there are multiple programs, services, and messaging being delivered in the same geographic areas. The evidence from these quantitative findings supports the conclusion that PROSHAR has helped to contribute to the overall improvement in nutritional and health status of women and children within the project implementation area.

Outcome indicators generally showed very strong improvement from baseline to endline. While the percentage of both participants and non-participants adopting recommended practices increased from baseline to endline, the fact that the improvements were in most cases significantly higher for beneficiaries than non-beneficiaries suggests that these changes in behaviors can be attributed to program interventions. Adoption of recommended agricultural practices increased more for project participants in SO1 interventions than for non-participants. Correspondingly, rice yields for SO1 participant households (5,567 kg/ha) are 52 percent higher than households that did not participate in SO1 (3,657 kg/ha). However, it is also true that non-participant households substantially increased adoption of recommended practices. This result is consistent with strong demonstration effects from participants to their neighbors, although alternative factors could also explain these patterns of change. Further exploration of the reasons for changes in farming practices by participant and non-participant households should be the focus of follow-up qualitative research. Adoption of recommended MCHN practices also increased substantially from baseline to endline, and, as in the case of SO1, adoption of most practices was significantly higher for participants than non-participants.

Vulnerability characteristics of project participants and non-participants indicate that SO1 interventions are quite effectively targeted toward more vulnerable households, while SO2 interventions are not targeted, which is consistent with the PM2A implementation strategy for MCHN interventions.

One unexpected finding in the final quantitative study of PROSHAR was the decline in the index of women's empowerment with respect to decision making. This is very surprising, given that PROSHAR interventions are strongly oriented toward enhancing women's empowerment. This result may reflect that the questions in the quantitative questionnaire do not adequately capture all the subjective and qualitative aspects of women's empowerment. In future project designs, more

detailed and qualitative analyses that focus specifically on measuring and assessing the factors that affect women's empowerment should be built into initial assessments and final project evaluations.

A limitation of the quantitative performance evaluations conducted for PROSHAR was the change in the sampling strategy from the baseline round, which employed a random-walk procedure for selecting households to be interviewed, to a random sampling of census listing of all households within selected villages. Analysis of the structural characteristics indicated some differences across the baseline and endline rounds, although the differences did not show a distinct pattern to support the conclusion that there was significant selection bias in the baseline sample design. Although these findings do not seriously compromise the comparison of results across survey rounds, future surveys should follow a census listing sampling procedure.

In the future, project M&E plans should include an integrated final project evaluation design that includes both qualitative and quantitative components. Ideally, M&E design of the next round of programming (or a separate impact evaluation) would incorporate testable hypotheses and a representative comparison group to evaluate the effectiveness of project activities for beneficiaries vs. non-beneficiaries. This recommendation is particularly relevant for project similar to PROSHAR that have very important intervention strategies that are not directed toward households, but rather to strengthen marketing systems, local institutions, infrastructures, etc. Adequate assessments of these types of intervention cannot be based only on household-level information.