



HOUSEHOLD DISASTER RESILIENCE ASSESSMENT BAGERHAT DISTRICT, BANGLADESH

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PROGRAM ON
**RESILIENT
COMMUNITIES**



**HARVARD
HUMANITARIAN
INITIATIVE**

In collaboration with **CONCERN**
worldwide

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This study was conducted as part of the Harvard Humanitarian Initiative's Program on Resilient Communities.

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HHI's **Program on Resilient Communities** uses evidence-based approaches to interpret how communities mitigate the impact of disasters. The program's starting point is the central role local communities play in both disaster preparedness and response. Communities are the front line and locus for interactions with local civil society organizations, the private sector, national disaster management agencies, and the international humanitarian community.

DisasterNet, as part of the Program on Resilient Communities, specifically seeks to support local and national capacity for disaster

preparedness and response by enabling grassroots organizations to: 1) adopt evidence-based tools and practices; leverage existing HHI best practices, data collection systems, and online educational tools to enhance research and training; 3) build leadership capacity; and, 4) promote intellectual exchange across national and disciplinary boundaries. DisasterNet will establish a foundation for more integrated, coordinated, and evidence-based preparedness and response structures for humanitarian disasters.

ABOUT THE AUTHORS

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JANUARY 2020

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INTRODUCTION

ASSESSING DISASTER RESILIENCE

Acknowledging the contextual nature of household disaster resilience, HHI's Program on Resilient Communities is undertaking the development of a measurement framework and, ultimately, a disaster resilience scorecard, to periodically assess progress toward disaster resilience for households exposed to both sudden and slow onset shocks, including natural disasters and effects from climate change. Building on field research and the rich set of global efforts aimed at measuring resilience, we propose that household-level disaster resilience is achieved when:

- (1) households are able to access and use quality services, resources, and information;
- (2) households can rely on effective social support and safety nets;
- (3) households take steps to learn, prepare and adapt before and after disasters; and
- (4) individuals and households are empowered and believe in their ability to cope and adapt to shocks.

These four capabilities (see Table 1) are commonly understood elements of resilience but remain highly abstract concepts. Operationalizing measurements associated with each of these elements leads to a set of less complex, more measurable concepts, which can ultimately be included in a resilience scorecard. The process of operationalization, however, is highly contextual. Because there are significant differences in the nature and dynamics of household resilience across contexts, establishing a single global, or even regional, scorecard is likely to be ineffective. For example, the ways in which support systems and safety nets manifest themselves vary greatly within and across countries, and such differences may not be captured in a universal scorecard. As such, operationalizing these abstract concepts requires local engagement with communities whose resilience is measured to identify appropriate indicators.

HHI, together with its partner Concern Worldwide, utilized local engagement to develop a series of preliminary indicators for a baseline assessment of household

Table 1: Elements of household disaster resilience

Household disaster resilience is achieved when:

1. *People access and use quality services, resources, and information;*
2. *People can rely on effective social support and safety nets;*
3. *People take steps to learn, prepare, and adapt before and after disasters; and*
4. *People are empowered and believe in their ability to cope and adapt.*

resilience in coastal Bangladesh. The baseline assessment was in support of a project led by Concern Worldwide to strengthen coastal community resilience in Bagerhat district, Bangladesh. With support from Concern Worldwide, we organized a series of participatory exercises with community members to identify key indicators to include in a first baseline assessment. This report presents the results of that assessment. Building on these results, we propose in the final chapter of this report a reduced set of indicators that can be usefully monitored to track progress toward household resilience over time.

ELEMENTS OF HOUSEHOLD DISASTER RESILIENCE AND CONTEXTUALIZATION TO BAGERHAT DISTRICT, BANGLADESH

These four overarching elements of household resilience were identified through literature review as well as through the HHI team's years of experience researching and supporting disaster resilience work around the world. While these elements are similar to components of other resilience frameworks, they are tailored to the household level and aim to operationalize key aspects of resilience to support measurement through a scorecard. The section below includes more information about each of the elements as well as the indicators under each element that were included in the baseline assessment. As mentioned above, these indicators were identified through participatory exercises in Bangladesh in early 2018.

(1) People access and use quality services, resources, and information

Access to resources, information, and services are regularly cited in the literature as key elements of disaster resilience (1–5). Through assets and income, households maintain the resources needed to take

adaptive actions and to cope when disasters strike (1,4,5). When households have access to services and information, they are more able to obtain the help they need in an emergency and to be able to take actions to protect themselves and to recover (2–4). However, for services, resources, and information to be useful to households, they must be easily accessible regardless of education level, gender, (dis)ability, and socio-economic status and must be of high quality (4,6).

As such, under this element, we sought to better understand household access to services, resources, and information. We start by exploring household resources, including assets, income, and savings. We then sought to understand households' access to various basic services, including credit, community disaster preparedness, education, electricity, employment, healthcare, transportation, and water, as well as access to various sources of information, both general and disaster-related. Finally, we sought to gauge households' perceptions of the quality of these services through questions around trust in local and government services and perceptions of service and information quality. Indicators included in the study under this element are below.

- Demographics commonly affecting access
- Household assets, income, and savings
- Household access to services and resources
- Access to information
- Access to and quality of agricultural information
- Access to early warning messages
- Knowledge of, and confidence in, community disaster preparedness

(2) People can rely on effective social support and safety nets

Social support is also a key indicator of resilience. When a disaster strikes, local residents are often the first responders, supporting their communities to survive and to begin to recover before emergency responders arrive (7). As such, households that have strong social connections to other members of their community (family, friends, etc.) can gain access to communal resources or assistance from their social connections in a disaster setting, enabling them to survive and recover faster than households without these connections (1–5,7,8).

Under this element, we sought to understand intra-household support as well as engagement with community disaster preparedness and other community groups. To better understand a household's willingness to rely on their social support networks, we explored households' trust of various groups in their community, as well as their perception of community members' willingness to support others before and during disasters. Indicators included in the study under this element are below.

- Engagement with community activities or groups
- Community willingness to help others before and during disasters
- Generalized trust of others
- Trust in local and national disaster plans and services

(3) People take steps to learn, prepare, and adapt before and after disasters

To be resilient in the face of anticipated and unanticipated shocks and stresses, households must have the knowledge and agency to take steps to prepare for, and adapt to, the effects of climate change and natural disasters (4,5). These steps can

include adopting climate-adaptive practices for agriculture and livelihoods, taking actions to protect assets, or preparing family emergency plans (9).

To understand steps that households have taken to learn, prepare, and/or adapt before and after disasters, we first assessed household awareness of climate change impacts, and then asked households about preparedness activities they had taken before the most recent disaster they experienced. We also asked what coping strategies these households employed after the most recent disaster, as well as actions they had taken to adapt to a changing climate. Indicators included in the study under this element are below.

- Knowledge of climate change
- Preparedness actions before the most recent disaster
- Coping strategies employed after the most recent disaster
- Actions taken to adapt to a changing climate

(4) People are empowered and believe in their ability to cope and adapt

Empowerment is a rarely captured, but

crucial, element of resilience (6). In addition to asking participants about actions they have or have not taken with respect to preparedness and adaptation, we also asked participants subjective questions to gauge how well they felt their household had been able to cope and adapt. These subjective measures provided additional insights into the success of households' efforts to learn, prepare, and adapt (6). Households may have resources and knowledge to cope and adapt to shocks, but if households do not believe in their ability to cope or are not empowered to put their knowledge and resources into action, they will struggle to be resilient to shocks or stresses (10,11).

To measure empowerment, we asked respondents for their own assessment of household risk and ability to prepare for and cope with disasters. We also asked about respondents' overall sense of control in life and sense of influence over disaster-related decisions made at the local and national levels. Indicators included in the study under this element are below.

- Subjective assessment of disaster risk; vulnerability; and ability to prepare for, and cope with, disasters
- Subjective assessment of ability to cope and adapt after the most recent

- disaster
- Sense of control over one’s future and security
- Sense of influence over disaster preparedness and decisions made at local and national levels

HOW WERE THESE ELEMENTS DEVELOPED?

The baseline and scorecard piloted in Bangladesh is rooted in a livelihoods-based

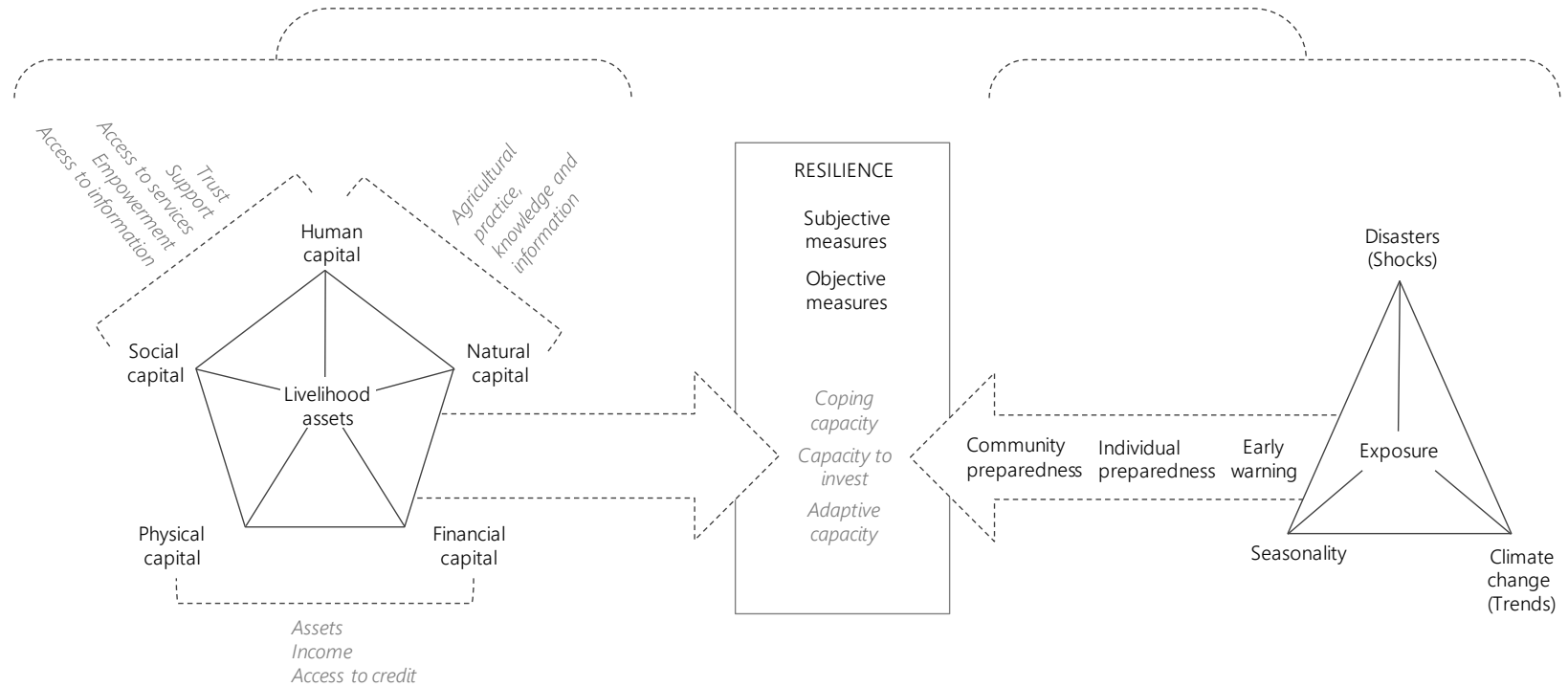
framework developed by HHI based on a review of the literature and the research team’s experience supporting resilience programs globally (see Figure 1).

First, the framework defines exposure as a combination of shocks from disasters and longer-term stresses from climate change and seasonal variation. Early warning, individual, household and community preparedness, mediate these exposures to affect a household’s resilience.

Second, at the individual level, assets affecting livelihoods include human, social, natural, physical, and financial capital. These assets affect preparedness levels, the capacity to cope with shocks and stresses and adapt over the long term, and household capacity to invest in preparedness and adaptation actions.

Finally, resilience includes not only objective measures, such as income, preparedness plans, and assets, but also includes

Figure 1: Livelihoods-based resilience framework



subjective measures, such as household empowerment.

Thus, household resilience can be understood as the combined effects of: 1) household exposure mediated by preparedness at multiple levels; 2) household livelihoods assets, which affect coping, adaptive capacity, and preparedness; and 3) subjective measures of household capacity and empowerment.

The four elements of the scorecard were defined through this framework and organized in a manner that would best support operationalization and indicator grouping in a scorecard. Element 1 measures household livelihoods and assets, Element 2 focuses on social capital and community preparedness, Element 3 focuses on preparedness, and Element 4 focuses on subjective measures of empowerment. Combined, these elements paint a holistic image of household resilience.

PURPOSE OF THE SCORECARD

The scorecard is meant to serve as a rapid monitoring and evaluation (M&E) tool that can be periodically deployed to assess key aspects of household resilience. Data gathered through use of the scorecard can be used to continually adapt and improve

program design.

It is important to note that this scorecard is not intended to provide a set list of indicators applicable globally. This iteration of the scorecard was developed specifically for programs working to improve the resilience of coastal communities in Bangladesh. As such, the indicators in this scorecard may not be appropriate in other contexts. However, the four key resilience dimensions utilized in the scorecard could be used as a basis for scorecards developed in other regions. To tailor the scorecard to other contexts, locally relevant measures must be selected and validated for each of the four resilience elements.

HOW DOES THIS APPROACH COMPARE WITH OTHER RESILIENCE SCORECARDS?

This approach adds to the literature and existing program assessment tools in a few key ways, including: 1) a focus on household-level resilience, including indicators related to social capital, 2) context-specific development using participatory research, and 3) use of subjective measures of resilience.

Much of the literature and publicly available program assessment tools focus on

community-level resilience assessments, rather than assessments at the household level (1,5,8). While an understanding of community-level resilience is crucial to ensure that systems and resources are in place for communities broadly, assessments focused on the community as a whole may not accurately reflect household-level resilience, especially for the most vulnerable households (6). This tool recognizes that resilience varies within a community, and seeks to complement community resilience assessment tools to gain a more nuanced and granular image of resilience within communities to support programs that seek to enhance resilience at the household level.

In addition, this scorecard is unique in its emphasis on context specificity and use of participatory action research. This scorecard does not seek to standardize indicators for use globally, or even across a region or country. Rather, using a participatory action research approach, we sought to define locally relevant measures within the four assessed dimensions. While such contextualization makes comparison across contexts difficult, it is likely to provide richer data and to enhance the effectiveness of program monitoring within the intended context (1).

The report also utilizes subjective measures of resilience, which are often underutilized in measurement tools. However, subjective measures provide key insights into a household's sense of agency and empowerment in preparing and adapting for the effects of climate change and natural disasters (6). In doing so, the scorecard centers households' expertise and experience as a key element of the scorecard. Households are often the best judges of their own coping capacity and resilience. As such, centering households' perceptions and experiences within the scorecard provides deeper insights into household resilience and accounts for households' sense of agency and empowerment (6).

STRUCTURE OF THE REPORT

Following a discussion of the research methods, this report is organized along the four resilience elements identified in the introduction. For each section, data are presented for each of the indicators, alongside a discussion of the study's findings. Recommendations are made for a limited set of indicators to include within the scorecard.

THE STUDY

This research establishes a baseline understanding of household disaster resilience among coastal communities in Bagerhat district, Bangladesh, to inform the design and implementation of the Coastal Community Resilience Project led by Concern Worldwide. The research explores factors that make a household resilient to the effects of climate change or natural disasters, the nature of climate change impacts and disaster risks, as well as the local context (12). As such, this survey provides crucial information needed to design programs to strengthen resilience that are tailored to the local context and current capacities. The research also aimed to test and advance the use of a simple household disaster resilience scorecard outlined in the introduction.

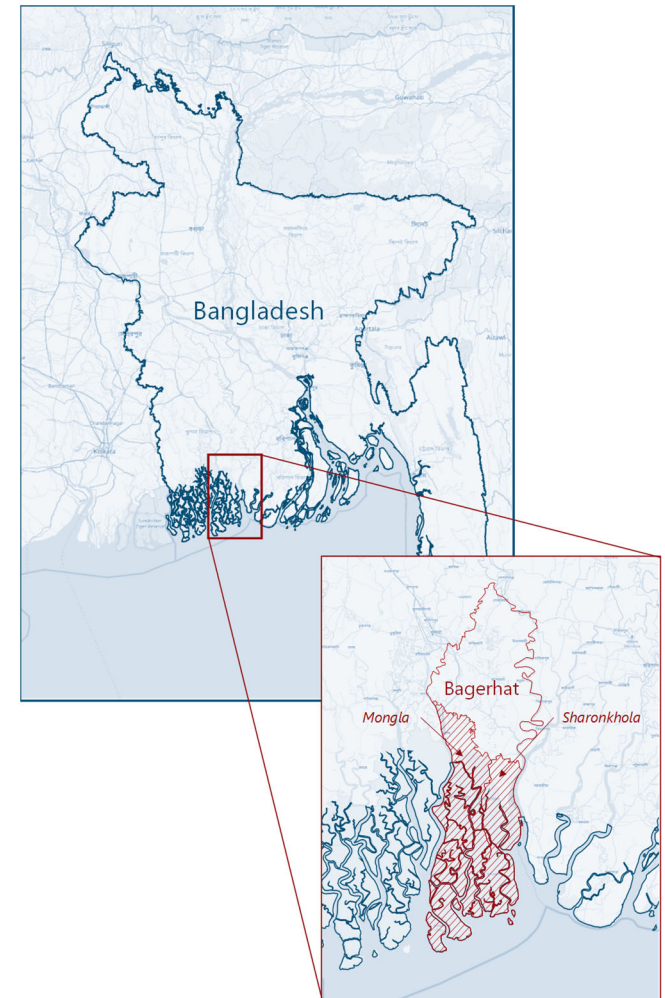
BAGERHAT DISTRICT, BANGLADESH

The study was conducted in Mongla and Sharonkhola *upazilas* (subdistricts) within Bagerhat district, Bangladesh. These two *upazilas* are located within the southwest coastal zone of Bangladesh (13). These areas are frequently affected by cyclones, tidal

surges, saltwater intrusion, and soil salinization. Access to government services are low due to the area's remoteness, and primary livelihoods-generating activities are agriculture and/or resource extraction from the nearby Sunderbans forest, a large mangrove forest separating these *upazilas* from the Bay of Bengal (14). Building coastal communities' resilience to the effects of climate change and natural disasters will be crucial as the country faces increased threats from a changing climate.

Bangladesh is ranked seventh on the 1998–2017 Climate Risk Index of countries most affected by climate change; the country experienced 190 extreme weather events causing over 2.4 million USD in losses and 635.5 deaths annually during this period (15). Bangladesh is particularly vulnerable to tropical cyclones, seasonal flooding, and climate change-related events, which are predicted to increase in frequency and severity due to climate change (16). The country's high population density, combined with high probability of natural disasters and low levels of development, make Bangladesh particularly vulnerable to climate change (17, 18, 19).

Figure 2: Location of the study sites, Mongla and Sharonkhola *upazilas* (hashed area).



Low-elevation coastal zones – such as Bagerhat district – are especially vulnerable to natural disasters, and have already begun to see the effects of climate change (20). These areas account for over 40 percent of the country’s landmass and 49 percent of the country’s total population (20). In recent years, these areas have been significantly impacted by cyclones, sea level rise, saltwater intrusion, coastal erosion, flooding, and more (19,21,22). Low-elevation coastal zones in Bangladesh are predominately rural (96 percent), and agriculture is a key economic activity (20,23). However, food yields in this region are threatened by increasing temperatures, unpredictability of monsoon rains, soil salinization, and limited availability of freshwater for consumption and irrigation (23). These effects have threatened livelihoods and food security (21,24–26). Thus, coastal communities in Bangladesh are of significant humanitarian concern due to their vulnerability to a range of natural disasters as well as more gradual, but very impactful, increasing threats from climate change (16).

METHODS

This report is based on a household-level survey in Mongla and Sharankhola *upazilas* in Bagerhat district, Bangladesh. Data were collected using a survey instrument designed

by Concern Worldwide with input from HHI’s Program on Resilient Communities. The survey asked questions regarding household demographics, assets, health, preparedness plans, trust in government and services, experience with disasters, and other topics. The study protocol was reviewed and approved by a locally-convened Community Advisory Board (CAB) to ensure that the research addressed ethical and context-specific concerns.

The survey was conducted by 10 trained enumerators working jointly with Concern Worldwide and Jagrata Juba Shangha (JJS). Enumerators collected data using a digital data collection tool and conducted surveys face-to-face with adult household members. Concern Worldwide and JJS’s field managers were responsible for overall field implementation and supervisors were responsible for overseeing the surveys. Supervisors monitored the study full-time, observed enumerators, and conducted periodic checks. Supervisors reviewed at least 10 percent of the total surveys for data quality.

SAMPLING

Mongla and Sharankhola *upazila* contain 11 unions and one municipality. A complete list of villages and households within these unions and municipality was created by Concern

Worldwide and JJS from June-July 2018 through community consultation. This list served as the sampling frame, and households served as the primary sampling units. There are 135 villages and 6,000 beneficiary households within the two *upazilas*. The required sample size was calculated to be 432 households to achieve the required power.

In the first stage of sampling, 30% (41) of the 135 villages were selected randomly. In the second stage of sampling, 432 households were selected randomly using a probability proportional to population size (PPS), resulting in the selection of 173 households in Mongla and 259 households in Sharankhola within the selected 40 villages. The systematic random sampling method was considered to select respondents for interview from the prepared list. Ultimately, data was collected from 462 sample households. Within those households, 217 respondents (47%) were male and 245 respondents (53%) were female. More information on sampling and data collection can be found in Concern’s report, *Baseline survey on “Coastal Community Resilience - Reduced vulnerability and enhanced resilience of coastal communities to prepare for and adapt to shocks induced by climate change” project*.

DATA ANALYSIS

Baseline data were analyzed in SPSS under the components of resilience outlined in the project's theory of household resilience. To select questions for the scorecard, HHI conducted a factor analysis for each of the subcomponents of the resilience framework.

The goal of this exercise was to reduce the number of questions needed to build a resilience scorecard, allowing the scorecard to be conducted more easily and frequently than a full survey. Factor analyses were conducted to identify which questions had similar response patterns, and thereby help the team to identify questions that could be eliminated from the questionnaire without losing much of the information those questions provided about household resilience (27). Factor analyses were conducted in SPSS using a Varimax rotation. To be included in factor analyses, a question needed an n of greater than 5, and answers to the question needed to show some variation among respondents. For example, a question in which all respondents answered "Yes" could not be included in the analysis, as it showed no differentiation between respondents.

For each factor analysis, the resulting component matrix was reviewed by the HHI team, and 1-2 questions were selected for inclusion for each component identified.

Questions were selected on the basis of:

1. Strength of component loading,
2. Variation among respondents' answers, and
3. Relevance of the question to program decision-making.

The resulting questions proposed for inclusion in the scorecard are outlined in the "Scorecard" section of this report. A simple, unweighted scoring scheme is proposed to generate a score for each of the four resilience components. The scoring scheme is unweighted, as the baseline data is insufficient to understand which components may be most relevant to resilience. Further validation and analysis of the tool could provide more insights into potential component weighting.

LIMITATIONS

A key limitation is that the survey is not intended to be representative of entire communities within Mongla and Sharonkhola sub-districts in Bagerhat. Households were sampled among Concern's beneficiary households within these two *upazilas*, rather than among all households within these *upazilas*. As such, these results are not representative of the full district population, but seek to be representative of Concern's beneficiary population within these two

upazilas at the time of the survey.

Another key limitation is variable quality of data and the potential for social desirability bias among the respondents. Throughout data collection, data managers observed that some enumerators lacked adequate understanding of all questions within the questionnaire and/or had difficulties operating within the digital data collection platform. Managers worked to correct enumerator behavior when such issues were found, but it is possible that the quality of the data may be limited. In addition, because the enumerators were hired by project staff and respondents were project beneficiaries, it is possible that respondents may have been inclined to answer questions in a manner that they believed aligned with the project goals.

ELEMENT 1
PEOPLE ACCESS AND USE
QUALITY SERVICES, RESOURCES,
AND INFORMATION

Key indicators assessed under this element include:

1. Demographics commonly affecting access
2. Household assets and income
3. Household access to quality services and resources
4. Access to information
5. Access to quality agricultural information
6. Access to, and quality of, early warning messages
7. Knowledge of, and confidence in, community disaster preparedness

POPULATION DEMOGRAPHICS

Household gender and age composition, as well as education levels and (dis)ability levels, can impact a household's ability to gain access to services and resources. Gender and age discrimination (usually against females and younger or elderly populations) can affect access to services and resources, and households with lower levels of education may also struggle to navigate bureaucratic systems to gain access to services or to access certain forms of information (28).

The gender distribution of respondents was approximately equal (47% male, 53% female), and the majority (76%) were 20-49 years of

age. The majority (90%) of respondents had no or only primary level education, with higher levels of education found among wealthier households, households in which heads of household had completed primary school, and male respondents. The majority of respondents were married (90%) and lived in male-headed households (85%), and just over half lived in multi-family households (58%). The majority had no (57%) or one (34%) child under the age of 5 living in the household. Approximate two-thirds reported living in a household with only one (37%) or two (34%) adults over 18 years of age, and 18% reported living in a household with no adults over the age of 18. Some respondents reported at least some difficulty seeing even if wearing glasses (10%), hearing even if wearing a hearing aid (5%), walking or climbing steps (15%), remembering or concentrating (14%), taking self-care actions such as washing or dressing (14%), or communicating (4%).

HOUSEHOLD ASSETS AND INCOME

Household wealth, assets, and income play a key role in a household's ability to afford and utilize services and resources to promote household resilience (4). Households with income, wealth, and assets can utilize those resources in emergencies to gain access to funds needed to weather shocks and stresses

(1,4,5). In addition, the condition of the home in which households live is important for resilience – some structures are better suited than others to withstand certain types of disasters.

Most homes of respondents contained one (60%) or two (34%) rooms for sleeping. Respondents who were older, wealthier, or lived in male-headed households tended to live in houses with more rooms. Almost all (95%) homes had earth or sand floors. The majority had wood (36%) or tin (38%) roofs, and tin (51%), dirt (17%), or wood (16%) walls. In Mongla, houses were more likely to have thatch or tin roofs with dirt or nypa walls, while wood roofs and tin walls were the majority in Sharonkhola. Thatch roofs and dirt or nypa walls were more common among poorer and less educated households, while tin roofs were more common among wealthier, more educated households.

The majority of households had some basic assets, such as chairs (55%), tables (42%), cooking pans (99%), hoes (61%), and machetes (85%). Fewer households had access to medium value assets, such as a watch (15%), bicycle (8%), or radio (0%), although 93% of households owned at least one mobile phone. Almost no households had access to high value assets, such as a fishing boat (8%),

motorcycle/scooter (1%), or car/truck/tractor (0%). Households in Mongla and households that were wealthier or more well-educated tended to have more assets than households in Sharonkhola or households that were less-educated or poorer.

One-quarter (26%) of surveyed households own land that can be used for agriculture. Most surveyed households own poultry (77%), 16% own cattle, and 11% own small livestock such as a pig or goat. 18% own no livestock. Households in Sharonkhola, as well as households which were wealthier and more educated, were more likely to own land. Households in Sharonkhola were more likely to own cattle, and female-headed households were less likely to own livestock.

Most households reported having 1 (56%) or 2 (30%) income sources in the past year. The majority (81%) reported wage income as their primary source of income in the past year, followed by self-employment (16%), financial transfers (2%), and rent (1%). Wage income was more commonly cited as the primary income source in Mongla (85%) compared to Sharonkhola (75%), and respondents in Sharonkhola were more likely to report that

self-employment was their main income source (21% compared to 13%). Wage income was also reported as the second main source of income by nearly half of households (45%), followed by self-employment (34%), rent (18%), and financial transfers (3%).

84% of households earned wage income in the last year, most through day or casual labor (84%) and few through regular full-time (8%) or part-time (5%) employment. Among those who earned wages, half (51%) worked in agriculture, especially among poorer (60%) and less educated (58%) respondents. Other key sectors included hunting or fishing (26%), retail (19%), and construction (17%). Respondents in Sharonkhola were more likely to receive income from regular part-time employment (12% compared to 2%), while residents in Mongla were more likely to receive income from day or casual labor (91% to 71%). Respondents in Mongla were more likely to report income from hunting/fishing and manufacturing, while mining and retail were more common in Sharonkhola.

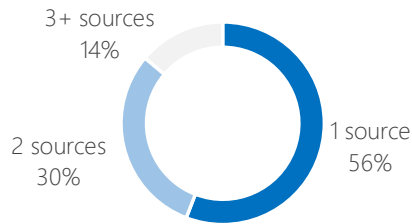
Among the 19% of households that earned income through self-employment, key sectors included crop cultivation (11%), fishery (33%),

and small business (trading, buying, selling products) (22%). No households reported self-employment in dairy; hunting; livestock; tailoring/weaving/handicrafts; transportation; service; or begging.

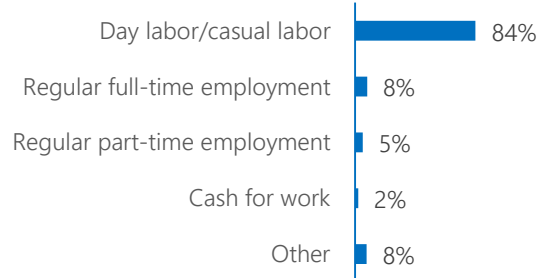
21% of households reported that a household member migrated permanently or temporarily to earn income. Migration was more commonly reported in Sharonkhola (30%) compared to Mongla (15%) and among poorer (31%) compared to wealthier households (11%). It appears these migrations fell into two categories – short-term (one (36%) to two (15%) months of the year) or long-term (ten (10%) to twelve (14%) months). No household reported receiving remittances.

Most respondents reported having only 1 (81%) or 2 (17%) individuals who worked for an income in the household. Most (85%) reported there were no income-earning women and girls in the household (more common among female, older, and less-educated respondents and in female-headed households), and only 3% reported that a youth aged 12-18 contributed to household revenue (in cash or in kind).

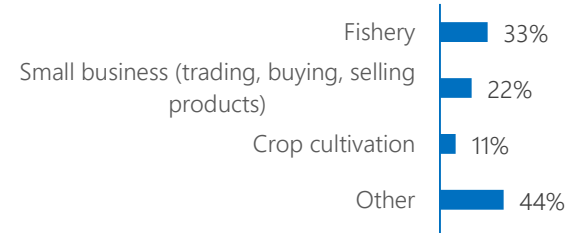
Number of household income sources in the past year



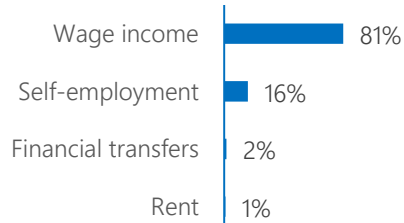
Wage Type and Sector (among those who earned wages in the past year)



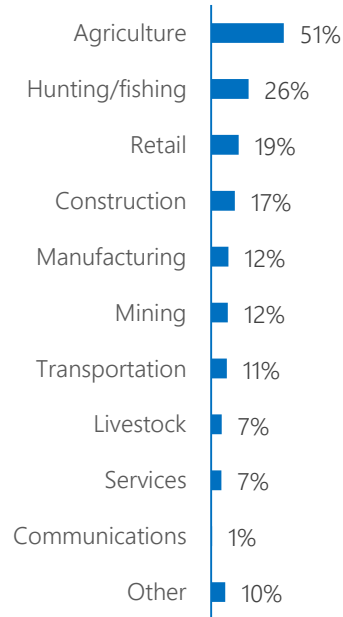
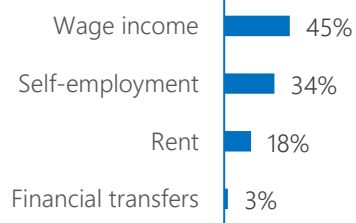
Self-Employment Sectors (among those who reported self-employment income in the past year)



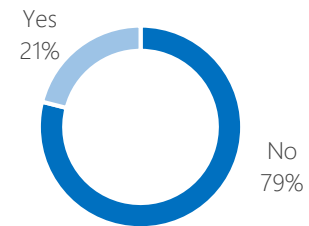
Households' primary source of income in the past year



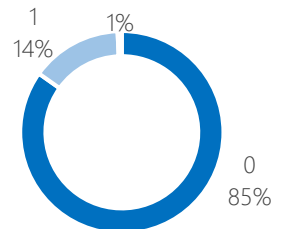
Households' secondary source of income in the past year



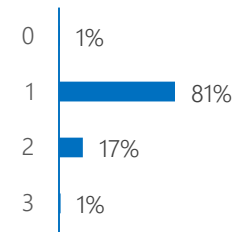
Whether or not a household member migrated for income in the past year



Number of working women or girls in the household



Number of household members who earn an income



ACCESS TO QUALITY SERVICES AND RESOURCES

Household access to basic services and resources, such as water, electricity, healthcare, education, credit, and transportation, are key aspects of day-to-day resilience, supporting households to generate income from assets (4). Access to finance in particular has been shown to enhance household resilience (29). In a disaster setting, access to transportation and basic services has been linked with more rapid response and recovery, supporting responders to reach accessible communities more quickly and deliver aid more effectively and efficiently (4).

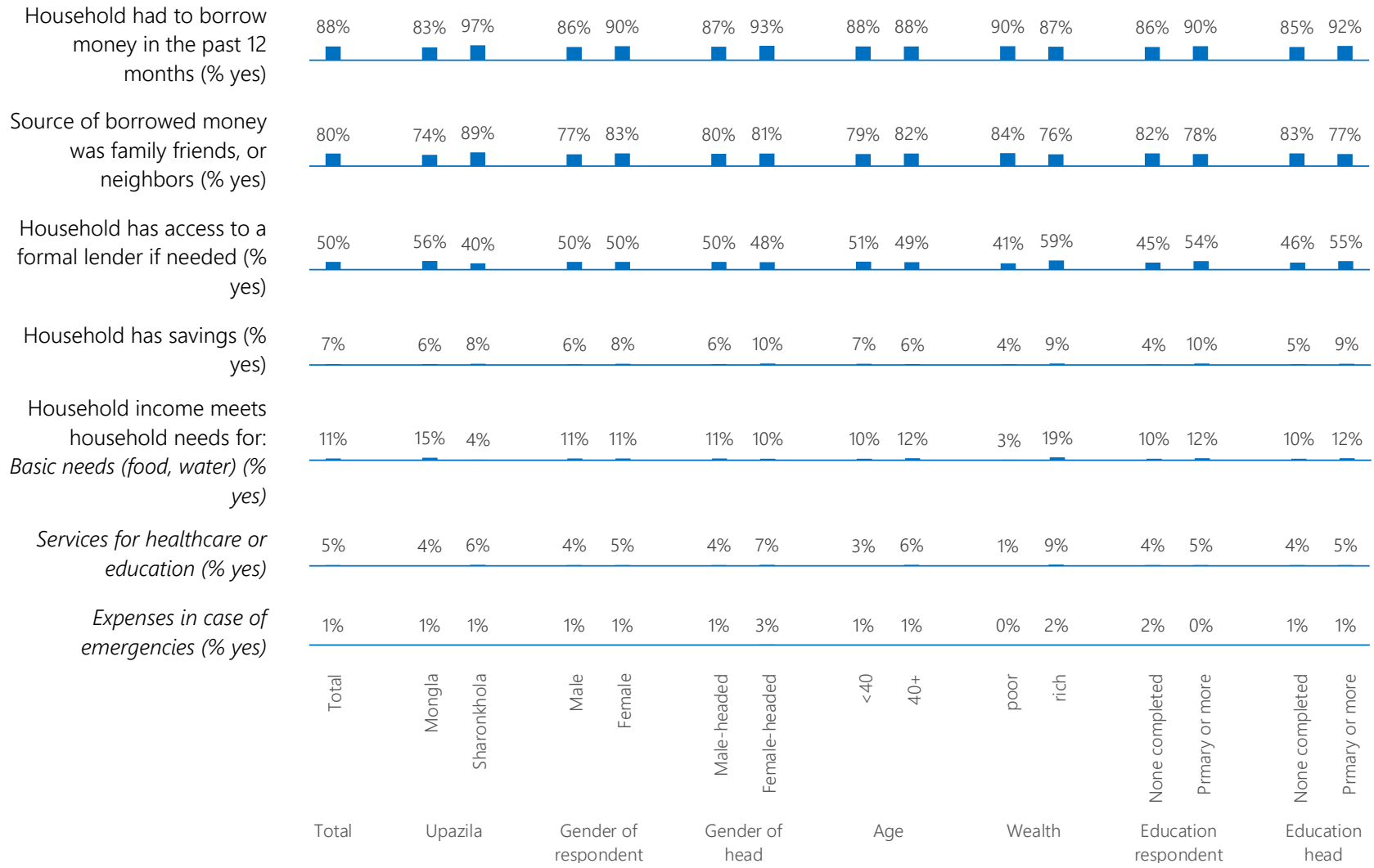
In this sample, most households (88%) had to borrow money in the last 12 months, most from informal sources such as friends, family, or neighbors (80%). Only 19% borrowed from organized sources such as associations/cooperatives (10%) or banks/lenders (9%). Only half (50%) has access to a formal place to borrow money if needed, and only 7% have household savings. The majority reported that their household income was not enough to cover basic needs (89%) or healthcare and education services (95%). Almost all said that

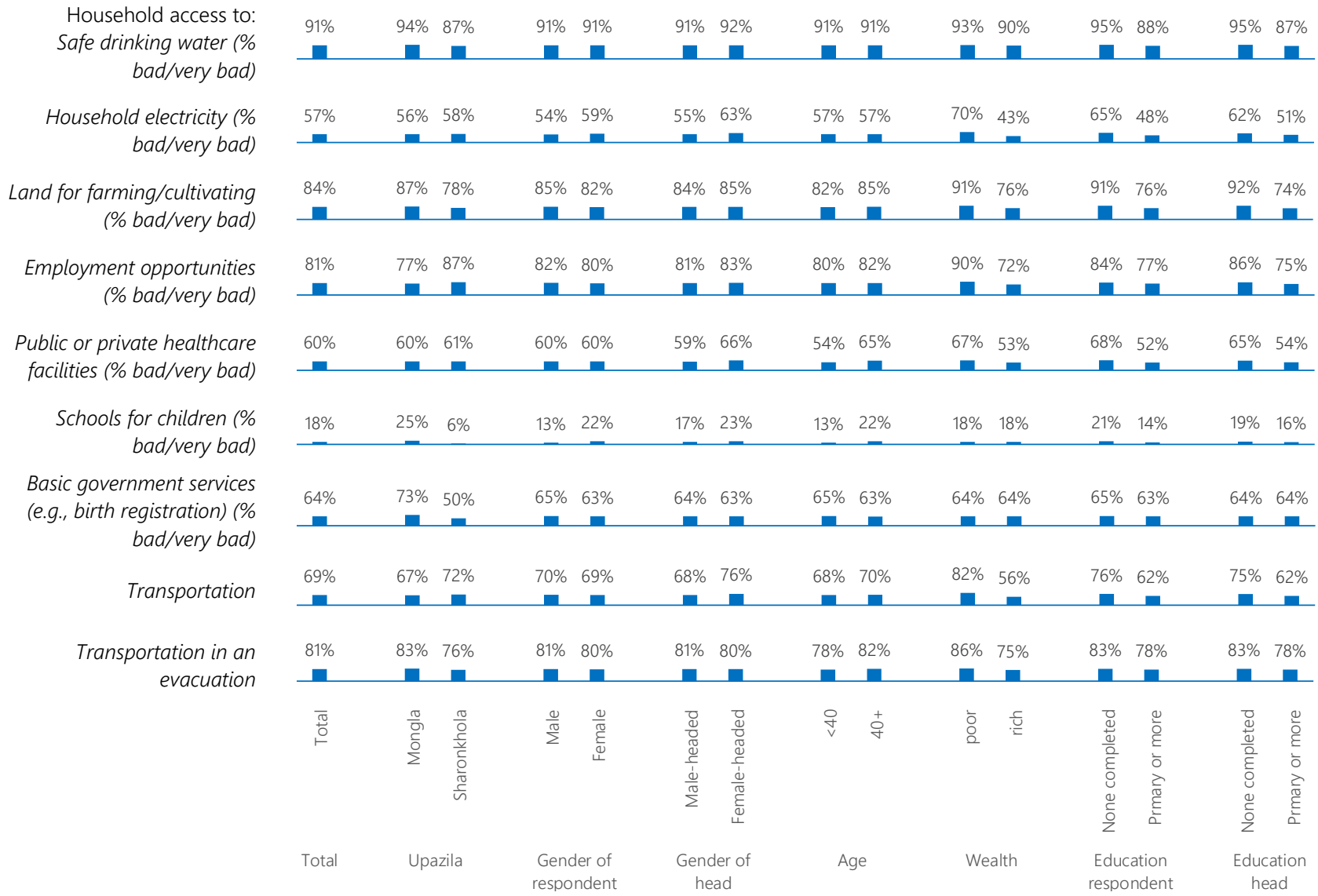
their household income does not cover emergency expenses (99%).

Respondents in Sharonkhola were more likely to have borrowed money (97% compared to 83% in Mongla), and were less likely to have access to formal lender (40% compared to 56% in Mongla). Cooperatives were more commonly used for borrowing in Mongla, as well as among wealthier households. Similarly, households in Mongla and wealthier households were more likely to report that their income met their basic needs.

In addition to income as a barrier to service access, households reported that they had poor overall access to basic services and resources. Respondents reported bad or very bad access to safe drinking water (91%), electricity in the home (56%), land for farming/cultivating (84%), employment opportunities (81%), public or private healthcare (61%), basic government services (64%), and transportation in general (69%) and during evacuations (81%). However, most felt their access to schools for children was average (60%). Most services were more frequently reported as “very bad” among poorer and less-educated households. In

Mongla, respondents reported better access to electricity, employment, healthcare, and transportation during evacuations, while respondents in Sharonkhola reported better access to education and government services. Male-headed households reported better land access, and young respondents reported better access to employment.





ACCESS TO INFORMATION

Access to information and media can expose households to new practices and opportunities related to livelihoods, social services, and health, as well as climate-adaptive and disaster mitigation actions, which can improve household adaptive capacity and resilience. When households are informed about opportunities and risks, they can take actions to protect themselves and their livelihoods (30). In addition, having an understanding of current information and media use can support preparedness programs to reach households on the platforms they are most likely to use.

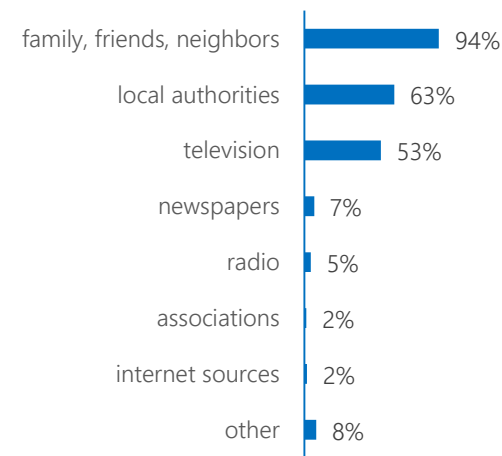
Respondents largely relied on informal sources of information for general news, such as family, friends, and neighbors (94%). Other key sources of general information were local authorities (63%) and television (TV; 53%). Local authorities were more commonly cited as an information source among poorer and less educated households, as well as in Mongla. TV was more commonly reported in Mongla, among younger and male respondents, and in respondents from wealthier and more educated households.

When asked specifically about disaster-related information, family, friends, and neighbors

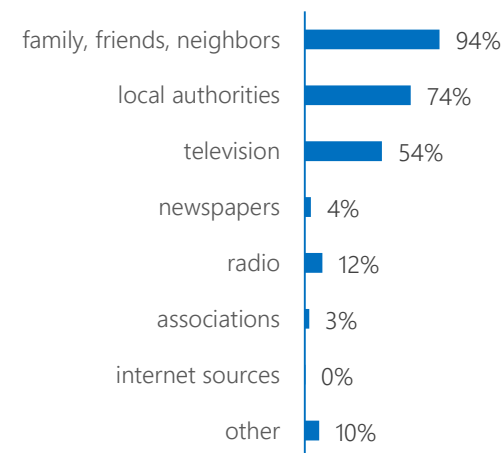
(94%) and local authorities (74%) were the most cited sources. Other key sources were TV (54%) and radio (12%). Local authorities were a more commonly cited information source among households in Sharonkhola compared to Mongla. In addition, radio was more commonly cited in Sharonkhola and among poorer households, while TV was more commonly cited among wealthier and more educated households. Respondents in Sharonkhola were more likely to report that they were better informed for general news and disaster information.

In general, respondents reported that they were more well-informed about disasters than about general news. Most respondents felt slightly (40%) or moderately (51%) well-informed about news. Most residents of Sharonkhola felt moderately informed (67%), while most residents of Mongla felt only slightly informed about general news (52%). In contrast, 12% of respondents reported that they were very well-informed, with 41% reporting they were moderately, and 44% slightly, well-informed. Interestingly, 21% of poorer households reported that they were “very” or “extremely” well-informed about disasters, while only 4% of wealthier households reported the same.

*Sources of general news
(% yes)*

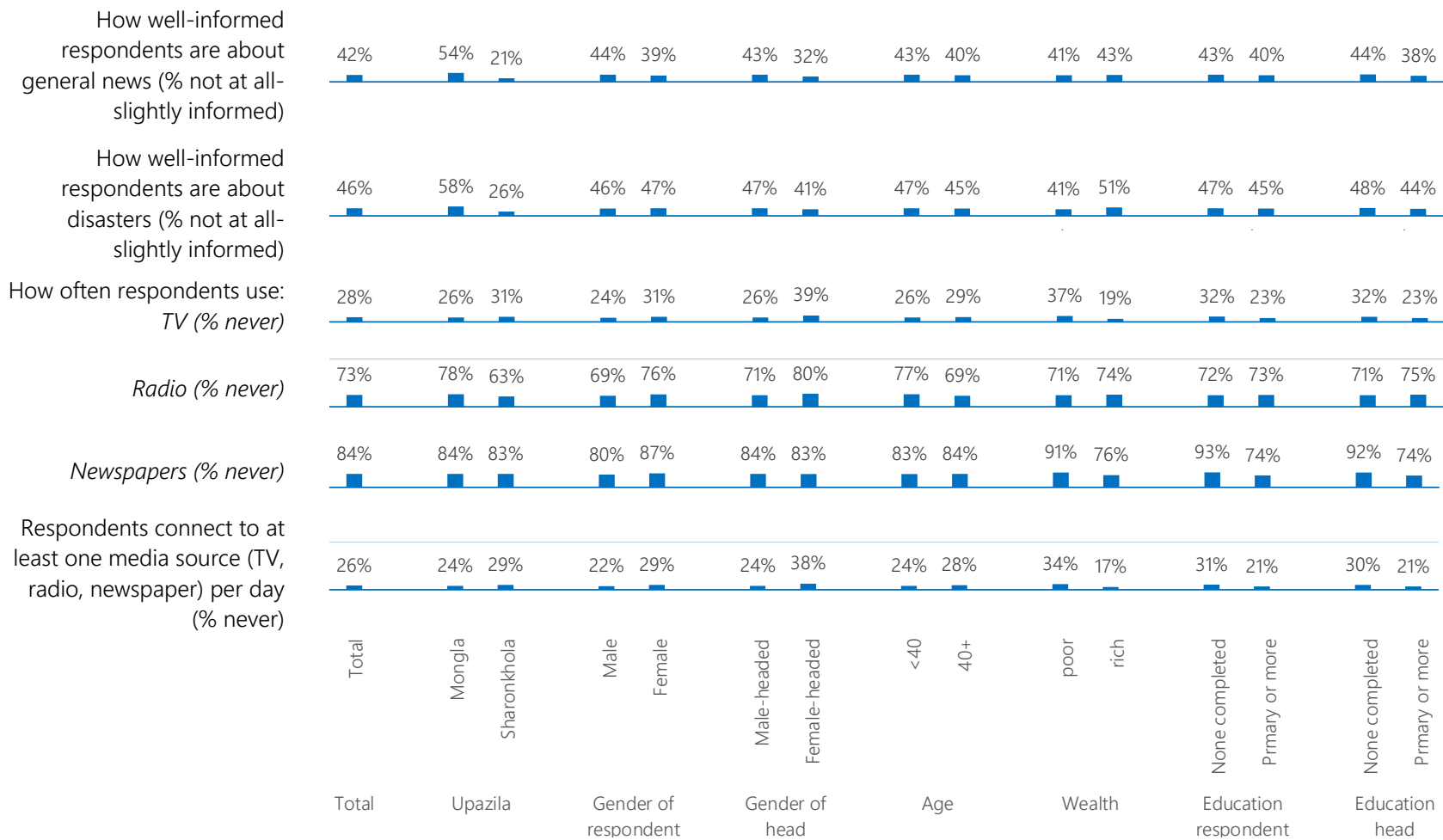


*Sources of disaster-related information
(% yes)*



TV appears to be the most used media source. 28% of respondents watch TV more than once a week, 16% watch once a week or less, and 29% watch sometimes (28% never watch). 37% of poorer households reported that they never watch TV, compared to only 19% of wealthier households. In comparison, 73% of respondents reported that they never listened to the radio, 84% never read the newspaper, and 96% never connect to the internet. Respondents in Mongla were more likely to report never listening to the radio, and poorer

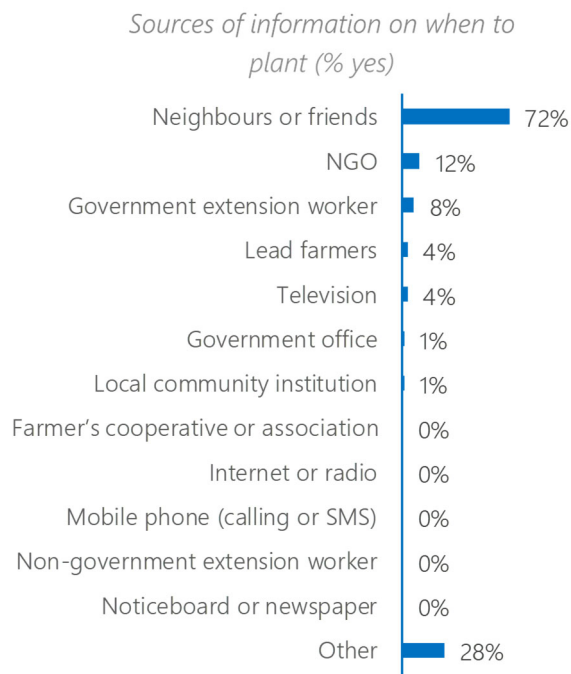
and less-educated respondents were more likely to report never reading the newspaper. 26% of respondents reported that they never connect to any of these sources, while 29% connect more than once a week, 17% connect once a week or less, and 28% connect sometimes. Respondents from female-headed households, poorer households, and less educated households were more likely to report that they never connected to any of these sources.



ACCESS TO AND QUALITY OF AGRICULTURAL INFORMATION

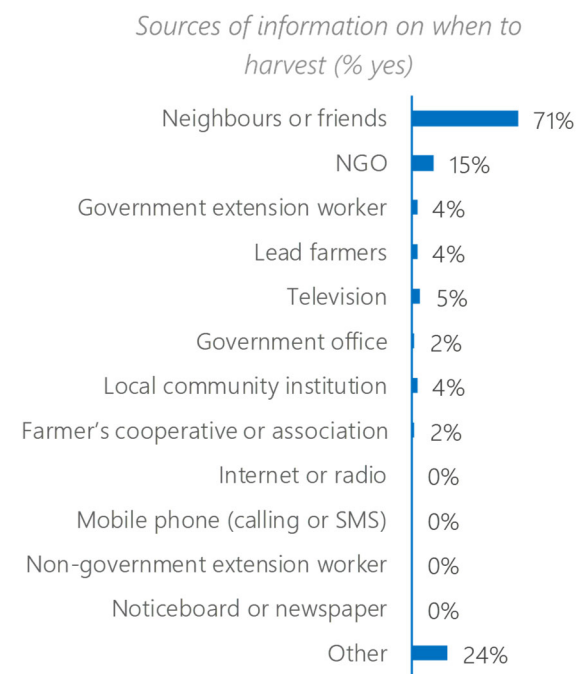
Agriculture is a key source of income in the district and is a sector that is heavily impacted by climate change (14). Changes in optimal planting times, water shortages, and soil salinization are just some of the climate change impacts affecting farmers in this region (31). As such, access to high-quality agricultural information is crucial to support farmers to make well-informed decisions and adopt practices that support their farms to be resilient in the face of climate change and natural disasters.

Overall, access to quality agricultural information was low. Very few farming households (3%) participated in organized farmer's groups in which agricultural practices were shared, and only half (50%) reported that they have access to timely information on weather/seasonality that enables them to decide when to plant. Farmers in Mongla, as well as wealthier and more educated households, were more likely to report that they had access to this information. Most people received this information from neighbors or friends (72%), NGOs (12%), or government extension workers (8%). Respondents who lived in Sharonkhola were more likely to receive planting



information from neighbors and friends, as were female respondents and younger, wealthier, and more educated farmers. NGOs were more commonly cited as a source of information in Mongla, as well as in female-headed, wealthier, and less educated households, while government extension workers were more likely cited in Sharonkhola and among male respondents.

Even fewer households (35%) had access to



timely information on weather/seasonality that enabled them to decide when to harvest, with a similar breakdown for information sources. Access to this information was more commonly reported in Mongla, among female and younger respondents, and in wealthier and more educated households. Male respondents and respondents in male-headed and wealthier households were more likely to report neighbors and friends as a source of information. NGOs were more often cited as

an information source in Mongla and among female, older, wealthier, and more educated respondents, while government extension workers were more likely cited in female-headed households.

Similarly, only 2% of farming households reported that they received any information related to agricultural practices in the last year. Those who did receive this information from neighbors and friends (67%) or government extension workers (33%). Overall, only 4% of respondents received information from an agricultural extension worker within the past year. Those who received this information

reported that it helped them take measures to improve their agricultural livelihoods either fully (33%) or somewhat (67%).

Only 5% of farmers reported that they had been trained in new agricultural practices in the past year, either by NGOs (75%), government offices (13%), or government extension workers (13%). Most found the training helped them somewhat (75%) in taking measures to improve their agricultural livelihoods, although some felt it helped very much (13%) or a little (13%). Only 1% reported that their farm had been visited by any extension worker in the last year.

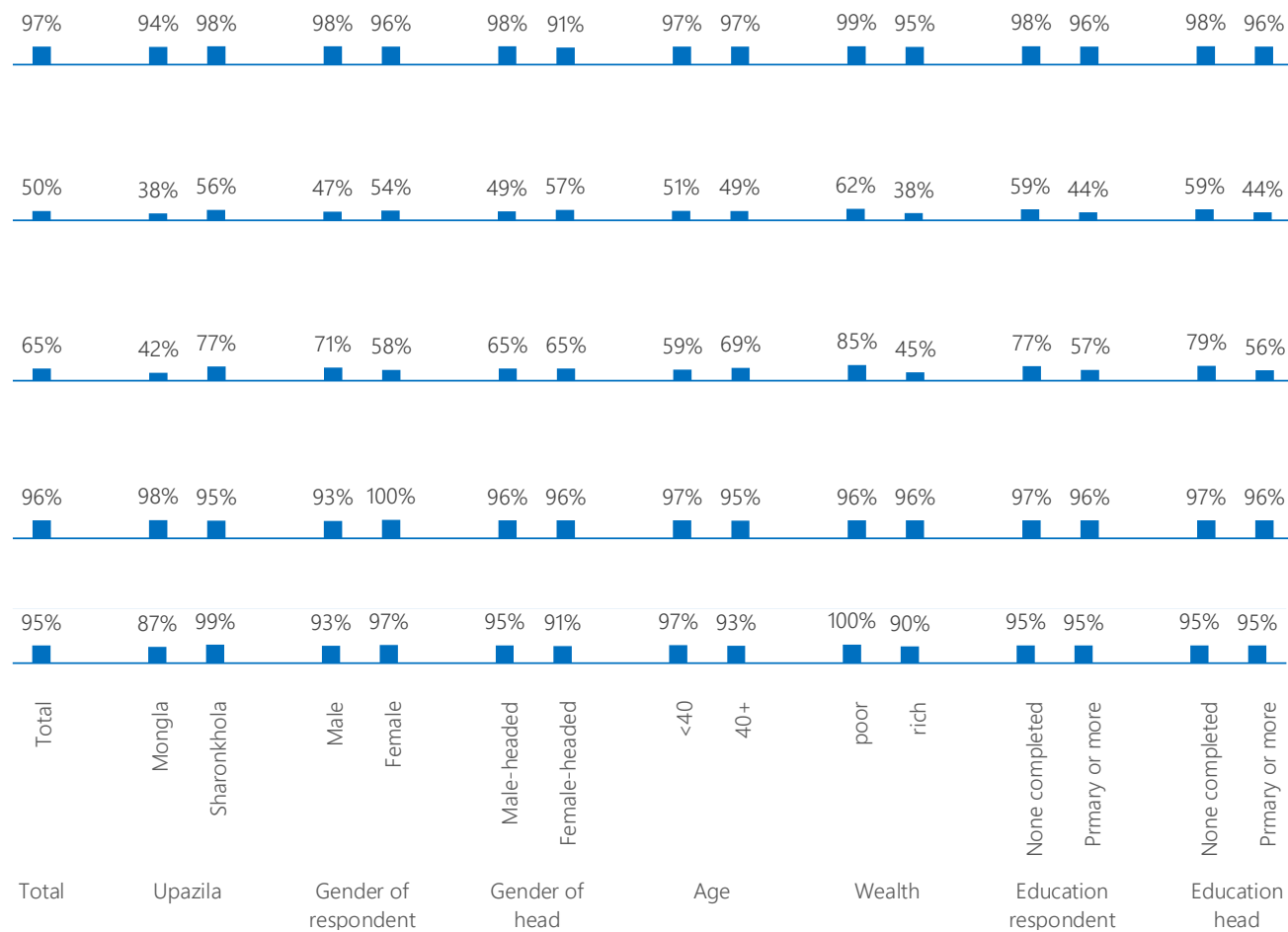
A household member participates in an organized farmer's group where farmers share best agricultural practices (% no)

Farmer has access to timely information on weather/seasonality to help them decide when to plant (% no)

Farmer has access to timely information on weather/seasonality to help them decide when to harvest (% no)

Respondent received information from an agricultural extension worker within the past year (% no)

Respondent received any training in new agricultural practices (% no)



ACCESS TO QUALITY EARLY WARNING MESSAGES

Early warning messages are critical to allow households to take actions to ensure their safety before disaster strikes (2). Early warning messages can be received from official sources, such as government or community officials, media broadcasts, loudspeakers, or alarms, or through unofficial sources such as family and friends. However, it is not enough to receive a warning – households must receive warnings with enough time to act to protect themselves and their families (2). This survey asked households about their experiences receiving early warning messages for the most recent flood they experienced.

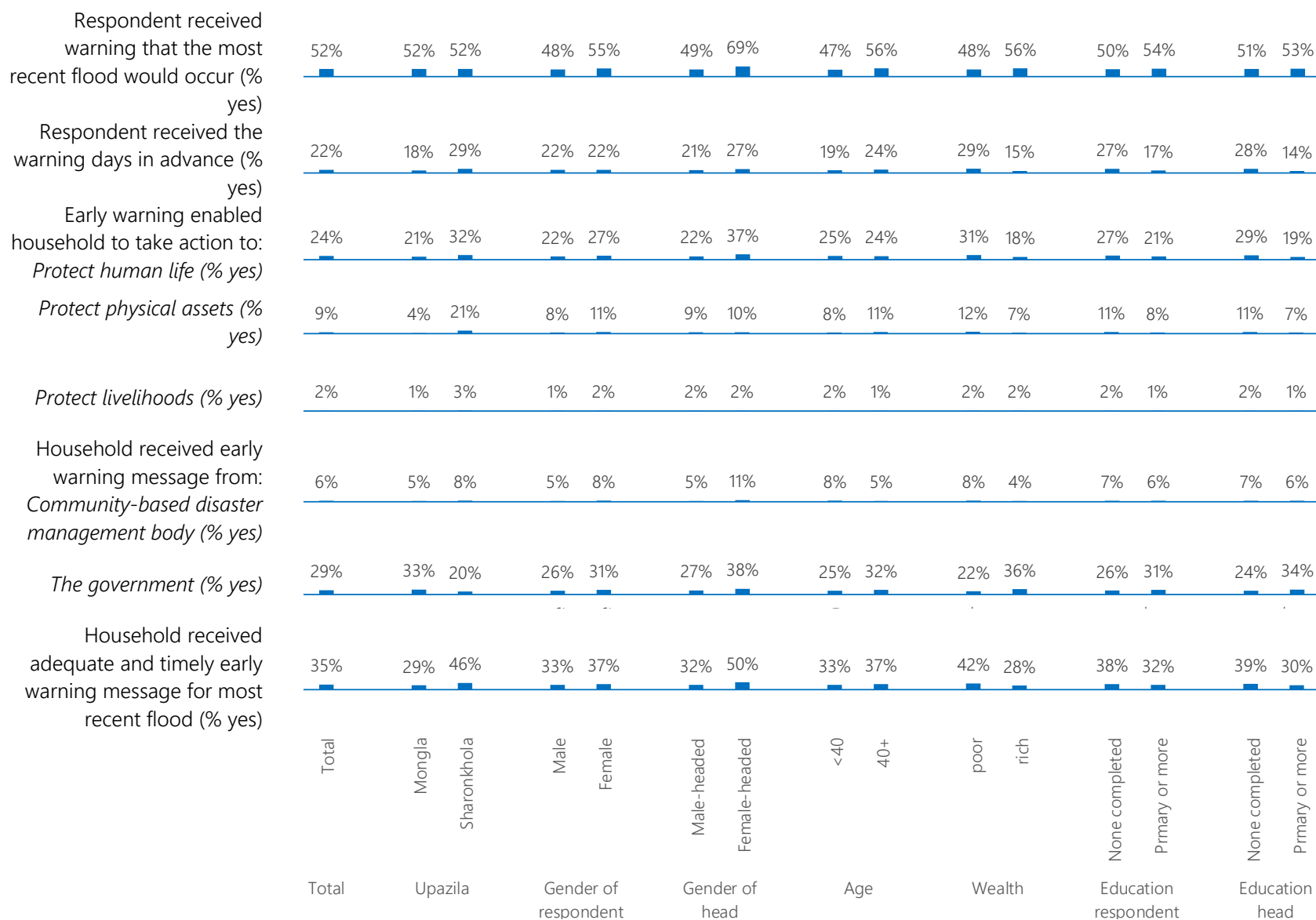
Nearly all (88%) households experienced flooding within the past year, but only half (48%) reported receiving any warning information. Interestingly, female-headed households were more likely to report receiving such a message, compared to male-headed households. Most respondents (69%) reported receiving a warning hours before the disaster, although some received the information days (29%) or minutes (2%) in advance. Households in Sharonkhola, as well

as poorer and less educated households, were more likely to receive a warning days in advance.

For the most recent flood, receipt of a warning enabled 24% of households to take action to protect human life, 9% of households to take action to protect physical assets (21% in Sharonkhola compared to only 4% in Mongla), and 2% of households to take action to protect livelihoods. Households in Sharonkhola, as well as households that were female-headed, poorer, and less educated, were the highest subgroups to report receiving a message with enough time to protect human life.

When asked specifically about the last flood, only 6% of households reported that they had received an early warning message for the most recent flood from a community-based disaster management body and 29% from a government source. Only 35% stated that they received an adequate and timely early warning message for the most recent flood.

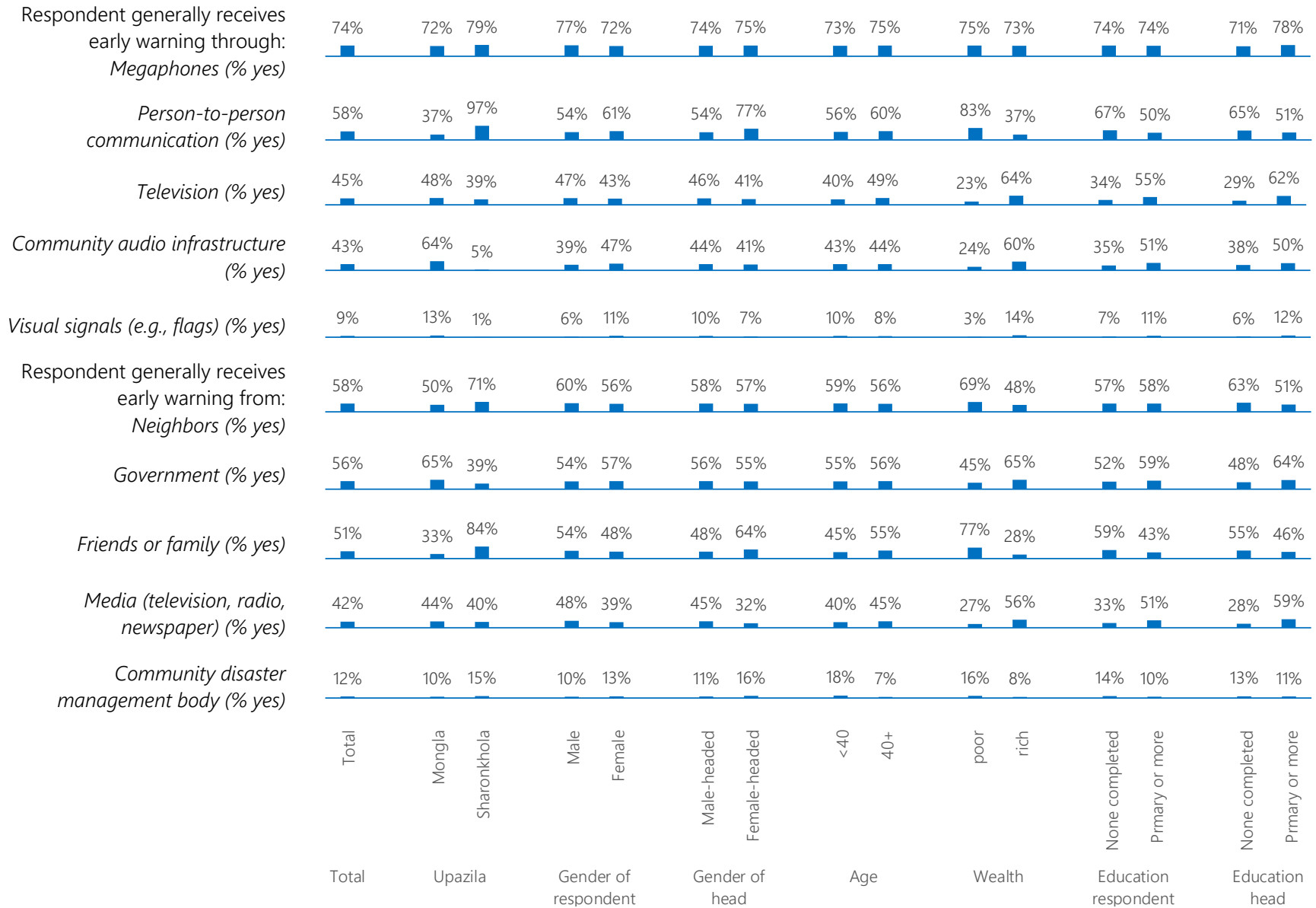
Respondents in Sharonkhola, as well as female-headed and poorer households, were more likely to report receiving an adequate and timely message.



When asked about early warning more generally, most households receive early warning messages through megaphones (74%) or person to person communication (58%). Other key platforms for early warning messages included television (45%), community audio infrastructure (43%), or visual signals (e.g., flags) (9%). No households received early warning messages through alert sounds, radio, mobile phone calls, SMS, or smartphone apps. Person-to-person communication was highly reported in Sharonkhola (97%), among female-headed households (77%), and among poorer households (83%), while community audio infrastructure was more commonly reported in Mongla (64% compared to only 5% in Sharonkhola), and among wealthier (60%) and more educated (50%) households. Visual cues were more commonly reported in Mongla (13%) and among wealthier (14%) households,

and television was highly reported among the wealthy (64%) and more educated (62%).

The most common sources of early warning messages were neighbors (58%), government (56%), friends or family (51%), media (television, radio, newspaper; 42%), or a community disaster management body (12%). Neighbors and family and friends were commonly reported among residents in Sharonkhola and among poorer and less educated households. Female-headed households were more likely to report family and friends as an early warning source. Media and government sources were highly reported among the wealthy and more educated, while government sources were highly reported in Mongla. Younger respondents more commonly cited community disaster management bodies.



KNOWLEDGE OF, AND CONFIDENCE IN, COMMUNITY DISASTER PREPAREDNESS

Community disaster preparedness plans can greatly support household preparedness. When households are aware of, and confident in, their community's disaster plan, they can utilize community support structures to stay safe and recover during a disaster (11). When community disaster preparedness is not strong, or when households are not aware of these plans, they may not be able to take advantage of community knowledge and resources before, during, and after a disaster.

No respondents reported that they were confident in their community's preparedness for disasters, and awareness of community capacity was low. While 72% of respondents reported that their community had a group or committee focused on preparedness and response, 39% reported that the group carried out preparedness activities regularly, and only 32% reported that the group could respond effectively in an emergency. However, most respondents in Sharonkhola (55%) felt the group could respond effectively, while most respondents in Mongla (60%) felt the group could not effectively respond. Few reported that the group had the necessary

equipment (14%; 23% in Sharonkhola compared to 8% in Mongla) or skills (5%) to carry out their roles in an emergency. Strikingly, many respondents reported that they didn't know whether or not the group existed (7%), if they carried out activities regularly (16%), if they could respond effectively (22%), or if they had the necessary equipment (34%) or skills (29%).

Only 27% of respondents were aware of potential hazards in their area and how these may affect their homes and livelihoods. Only 4% reported that there was a mechanism in place to monitor these hazards (54% didn't know), and only 18% reported that people at risk were alerted of an impending emergency with sufficient time in advance (33% didn't know). Only 5% reported that their community had the capacity to evacuate persons rapidly from high risk areas before an emergency (36% didn't know), and only 18% reported that community members had been trained in operation and maintenance of the community's Early Warning System (35% didn't know). Only 6% reported that the community had an emergency contingency plan (61% didn't know). Half (54%) reported that evacuation routes and routes to alternative water sources were not mapped. Only 1% reported that simulation drills were

carried out in their community in the last year (52% didn't know).

When asked what their community does in an emergency situation, 34% reported that the community waits for external help before responding, and 55% reported that the community begins responding using its own resources. However, only 29% reported that their community has the capacity to lead response and recovery actions, while 44% reported that the community depends on external assistance to effectively respond. Finally, only 14% reported that their community leaders ensure that the needs of affected populations and vulnerable groups are met during emergencies.

With respect to community capacity, respondents in Mongla and Sharonkhola responded quite differently. Most respondents from Mongla cited that their community depends on external capacity for response (55%) or responds using their own resources (34%), while most respondents from Sharonkhola didn't know (57%). In addition, respondents in Sharonkhola (71%, compared to 47% in Mongla) felt that community leaders did not ensure the needs of affected and vulnerable groups were met in an emergency.

ELEMENT 2
PEOPLE CAN RELY ON
EFFECTIVE SOCIAL
SUPPORT AND SAFETY NETS

Key indicators assessed under this element include:

1. Engagement with community activities or groups
2. Community willingness to help others before and during disasters
3. Trust of others
4. Trust in local and national disaster plans and services

COMMUNITY ENGAGEMENT

Social capital is a crucial element of disaster resilience (1–3,32,33). By building relationships with others outside of their household, households gain support and access to resources to help them prepare, respond, and recover from disasters (32,33). Membership in a community organization is one widely used metric for assessing “bridging social capital,” and such community engagement has been found to be predictive of resilience (33). In fact, HHI’s nationwide household resilience survey in the Philippines found that membership in a community organization was the single highest predictor of household

preparedness. When households engage in a community group, they not only build social capital, but can also gain access to resources and services they may not otherwise have had. As such, we asked about respondents’ formal and informal engagement in community groups and efforts.

Over half (62%) of respondents agreed or strongly agreed that they would help others in their community, no matter what their needs are. This was notably high in Sharonkhola (81%) compared to Mongla (51%) and among poorer respondents (74%), compared to their wealthier (51%) counterparts. While few respondents (3%) reported that they contributed money, food, or clothing to others in the community, more (30%) said that they volunteered their time in activities to benefit their communities. Volunteering was highest among female respondents (41%).

Overall, formal community group participation is low. Only 2% of respondents are a member in any associations or groups, and 3% are a member in associations or groups aimed at preparing for, or helping with, disasters.

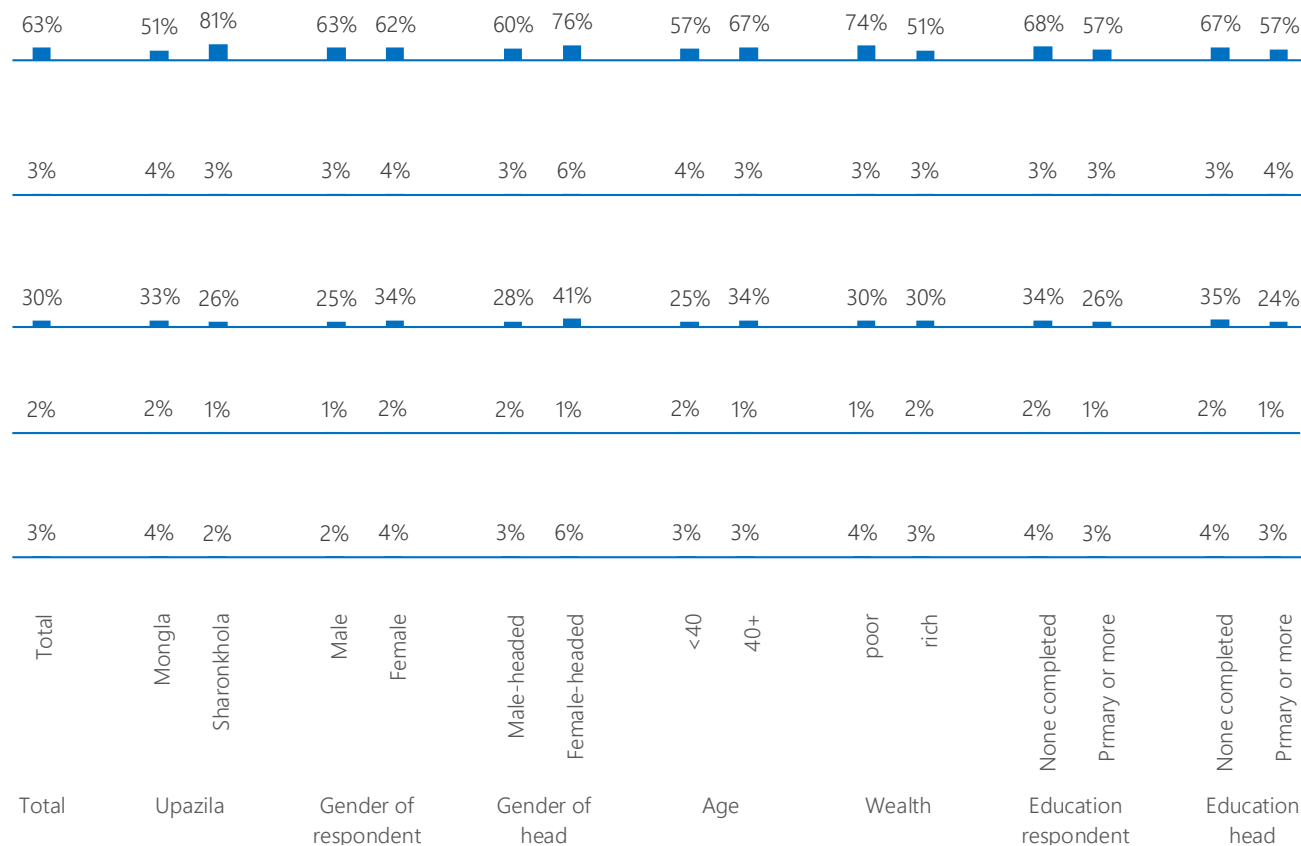
Respondent would help others in his/her community no matter what their needs are (% agree/strongly agree)

Respondent contributes money, food, or clothing to local causes, charities, or others in community (% yes)

Respondent volunteers in activities intended to benefit his/her community (% yes)

Respondent is a member in any associations or groups (% yes)

Respondent is a member in any associations or groups for preparing or helping with disasters (% yes)



COMMUNITY WILLINGNESS TO HELP

In addition to the respondents' own community engagement, we also explored respondents' perception of overall community willingness to engage with others to improve community life and recover from disasters. These questions explore respondents' perception of social connectedness in the

community, and also help explore existing community support for collective preparedness, response, and adaptive actions (33).

Most respondents reported strong community willingness to support others during a disaster. 74% of respondents disagreed or strongly disagreed that people only help their own families, and 71% agreed that people would

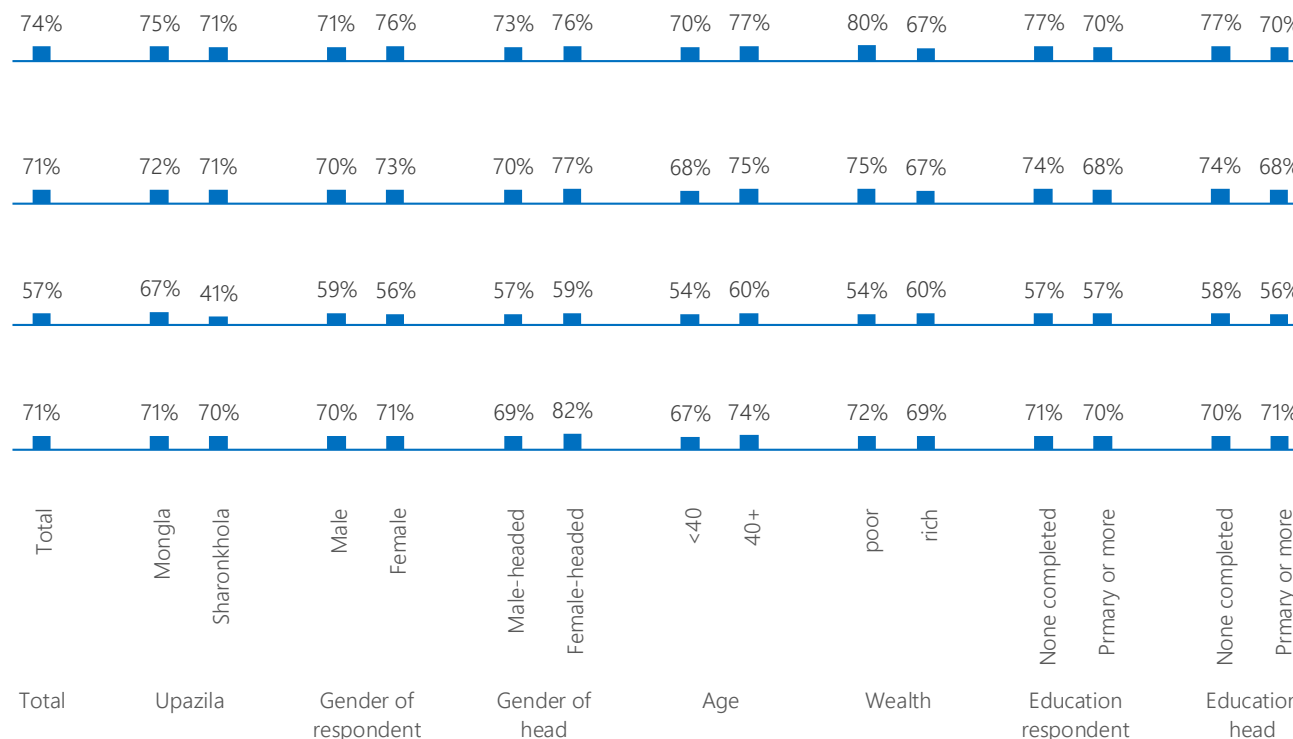
work together to support each other, during a disaster. Most respondents also agreed or strongly agreed that people in the community work together to improve community life (57%) and reduce disaster risk (71%). Respondents in Mongla reported higher agreement (67%) that people worked together to improve community life, compared to respondents in Sharonkhola (41%).

If there is a disaster, people will only help their own families (% strongly disagree/disagree)

If there is a disaster, people will work together to support each other (% strongly agree/agree)

People here work with each other to improve community life (% strongly agree/agree)

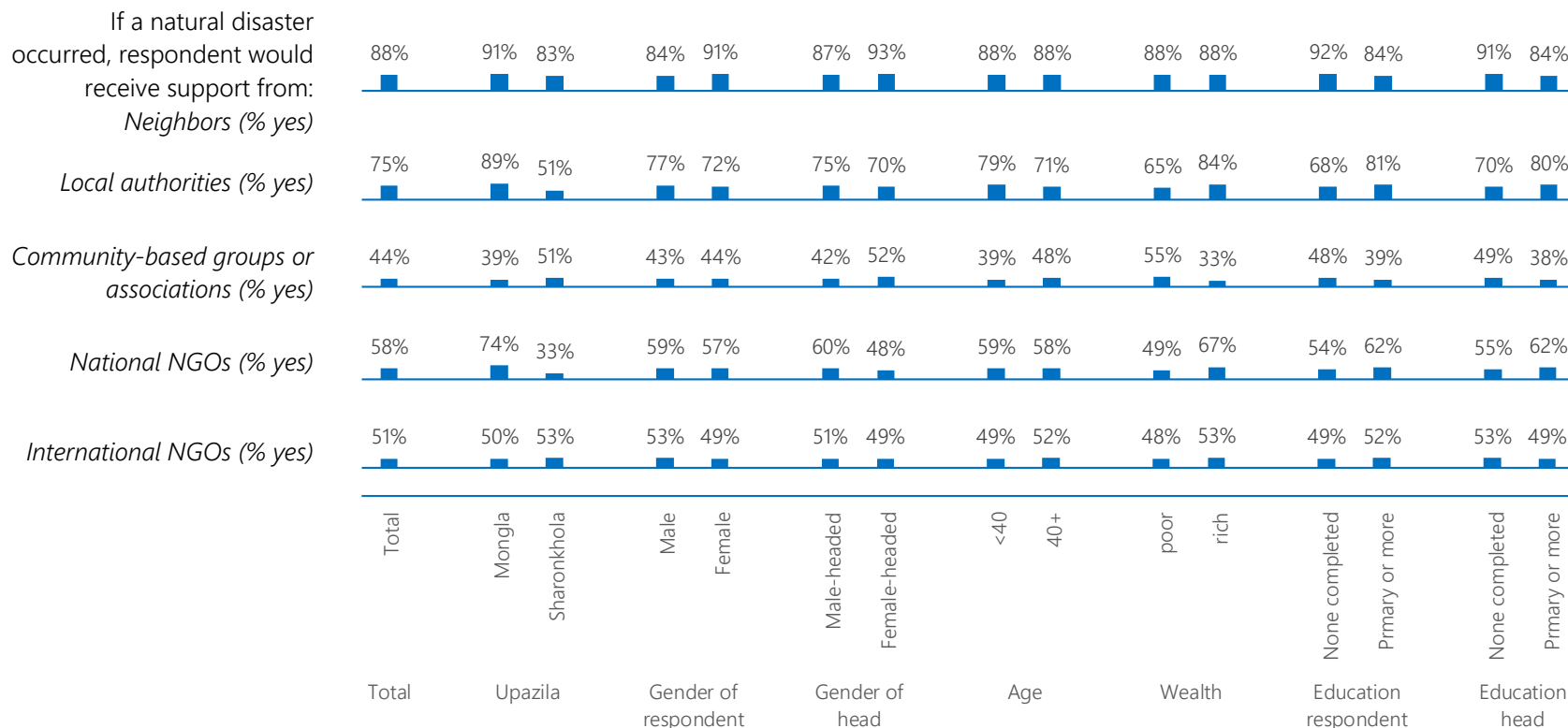
People here work with each other to reduce the risk of disasters (% strongly agree/agree)



Respondents were also asked how much support they would expect to receive from various groups should a disaster occur. Most respondents expected to receive some disaster support, either from their neighbors (88%), local authorities (75%), community-based associations or groups (44%), national NGOs (58%), or international NGOs (51%). Overall, only 3% of respondents did not expect to receive support from any of those sources.

Residents in Mongla reported much higher support from local authorities (89%) and national NGOs (74%) compared to residents from Sharonkhola (51% and 33%, respectively), and also reported receiving support from more sources (75% reported 3+ sources of support, while only 49% in Sharonkhola reported the same). Wealthier and more educated respondents expected more support from local authorities (84% and 81%,

respectively) compared to their counterparts, while poorer respondents reported higher support from community-based groups (55%). Male-headed and wealthier households reported higher support from national NGOs (60% and 67%, respectively) compared to female-headed households (48%) and poorer households (49%).



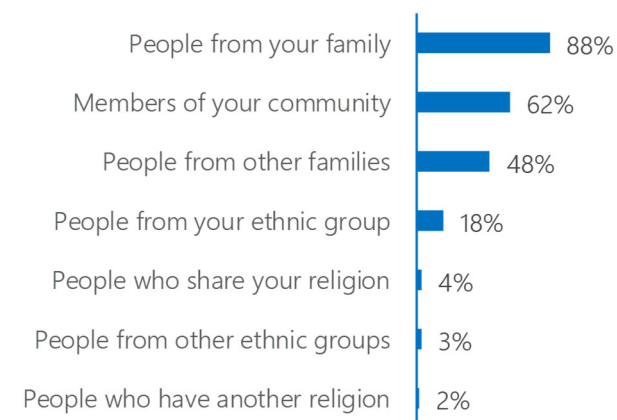
GENERALIZED TRUST OF OTHERS

In addition to the previous behavioral measures of social support, we also assessed attitudinal measures by asking respondents about their trust of various groups (33). We explored respondents' trust of those similar to themselves (family, members of their own community), dissimilar from themselves (those with different backgrounds or religions), and authority figures. Communities with high trust have been found to take more collective action to prepare for disasters and make effective collective decisions and actions during response, recovery, and adaptation (33).

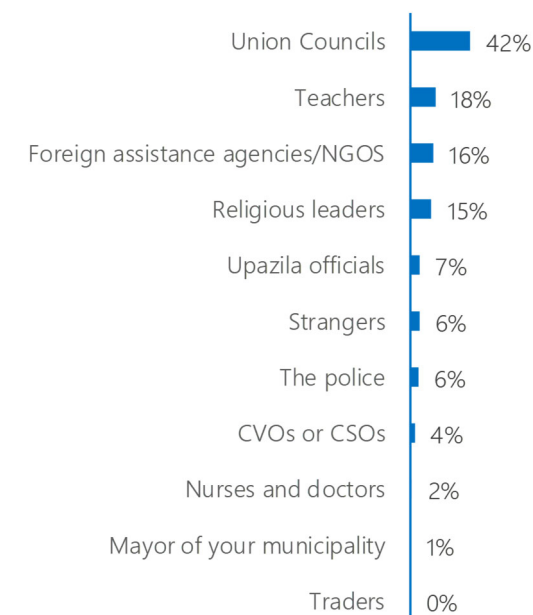
Most respondents trust members of their community (62%) and family (88%), while almost half (48%) trust people from other families. Few trust people from their own (18%), and fewer trust people from other (3%) ethnic groups. Only 4% trust people who share their religion, and 2% trust those with other religions. These patterns varied little between groups, although female respondents reported higher trust of community members (72%) compared to male respondents (60%) and residents of Mongla reported higher trust of other families (53%) compared to Sharonkhola residents (41%).

Among authority figures, respondents most trust Union Councils (42%), teachers (18%), foreign assistance agencies/NGOs (16%), and religious leaders (15%). Few respondents reported that they trust Upazila officials (7%), police (6%), strangers (6%), CVOs or CSOs (4%), nurses and doctors (2%), or their mayor (1%). There was similarly low variation between groups, however, trust in Union Councils was higher among respondents from Mongla (56%), who were under 40 (48%), or who were from households that were male-headed (44%), wealthier (56%), or more educated (49%), compared to their counterparts. Trust in Union Councils was particularly low in Sharonkhola (19%). In addition, trust in foreign assistance agencies and NGOs was especially high in Mongla (22%, compared to 7% in Sharonkhola) and among wealthier households (24%, compared to 9% in poorer households).

Generalized Trust



Trust in Authorities



TRUST IN DISASTER PLANS

Finally, we explored households' trust in local and national governments' ability to prepare for, and respond to, disasters. People are more likely to take action to protect themselves when they trust government sources and are engaged in government preparedness and response (34). We also explored household perceptions of the quality of local government response, which is more indicative of household ability to avail themselves of government response resources (32,35).

There was wide variation in participants' trust in local and national government preparedness. When asked whether or not they agree that local and national governments are well prepared for any natural disasters, many participants neither agreed nor disagreed (30% for local government, 52% for national government). Trust in preparedness appeared to be slightly higher for local government; 29% of respondents agreed or strongly agreed that local government was

well-prepared, compared to only 11% of respondents when asked about national government preparedness. Respondents from poorer and less-educated households felt both the local and national governments were less prepared, compared to wealthier and more-educated households. In addition, a greater proportion of households in Sharonkhola did not feel the national government was well-prepared (50%), compared to only 29% of residents in Mongla who felt the same.

However, most respondents did not agree that the local government ensures the security of their homes during an evacuation (only 5% agreed or strongly agreed), or that local government distributes resources based on needs during disasters (only 10% agreed or strongly agreed). Interestingly, the majority of wealthier (54%) and well-educated (51%) households disagreed that resources were distributed based on needs, while poorer (53%) and less-educated (49%) households neither agreed nor disagreed.

The local government is well prepared for any natural disasters (% strongly disagree-disagree)



The national government is well prepared for any natural disasters (% strongly disagree-disagree)



The local government ensures the security of your house during evacuation (% strongly disagree-disagree)



The local government distributes resources to address natural disasters based on needs (% strongly disagree-disagree)



Total	Mongla	Sharonkhola	Male	Female	Male-headed	Female-headed	<40	40+	poor	rich	None completed	Primary or more	None completed	Primary or more
Total	Upazila	Gender of respondent	Gender of head	Age	Wealth	Education respondent	Education head							

ELEMENT 3

PEOPLE TAKE STEPS TO LEARN,
PREPARE, AND ADAPT BEFORE
AND AFTER DISASTERS

Key indicators assessed under this element include:

1. Knowledge of climate change
2. Actions taken to protect human life, physical assets, and/or livelihoods before the most recent disaster
3. Coping strategies employed after the most recent disaster
4. Actions taken to adapt to a changing climate

EXPOSURE

To understand the strategies and actions households taken to prepare for, cope with, and adapt to disasters and climate change impacts, household exposure must be understood.

The vast majority (90%) of households experienced a natural disaster in the last 12 months, largely salinity (69%), flooding (66%), drought (53%), and cyclones (45%). Nearly all (97%) households in Mongla experienced a disaster in the last 12 months, compared to only 80% of households in Sharonkhola. Despite geographic proximity, a greater proportion of households in Sharonkhola reported experiencing drought (88%, 36% in Mongla) and salinity (96%, 56% in Mongla), while flooding was more commonly reported in Mongla (70%, compared to 58% in

Sharonkhola). In addition, wealthier (76%) and more-educated households (73%) more commonly reported flooding impact compared to their counterparts (57% and 61%, respectively). More-educated households also commonly reported salinity (78% compared to 61% in less-educated homes).

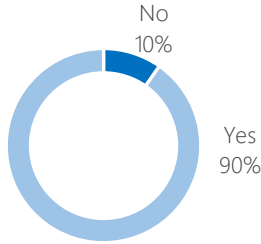
Many households experienced other environmental changes including reduced water quantity (93%), reduced water quality (94%), livestock disease (44%, 73% of households that raise livestock), crop disease/damage (24%, 73% of households that conduct agricultural work), low agricultural yields (22% of all respondents, 85% of households that conduct agricultural work), and post-harvest losses (21%, 71% of households that conduct agricultural work). Reduced water quantity and quality was more commonly reported in Mongla (97% for both impacts), than in Sharonkhola (87% and 88%, respectively). However, post-harvest losses were more commonly reported in Sharonkhola (29% of all respondents, 76% of households who engage in agriculture) compared to Mongla (16% of all respondents, 64% of households who engage in agriculture).

In addition to environmental and climate change impacts, households experienced many other threats to livelihoods and resilience,

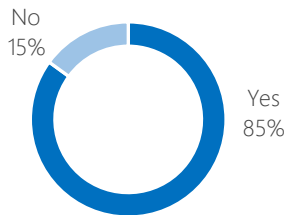
including malnutrition (85%; 91% in Sharonkhola, 81% in Mongla); macroeconomic shocks, such as inflation, recession, or supply/demand shocks (32%); job or business loss (29%); loss of enterprise assets (10%); chronic illness, death, or disability of an income-earning (4%) or non-income-earning household member (7%); displacement (4%); and interpersonal or community violence (1%). Macroeconomic shock impact was reported more commonly among wealthier (43%) and more-educated (45%) households, compared to their counterparts (22% and 21%, respectively).

The majority of households (85%) reported that these shocks had financial implications. Households reported experiencing these events anywhere from 0-5 times in the last year, with most experiencing these events once (51%), twice (25%), or thrice (13%). Most (90%) said this year's events were worse than usual.

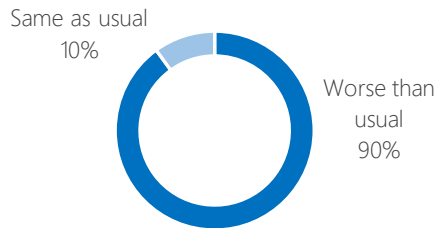
Whether or not respondent experienced a natural disaster in the last 12 months



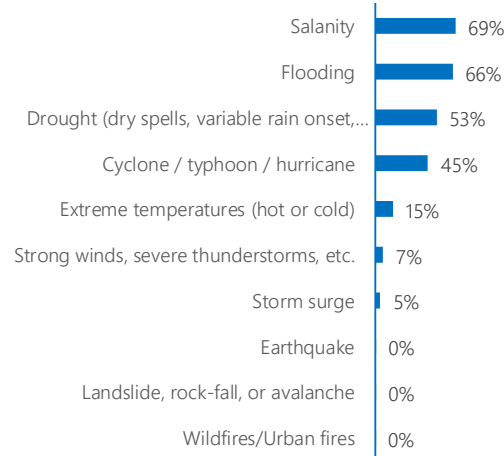
Whether any shock experienced by the respondent in the past 12 months had financial implications



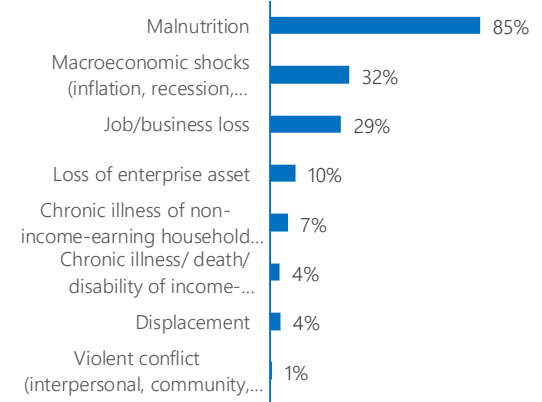
How this year's shocks compared to usual years' shocks



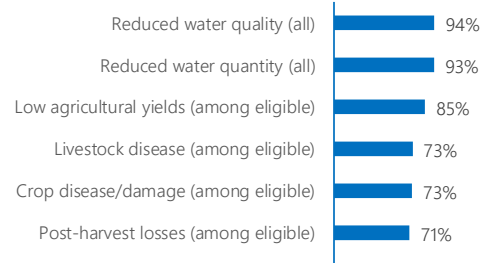
Natural disasters experienced by respondent in the last 12 months



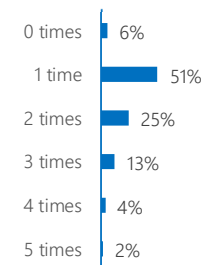
Other shocks experienced by respondent in the last 12 months



Environmental changes experienced by respondent in the last 12 months



Number of times respondent experienced these shocks in the last 12 months



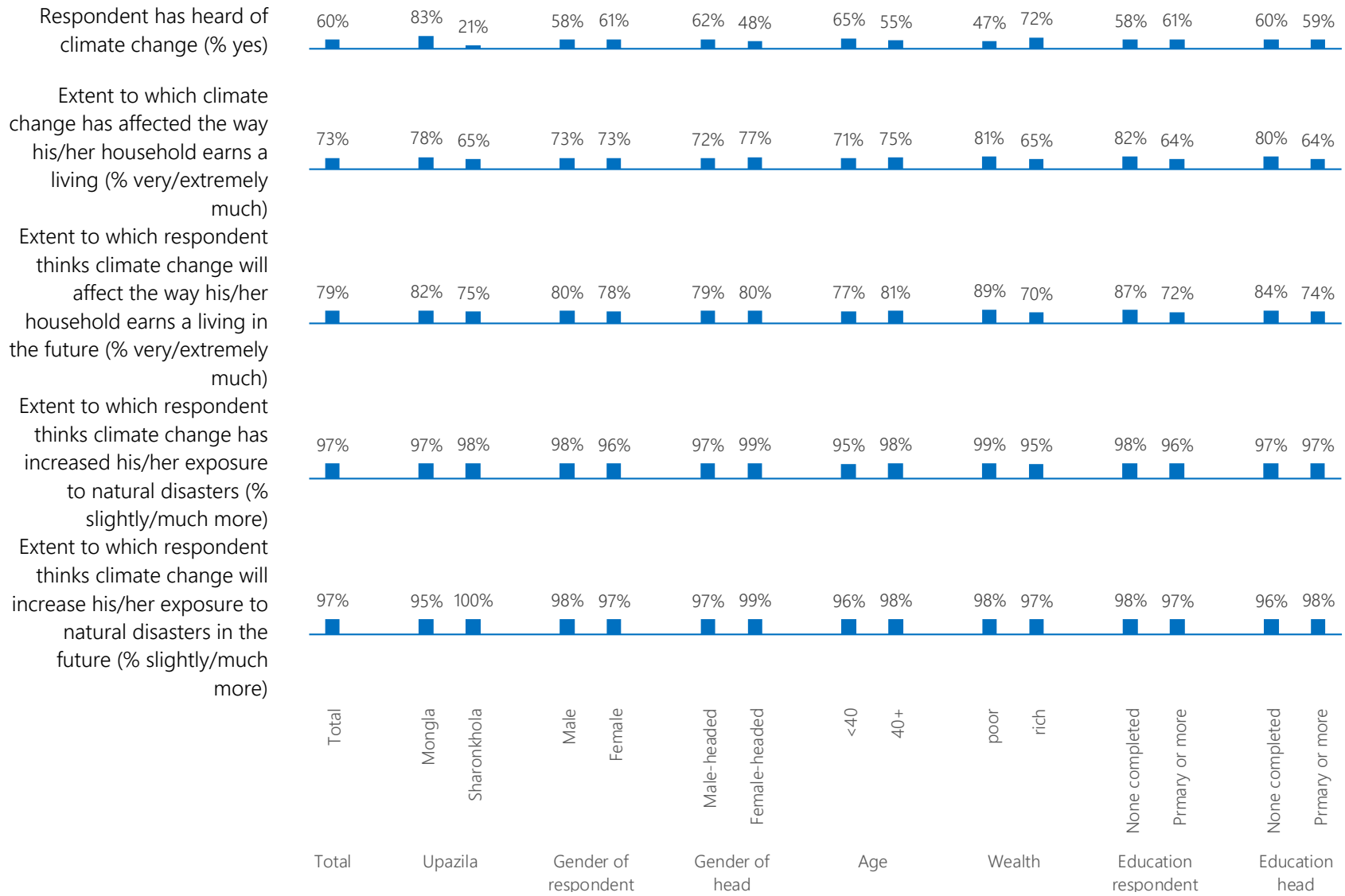
CLIMATE CHANGE KNOWLEDGE

Knowledge and awareness of climate change and its impacts is important for individuals to assess their own hazards, risk, and exposure. While knowing about climate change impacts does not automatically result in preparedness actions or increasing resilience, it is a crucial first step toward understanding and assessing ones' own risk and taking steps to prepare and adapt (11,36).

60% of respondents had heard about climate change. Awareness was high in Mongla (83%) and low in Sharonkhola (21%). Male-headed (62%) and wealthier (72%) households had higher awareness of climate change compared to their counterparts (48% and 47%, respectively). When given the definition of climate change, 73% reported that climate change had affected the way in which their household earns a living (in cash or in kind) very (40%), or extremely (33%), much. Respondents from Mongla and from poorer and less educated households reported stronger impact compared to their counterparts.

Similarly, 79% thought climate change would affect the way in which their household earned a living in the future very (33%), or extremely (46%), much. Poorer (89%) and less educated (87%) respondents predicted they would be impacted more heavily compared to their counterparts (70% and 72%, respectively).

Almost all (97%) felt that climate change made them slightly (31%), or much (66%), more exposed to natural disasters, and that climate change would make them slightly (39%), or much (58%), more exposed to disasters in the future.



PREPAREDNESS ACTIONS TAKEN BEFORE RECENT DISASTER

A key element of resilience is preparedness – protective actions households and individuals take to mitigate risk in advance of a disaster (34). When households have taken steps to plan for, and take necessary measures to, protect themselves and their livelihoods before disaster strikes, they are more likely to decrease the impact of the disaster on their health and livelihoods, and therefore have the capacity to recover more quickly (34). Preparedness actions vary based on context and potential disasters, but key preparedness actions include material preparedness (e.g., pre-positioning resources to mobilize quickly in a disaster) and planning (e.g., having an evacuation plan) (9). The preparedness actions included in this section are based on appropriate preparedness actions identified during local consultations.

Among those who received a warning before the most recent disaster (52%), only 41% made any decisions or took any actions once they received the warning. Poorer (53%) and less educated households (50%) more commonly reported taking action compared to wealthier

(30%) and more educated (30%) households. Of those who took action, most (97%) took actions to protect human life, and some took actions to protect physical assets (39%) or livelihoods (7%). The most common actions taken to protect life included preparing a first aid kit (86%), saline tablets (44%), or medications (39%). The most common actions taken to protect physical assets include tying the house roof to the ground (82%), storing non-perishable foods (65%), communicating with the CPP volunteer (21%), ensuring the safety of valuable documents (12%), and planting wave/wind protection plants adjacent to the homestead (6%). No households reported securing livestock and poultry. The most common actions taken to protect livelihoods include keeping cash on hand (33%) and taking steps to keep agriculture production safe (17%). No households reported actions taken to protect non-agricultural small businesses or the safety of fish.

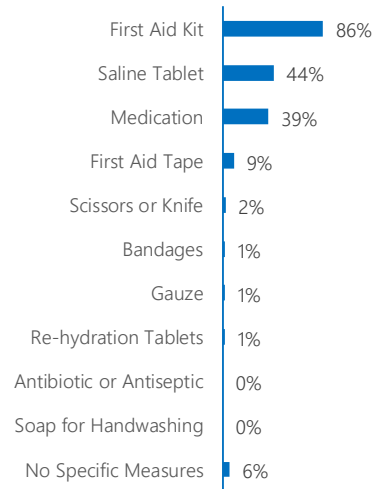
Among those who did not take any actions to prepare, the most common reasons for non-action were not considering action necessary (44%), not having enough warning time (33%), and lacking the resources needed to take

action (26%). No households reported not knowing what to do when they received the warning.

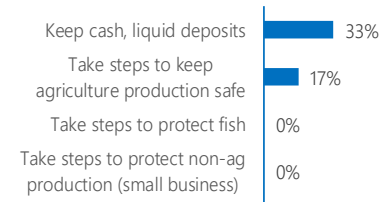
In general, only 30% of respondents had an identified place to evacuate to if an alert was raised, and just 19% had discussed an emergency plan as a family or household. Even fewer had assigned roles for household members in case of a disaster (15%), had attended a training or drill to prepare for a disaster (11%), or had a kit or to-go bag ready (5%). No respondents had any kind of insurance.

Preparedness actions varied little among subgroups. However, female-headed households had higher rates of evacuation place identification compared to male-headed households (42% and 28%, respectively), and households in Mongla (20%) and wealthier households (21%) more commonly reported assigning household roles in case of a disaster compared to their counterparts (5% in Sharonkhola and 8% in poorer households).

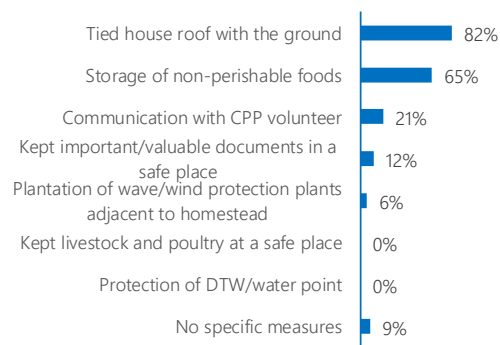
Safety Items Prepared
(among those who took action to protect human life after last disaster warning)



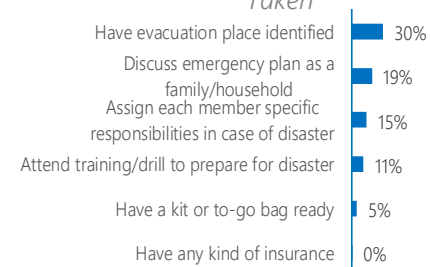
Livelihood Protection Actions Taken
(among those who took action to protect livelihoods after last disaster warning)

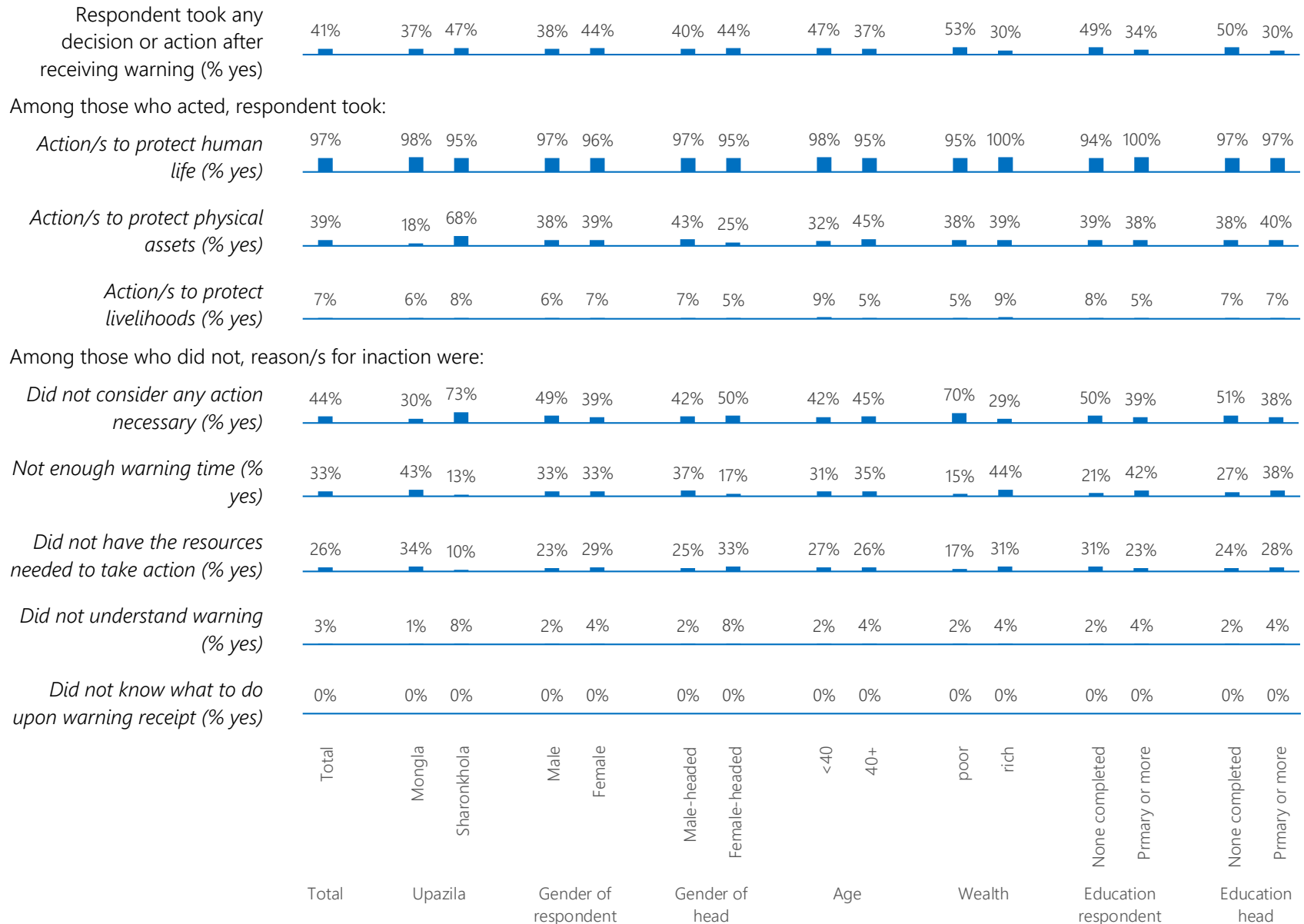


Asset Protection Actions Taken
(among those who took action to protect physical assets after last disaster warning)



Household Preparedness Actions Taken





COPING STRATEGIES EMPLOYED AFTER RECENT DISASTER

Households can employ a number of strategies to cope with losses following a disaster, such as borrowing money or resources or making changes to household spending or employment (37). These strategies reflect the available resources available to households to recover following a disaster. Thus, understanding households' historic coping strategies can reveal opportunities for government and NGOs to complement and strengthen safety nets for households to promote resilience in the face of future disasters (37).

Almost all (98%) of households reported employing some coping strategy following financial shocks in the last year. The most commonly employed coping strategy households reported was borrowing money (91%). Other common coping strategies included making changes to household spending (18%) or selling something(s) (13%). No households received an insurance payout, took children out of school, or relocated. Households in Mongla (26%) as well as wealthier (31%) and more educated households (28%) were more likely to report change to household spending compared to their counterparts (5% in Sharonkhola, 6% in

poorer households, and 9% in less educated households).

Among those who borrowed following a disaster, all reported borrowing money, and only 1% reported borrowing assets. Only 25% of households who borrowed money had been able to repay it in full, and 63% of those needed to take out another loan to repay the original loan. Among those who repaid the loan, the majority (86%) reported that their household situation was worse than when they borrowed the money.

Households in Sharonkhola more commonly reported paying the loan back in full (55%, compared to 6% in Mongla), but a greater percentage said that they needed to take out another loan in order to repay the original loan (71%, compared to 14% in Mongla) and almost all said their financial situation was worse when they repaid it (95%, compared to 29% in Mongla). Interestingly, poorer families also reported a higher percentage of paying off borrowed money in full (30%, compared to 19% in wealthier households). Finally, nearly all (93%) older respondents reported a worse financial situation at loan payoff compared to younger respondents (76%).

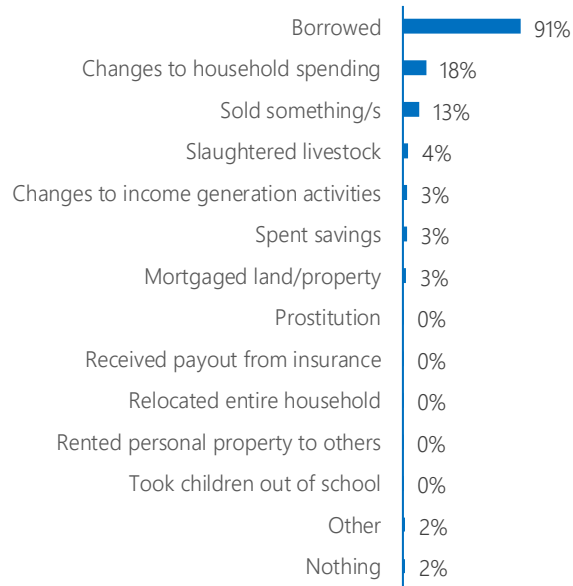
Among the 18% who made changes to household spending, the most common change was reducing food (97%) and non-

food expenses (86%), and reducing support given to others (13%). Non-food expense reduction was lowest among female-headed (75%), poorer (75%), and less educated (74%) households. 24% reported that food expenses were reduced to the extent that members of the household went hungry. This was especially high in Sharonkhola (100%), among poor (69%) and female-headed (40%) households, and among more educated respondents (30%), compared to their counterparts.

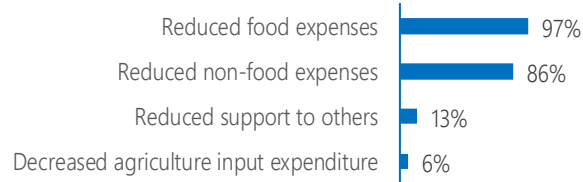
When using selling as a coping strategy, more households sold non-productive assets (45%) than sold or exchanged productive assets (16%). Some sold female/reproductive livestock (33%) or male/non-reproductive livestock (27%), and few sold crops/harvest (4%) or property (i.e. land, home, etc.) (2%).

Among the 3% who made changes to income generating activities, most households changed to alternative economic activities (58%), sought local employment (42%), or increased existing economic activities (25%). Few (8%) sent a household member away to seek employment, and no households reported using child labor or begging.

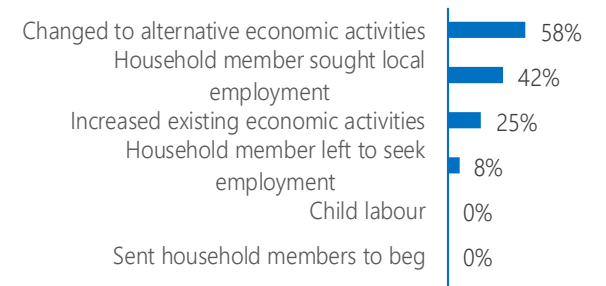
Coping Strategies Employed by Respondents Following Financial Shocks in Last Year



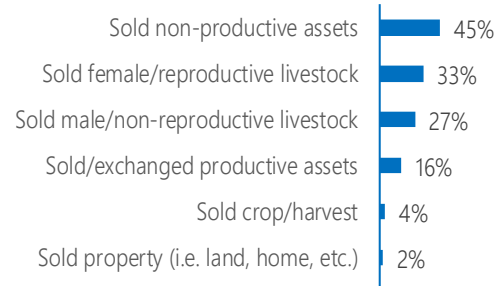
Changes to Household Spending to Cope with Financial Shocks in Last Year



Changes to Income Generating Activities to Cope with Financial Shocks in Last Year



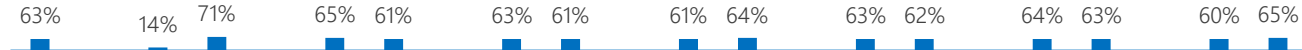
Items Sold to Cope with Financial Shocks in Last Year



Household has been able to repay borrowed money in full (% yes)



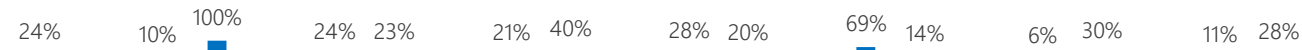
Household had to take another loan in order to repay original loan (% yes)



How the household's financial situation at time of repayment compared to when the original loan was made (% worse)



Household reduced food expenses to the extent that a household member went to bed hungry (% yes)



Total	Mongla	Sharonkhola	Male	Female	Male-headed	Female-headed	<40	40+	poor	rich	None completed	Primary or more	None completed	Primary or more
Total	Upazila	Gender of respondent	Gender of head	Age	Wealth	Education respondent	Education head							

ACTIONS TAKEN FOR CLIMATE CHANGE ADAPTATION

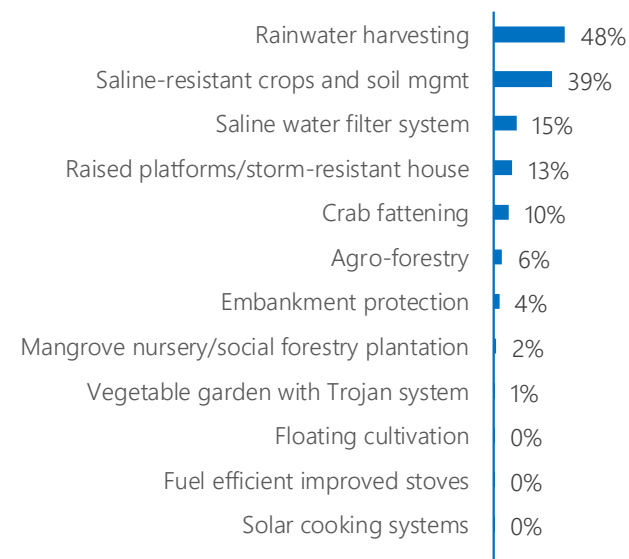
Similar to preparedness actions, appropriate adaptation actions vary by context and the nature of disasters and climate change impacts affecting a region (38). Households who have taken action to adapt their livelihoods strategies and/or cope with climate change impacts have worked to mitigate their vulnerability to climate change and disaster-related threats, and can thereby reduce the impact of those threats on their lives and livelihoods (38,39). Similar to preparedness actions, the indicators in this section were derived from conversations with local communities about what actions are commonly undertaken in the study area to adapt to climate change.

While many respondents had taken action to adapt to climate change, some adaptive practices were more utilized than others. Almost half of respondents reported that they practiced rain water harvesting (48%) and used saline-resistant crops and soil management (39%). However, fewer had a saline water

filtration system (15%), had a high-raised/pillar platform storm-resistant house (13%), practiced crab fattening (10%), practiced agro-forestry (6%), had embankment protection (4%), or planted or grew mangrove trees (2%).

With regards to water management, adoption of rain water harvesting and saline water filtration systems was particularly low in Sharonkhola (9% and 1%, respectively) and among poorer households (33% and 7%, respectively), while these practices were highly adopted in Mongla (71% and 24%, respectively) and among wealthier households (63% and 23%, respectively). Conversely, higher adoption of saline-resistant crops and soil management was reported in Sharonkhola (81%, only 14% in Mongla) and among poorer households (53%, 24% among wealthier households). Finally, no households in Sharonkhola reported crab fattening (0%, compared to 16% in Mongla), and few (1% reported having a storm-resistant house (1%, compared to 20% in Mongla).

Actions Taken by Respondents for Climate Change Adaptation



ELEMENT 4

PEOPLE ARE EMPOWERED AND
BELIEVE IN THEIR ABILITY TO
COPE AND ADAPT

Key indicators assessed under this element include:

1. Subjective assessment of household and risk, vulnerability, and ability to prepare and cope with disasters
2. Subjective measures regarding the household's ability to cope and adapt after the most recent disaster
3. Overall sense of control over one's future and security, in general and during disasters
4. Overall sense of influence over disaster preparedness and other decisions made at local and national levels

SUBJECTIVE ASSESSMENT OF RISK, VULNERABILITY, AND ABILITY TO PREPARE AND COPE

In addition to having the knowledge and resources to adapt to climate change and be resilient in the face of shocks, individuals must also feel empowered to take action to prepare and have the capacity to cope with changes due to climate change or natural disasters. Psychological resilience, or the ability to cope with stress and thrive in the face of adversity, is a key element of resilience, and tools such as the Connor-Davidson Resilience

Scale have been widely used to assess individuals' ability to cope with adversity (6,40). This section pulls from questions in this index to assess how well respondents feel that they understand their own vulnerability and ability to prepare and cope.

Most respondents felt that the risk of disaster in their community was high (39%) or very high (47%), and felt that they and their households were very (30%) or extremely vulnerable to disaster (50%). Most felt that they were more vulnerable (68%) or as vulnerable (31%) as others in their community. Households that were poor, less-educated, or that lived in Sharonkhola, reported higher perceptions of vulnerability.

Despite this high risk, most felt not at all (39%) or only slightly (54%) prepared to respond to a natural disaster in the near future. Most felt that they knew slightly (72%) or moderately (21%) well how to prepare for a disaster if they received a warning, and felt that their house would not be able (65%), or would be only slightly able (29%), to withstand a strong cyclone.

Personally, most felt only likely (61%) or not at all (34%) strong when facing a natural disaster, and felt that they were not at all (45%) or only slightly (52%) able to deal with whatever comes as a result of a natural disaster.

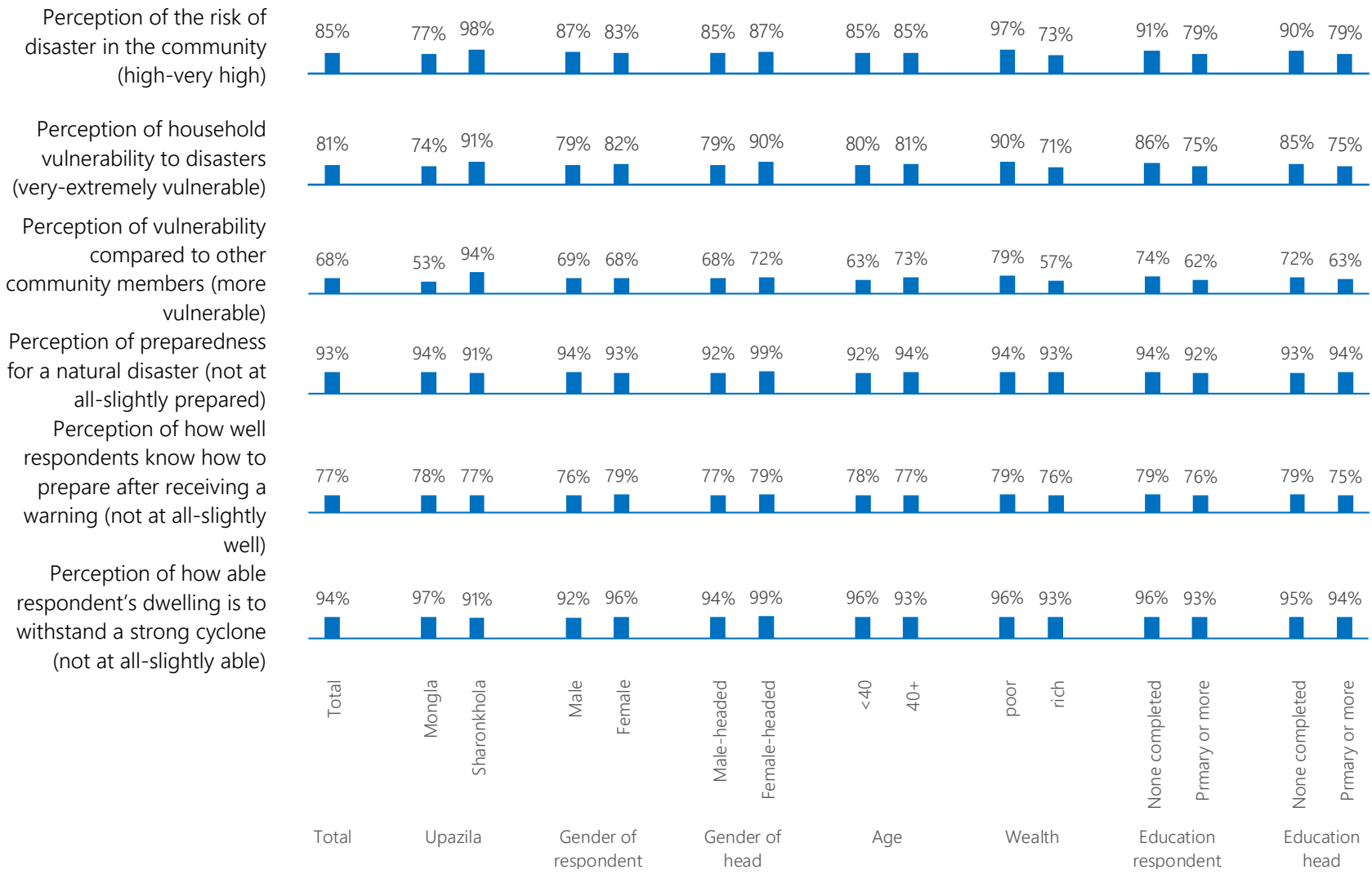
Most felt that they would be unable (43%) or only slightly able (55%) to recover from a natural disaster happened in the near future, and felt that they were unable (32%) or slightly able (65%) to adapt to changes after a disaster. This adaptation question showed high variability, with most respondents from Sharonkhola feeling not at all able to adapt (55%), while most respondents from Mongla felt slightly able (78%). Similar differences were seen between female-headed (44% unable) and male-headed households (30% unable), and between poorer households (43% unable) and wealthier households (20% unable).

Most respondents felt unable (58%) or slightly able (40%) to sustain themselves without help should their home be affected by a natural disaster. This difference was especially pronounced between households in Mongla (49% unable) and Sharonkhola (71% unable), and between poorer (65% unable) and wealthier (50% unable) households. However, more felt slightly (50%) or moderately able (24%) to cope if they were cut off from services without warning and had no water or electricity.

Interestingly, when asked how difficult it would be to adapt if natural disasters were to become more frequent in the future, there was wide variation in household responses. Some

felt not at all able to adapt (41%), while others felt slightly able (19%), moderately able (3%), very able (12%), or extremely able (24%). Most (69%) felt that past experiences coping with natural disasters has strengthened them, although most felt that natural disasters prevented them from achieving their goals very much (18%) or extremely much (49%). A greater percentage of households in Mongla and households with less education reported that disasters prevented them from achieving their goals, compared to households in Sharonkhola and households with more education.

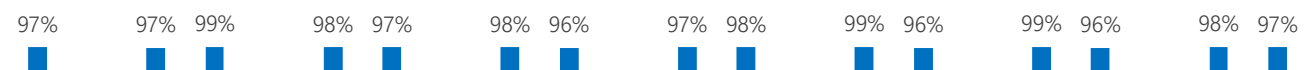
Most felt only slightly able (48%) or unable (32%) to focus and think clearly during disasters, and felt slightly able (59%) or unable (34%) to handle unpleasant feelings if a disaster happens. A higher percentage of respondents in Sharonkhola (46%) and in poorer households (41%) reported being unable to control unpleasant feelings compared to households in Mongla (26%) and wealthier households (26%). Most felt extremely (53%) discouraged when disasters happen. Notably, households that were poorer were more likely to report feeling very or extremely discouraged.



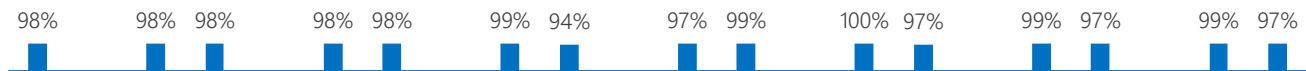
Perception of how strong respondent is when facing a disaster (not at all-slightly strong)



Perception of how well respondent deals with whatever comes after a disaster (not at all-slightly able)



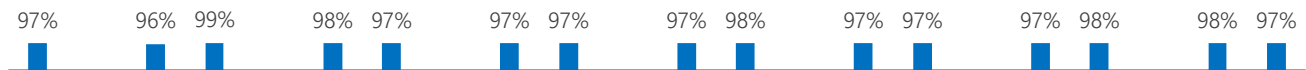
Perception of how well respondent would recover if a disaster happened soon (not at all-slightly able)



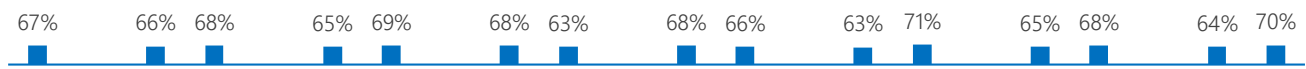
Perception of how able respondent is to adapt to changes after a disaster (not at all-slightly able)



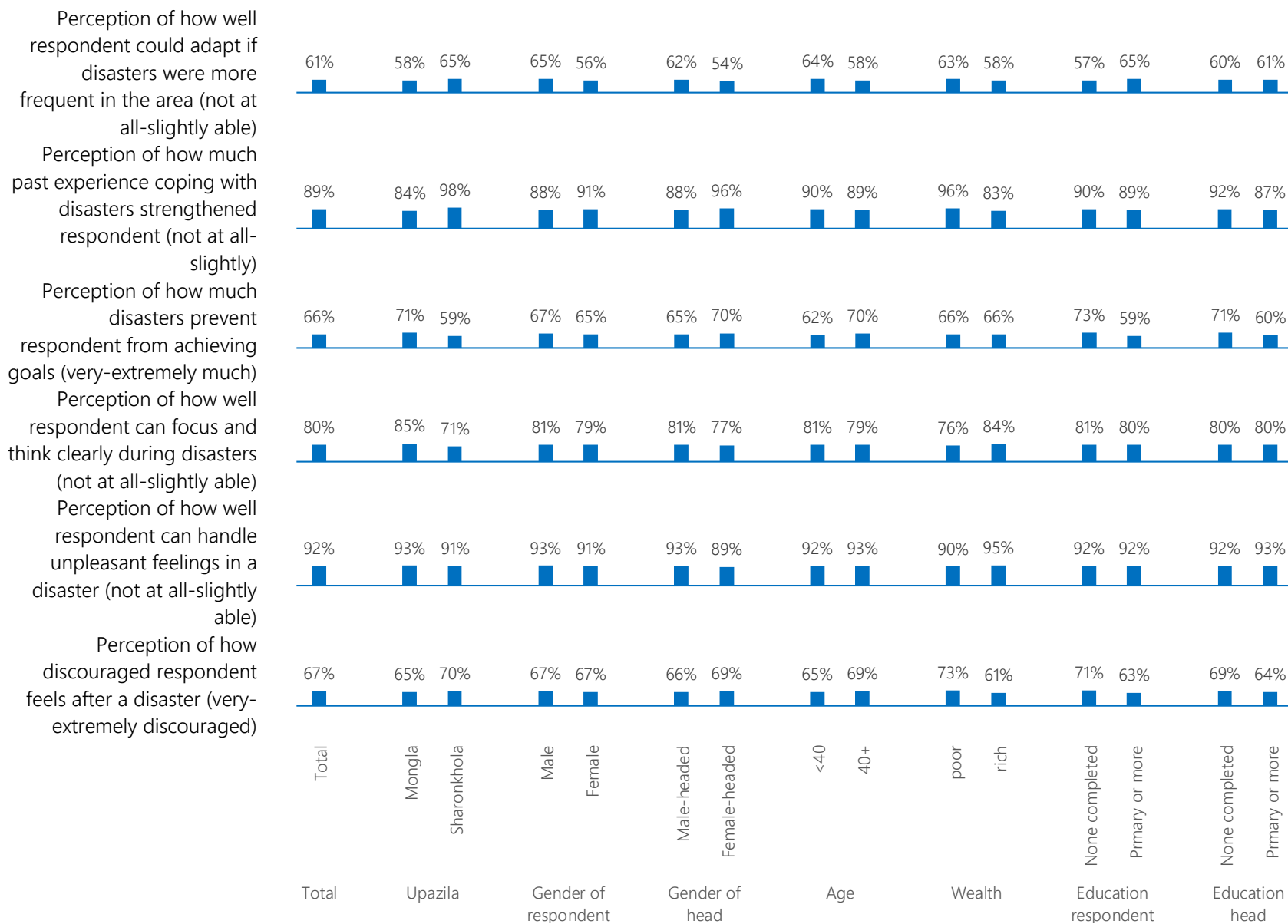
Perception of how well respondent could sustain themselves if their home was affected by a disaster (not at all-slightly able)



Perception of how well respondent would cope without water/electricity without warning (not at all-slightly able)



Total	Mongla	Sharonkhola	Male	Female	Male-headed	Female-headed	<40	40+	poor	rich	None completed	Primary or more	None completed	Primary or more
Total	Upazila	Gender of respondent	Gender of head	Age	Wealth	Education respondent	Education head							



SUBJECTIVE ASSESSMENT OF COPING FOLLOWING MOST RECENT DISASTER

In addition to hypothetical, forward-looking questions about respondents' coping capacity, we also looked at respondents' subjective assessment of their ability to cope historically. This historical look provides a more nuanced exploration of respondents' own subjective understanding of their coping capacity.

The majority respondents felt that, following the most recent disaster, their family had been able to recover slightly financially (60%), in the household's ability to earn money or produce food (70%), and in the household's ability to resume a normal life (81%). However, many households felt that they had not recovered at all financially (36%) or in their household's ability to earn money or produce food (25%). Respondents in Sharonkhola and poor households reported lower levels of recovery across the board, compared to wealthier households or households in Mongla.

Perception of how well household recovered financially from most recent disaster (not at all recovered)



Perception of how well household recovered its ability to earn money or produce food after most recent disaster (not at all recovered)



Perception of how well household recovered generally/resumed a normal life after most recent disaster (not at all recovered)



Total	Mongla	Sharonkhola	Male	Female	Male-headed	Female-headed	<40	40+	poor	rich	None completed	Primary or more	None completed	Primary or more
Total	Upazila	Gender of respondent	Gender of head	Age	Wealth	Education respondent	Education head							

SENSE OF CONTROL AND SECURITY

Having a realistic sense of control over one's own life, surroundings, and security is a commonly assessed element of psychological resilience, and is an element of the Connor-Davidson Resilience Scale. Without a sense of control, individuals can feel "powerless, nihilistic, and low in motivation," and can struggle to cope in stressful situations (40,41). Thus, in this section, we explored how much control individuals feel they have over their lives, for their general security, and in disasters.

Respondents' sense of control and security was very low. Most respondents felt that they were not in control or only slightly in control of what happened to them in general (83%) or during disasters (96%). Most also felt that they were not in control or only slightly in control (96%) of their security.

Respondents in Sharonkhola or who lived in female-headed and poorer households reported feeling lower levels of control than their counterparts across all three areas of control. This difference was especially marked between Sharonkhola and Mongla – in Sharonkhola, high percentages of respondents reported feeling not at all in control of what happens to them in general (55%), during disasters (88%), and over their security (81%), compared to 35%, 48%, and 37% in Mongla, respectively. Interestingly, male respondents reported feeling less control over their security (59%) than women (49%), although men and women reported feeling similar levels of control in disasters and in general. Finally, less-educated households reported lower feelings of control in general and for their security compared to more-educated households, although similar levels of control were reported during disasters regardless of household education.

How much control respondent feels over what happens to them in general (no control at all)



How much control respondent feels over what happens to them in disasters (no control at all)



How much control respondent feels over their own security (no control at all)



Total	Mongla	Sharonkhola	Male	Female	Male-headed	Female-headed	<40	40+	poor	rich	None completed	Primary or more	None completed	Primary or more
Total	Upazila		Gender of respondent		Gender of head		Age		Wealth		Education respondent		Education head	

SENSE OF INFLUENCE OVER DISASTER PREPAREDNESS AND PLANNING

If individuals feel that their relationships with institutions are fair and empowering, research shows that they are more willing to take responsibility for their own preparedness and safety and to take actions that will increase their resilience (35). As such, this section assesses how empowered respondents feel to influence decisions and actions taken by local and national government actors.

Most respondents felt that they had no influence over disaster preparedness in their communities (61%), over community decisions made by local leaders (60%), or over decisions made at the national level (88%). Interestingly, while residents of Sharonkhola reported lower levels of influence over community disaster

preparedness compared to Mongla, they reported feeling higher levels of influence over decisions made at the community and national levels. In fact, 31% of respondents in Sharonkhola felt their level of influence over community leaders' decisions was very or extremely high, compared to only 1% of Mongla residents.

In addition, female-headed households expressed less influence over community preparedness than male-headed households. Surprisingly, wealthier households expressed less influence over community leaders' decisions than poorer households, although poorer households felt less influence over community preparedness. Finally, households with a more-educated head of household expressed more influence over community decisions and preparedness than households with a less educated head.

How much influence respondent feels they have over disaster preparedness in their community (no influence at all)



How much influence respondent feels they have over decisions made in the community by local leaders (no influence at all)



How much influence respondent feels they have over decisions made at the national level (no influence at all)



Total	Mongla	Sharonkhola	Male	Female	Male-headed	Female-headed	<40	40+	poor	rich	None completed	Primary or more	None completed	Primary or more
Total	Upazila		Gender of respondent		Gender of head		Age		Wealth		Education respondent		Education head	

THE SCORECARD
QUESTIONS AND ANALYSIS

RECOMMENDATIONS FOR A SCORECARD

Building on the survey results presented in this report, a proposed scorecard was developed for the rapid assessment of resilience. This section outlines the questions included by components and subcomponents of resilience within the scorecard, as well as how each question, subcomponent, and component's score is calculated.

USE

The Scorecard contains 41 questions across 4 components and 14 subcomponents. Each of the 4 components includes a number of subcomponents with relevant questions. Within each of those subcomponents, there are a series of questions that are connected to the subcomponent. Each of these questions has an assigned score that ranges from 0-10, and subcomponent scores can be averaged to generate overall scores for each of the four components.

For example, component 1 (Access to Quality Services, Information, and Resources) includes 4 subcomponents (1.1-1.4), including

subcomponent 1.1 (Access to services and resources). Each of the questions in subcomponent 1.1 are assigned an item score, and these item scores are summed to create a subcomponent score for 1.1. The subcomponent score for 1.1 is then added to the subcomponent scores for 1.2, 1.3, and 1.4 and divided by the number of subcomponents (4) to generate the overall component score for Component 1 - Access to Quality Services, Information, and Resources.

This score can be automatically calculated for all individual respondents within a survey using simple formulas. Once calculated, subgroup analyses can be conducted to understand how resilience across the components varies based on *upazila*, gender, income level, education level, or other subgroups of interest to programming decisions. This scorecard could be used periodically (e.g., quarterly), to understand which components of household, village, *upazila*, or other groups' resilience are strong and which components could be targeted for program strengthening efforts. An example of the types of results that this

analysis could generate can be found in the "Results" section below.

LIMITATIONS

This scorecard is exploratory, and is based on a small sample. While the authors believe that it can provide some information about household resilience to inform program decision making, the tool should be reviewed and validated as it is used to continually improve the model. It is important to note that households included in the baseline assessment were sampled among the project's beneficiary households within these two *upazilas*, rather than among all households within these *upazilas*. As such, these results, and the resulting scorecard, may not be representative of the full district population, but seek to be representative of Concern's beneficiary population within these two *upazilas* at the time of the survey.

R1. ACCESS TO QUALITY SERVICES, INFORMATION, AND RESOURCES

Score scale from 0 (worse) to 10 (best) – average of four independent components.

$(R1.1 + R1.2 + R1.3 + R1.4)/4 = R1$ component score

R1.1 ACCESS TO SERVICES AND RESOURCES

R1.1 has 11 questions, grouped in 5 sets based on network analysis results – each set is scored 0-2 and summed for a total subcomponent score of 0-10.

No.	ITEMS	ITEM Score	Component Score	R1.1 score	Computation
1	In the past 12 months, have you or your household had to borrow money	0-1	0-2		
2	Is there a formal place where you can borrow money if needed	0-1	(sum)		
3	Does your income cover your basic needs (food, water...)	0-1	0-2		
4	Does your income cover your need for services like healthcare or education	0-1	(sum)		
5	Your access to safe drinking water	0-4			
6	Your access to electricity in your house	0-4	0-2	0-10 (sum)	$(credit_gen + credit_option) + (income_basic_needs + income_basic_needs_health_edu) + ((access_water + access_elec + access_health + access_gov) / 8) + ((access_trsprt + access_emtrsprt) / 4) + (access_empl / 2)$
7	Your access to healthcare facilities (private or public)	0-4	(sum/8)		
8	Your access to basic government services (like registration of a birth)	0-4			
9	Your access to transportation	0-4	0-2 (sum/4)		
10	Your access to transportation WHEN THERE IS AN EVACUATION	0-4			
11	The availability of employment opportunities	0-4	0-2 (item/2)		

R1.2 ACCESS TO INFORMATION

R1.2 has 2 questions given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R1.2 score	Computation
12	What would you say is your main source of information about disasters*	0-1	x 5	0-10 (sum)	$(Dis_source_formal*5) + (info_dis_source1*5/4)$
13	How well informed would you say you are about disasters	0-4	x 5/4		

** responses for this item are dichotomized to distinguish the use of formal sources (radio, television, newspapers) to create the variable Dis_source_formal*

R1.3 ACCESS TO EARLY WARNING

R1.3 has 5 questions given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R1.3 score**	Computation
14	Are people at risk alerted of an impending emergency with sufficient time in advance	0-1	x 2	0-10 (sum)	$(household_early_warning_messages_ews + household_early_warning_messages_ews_flood_indicator + household_early_warning_messages_received_ews_government_flood + household_early_warning_messages_received_ews_cdmc_flood_indica + confidence_in_community_disaster_preparedness_alert)*2$
15	Thinking about the most recent time this disaster occurred in your community, did you receive any warning information that it was going to occur	0-1	x 2		
16	Household received early warning message for most recent Flood that enabled them to take action to protect human life	0-1	x 2		
17	Household received adequate and timely early warning message for Flood	0-1	x 2		
18	Household received early warning message for most recent Flood from the government*	0-1	x 2		

** response for this item must be dichotomized – i.e assign 0 for don't know*
*** since not all households experienced disasters, several missing values may exist. We assign the average score for missing values*

R1.4 KNOWLEDGE OF, AND CONFIDENCE IN, COMMUNITY DISASTER PREPAREDNESS

R1.4 has 5 questions given equal weight in the total score.

No.	ITEMS*	ITEM Score	Component Score	R1.4 score	Computation
19	Does your community have an organization/group/committee who focuses on disaster preparedness and response	0-1	x 2	0-10 (sum)	<i>confidence_in_community_disaster_preparedness_organisation_grou +</i>
20	Do you think that they can respond effectively during emergency situations	0-1	x 2		<i>confidence_in_community_disaster_preparedness_emergency_respons +</i>
21	Does the community have a contingency plan for emergencies	0-1	x 2		<i>confidence_in_community_disaster_preparedness_contingency_plan +</i>
22	In the last 12 months, have any simulation drills been carried out in this community	0-1	x 2		<i>confidence_in_community_disaster_preparedness_drills +</i>
23	In an emergency situation does your community wait for external help before responding or does the community begin responding using its own resources	0-1	x 2		<i>confidence_in_community_disaster_preparedness_own_resources</i>

* response for these items must be dichotomized – i.e assign 0 for don't know,

R2. SOCIAL SUPPORT

Scores scale from 0 (worse) to 10 (best) – average of four independent components

$$(R2.1 + R2.2 + R2.3 + R2.4)/4 = R2 \text{ component score}$$

R2.1 COMMUNITY ENGAGEMENT

R2.1 has 2 questions given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R2.1 score	Computation
24	You would help others in your community no matter what their needs are	0-4	x 5/4	0-10 (sum)	$(sc10*5/4) + (sc14*5)$
25	Be a member in any associations or groups	0-1	x 5		

R2.2 SUPPORT

R2.2 has 2 questions given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R2.2 score	Computation
26	If there is a disaster, people will work together to support each other	0-4	x 5/4	0-10 (sum)	$(sc7*5/4) + (s3*2.5) + (s5*2.5)$
27	If a natural disaster were to happen, how much support would you say you would receive from the following*				
	From the local authorities	0-1	x 2.5		
	From national NGOs	0-1	x 2.5		

* responses for these items were supposed to be on a 0-4 Likert scale, but were coded as yes/no by mistake – suggest keeping as is for now

R2.3 GENERALIZED TRUST

R2.3 has one question with 8 subquestions. All subquestions are given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R2.3 score	Computation
28	Could you tell me if, in general, you can trust the following groups?				
	Members of your community	0-1	x 1.25	0-10 (sum)	$(trust1_members_of_your_community + trust1_people_from_your_family + trust1_upazila_officials + trust1_union_councils + trust1_people_who_share_your_religion + trust1_foreign_assistance_agencies_ngos + trust1_religious_leaders + trust1_civic_and_volunteer_organisations_cvo) * 1.25$
	People from your family	0-1	x 1.25		
	Upazila officials	0-1	x 1.25		
	Union Councils	0-1	x 1.25		
	People who share your religion	0-1	x 1.25		
	Foreign assistance agencies/NGOS	0-1	x 1.25		
	Religious leaders	0-1	x 1.25		
	CVOs or CSOs	0-1	x 1.25		

R2.4 TRUST IN GOVERNMENT PREPAREDNESS

R2.4 has one question with 2 subquestions. All subquestions are given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R2.4 score	Computation
29	Now I would like you to tell me how much you agree with the following statements				
	The local government is well prepared for any natural disasters	0-4	x 5/4	0-10 (sum)	$(sc2 + sc3)*1.25$
	The national government is well prepared for any natural disasters	0-4	x 5/4		

R3. PREPARE, LEARN, ADAPT

Score scale from 0 (worse) to 10 (best) – average of four independent components

$(R3.1 + R3.2 + R3.3)/3 = R3$ component score

R3.1 CLIMATE CHANGE AWARENESS

R3.1 has 2 questions given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R2.1 score	Computation
30	And thinking about the future, how much will climate change affect the way you and your household earn a living (in cash or in kind)	0-4	x 5/4	0-10 (sum)	$(cc_live_effect_fut + cc_dis_effect_now_92)*1.25$
31	And thinking about the future, how much will climate change affect your exposure to natural disasters	0-4	x 5/4		

R3.2 DISASTER PREPAREDNESS

R3.2 has one question with 2 subquestions. All subquestions are given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R2.4 score	Computation
32	Can you tell me if you or your household have done any of the following:			0-10 (sum)	$(dp1 + dp3)*5$
	Discuss an emergency plan as a family / household	0-1	x 5		
	Have a kit or to-go bag ready in case of an emergency	0-1	x 5		

R3.3 ADAPTATIVE ACTIONS

R3.3 has one question with 5 subquestions. All subquestions are given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R2.3 score	Computation
33	What, if anything, have you or your household done to adapt to climate change?				
	Saline Resistant crops and soil management	0-1	x 2	0-10 (sum)	$(cc_adapt_saline_resistant_crops_and_soil_man + cc_adapt_crab_fattening + cc_adapt_saline_water_filter_system + cc_adapt_rain_water_harvesting + cc_adapt_agro_forestry)*2$
	Crab fattening	0-1	x 2		
	Saline water filter system	0-1	x 2		
	Rain Water harvesting	0-1	x 2		
	Agro-forestry	0-1	x 2		

R4. EMPOWERMENT

Score scale from 0 (worse) to 10 (best) – average of three independent components

$(R4.1 + R4.2 + R4.3)/3 = R4$ component score

R4.1 SUBJECTIVEASSESSMENT OF RISK, VULNERABILITY AND ABILITY TO PREPARE AND COPE

R4.1 has 6 questions given equal weight in the total score.

No.	ITEMS	ITEM Score	Component Score	R4.1 score	Computation
34	How high is the risk of disaster in this community, in your opinion	0-4	x 5/24	0-10 (sum)	$(subjres_1 + subjres_4 + subjres_10 + subjres_12 + subjres_13 + subjres_16) * 5/24$
35	How prepared would you say you are to respond to a natural disaster in the near future	0-4	x 5/24		
36	And how able are you to adapt to changes after a disaster	0-4	x 5/24		
37	If you were cut off from services without warning and had no water or electricity, how well would you cope in your opinion	0-4	x 5/24		
38	Now thinking about the future, if natural disasters were to become more frequent in your area, how difficult would you say it would be for you to adapt to this	0-4	x 5/24		
39	And how well would you say you can focus and think clearly during disasters	0-4	x 5/24		

R4.2 SENSE OF CONTROL

R4.2 has 1 question that forms the total score.

No.	ITEMS	ITEM Score	Component Score	R4.2 score	Computation
40	Control over what happens to you during disasters	0-4	x 2.5	0-10	$empowerment_3 * 2.5$

R4.3 PERCEIVED INFLUENCE

R4.3 has 1 question that forms the total score.

No.	ITEMS	ITEM Score	Component Score	R4.2 score	Computation
41	Influence over decisions made in the community by local leaders	0-4	x 2.5	0-10	<i>empowerment_6*2.5</i>

SCORECARD RESULTS

Scorecard results are presented below for each of the components and across a number of subgroups. Each analysis shows a subgroup's score along each of the 4 resilience components. On the radar charts presented below, resilience along each axis (subcomponent) is demonstrated by how far from the center a data point is plotted. Thus, on each axis, the further out from the center a data point, the higher the resilience is along that axis.

Figure 1 shows scores for Component 1 – Access to Quality Services, Information and Resources – for *upazila* subgroups, as well as subgroups based on respondent gender, household relative wealth, head of household gender, and education of the head of household. This analysis suggests that respondents from Sharonkhola may have shown higher access to information (1.2), access to early warning messages (1.3), and knowledge of/confidence in community disaster preparedness (1.4) compared to respondents in Mongla. It also appears that female-headed households may have reported greater access to early warning messages (1.3), and richer households

reported greater access to services and resources (1.1).

Figure 2 shows scores for Component 2 – Social Support. There appears to be low variation along the axes based on gender, education, and even household wealth. However, it appears that respondents in Mongla showed higher social support (2.2), general trust (2.3), and trust in government preparedness (2.4) compared to respondents in Sharonkhola. Conversely, respondents in Sharonkhola showed higher community engagement (2.1) compared to respondents in Mongla.

While Figure 3 shows low variability within the subgroup analyses for Component 3 – Prepare, Learn, and Adapt, the overall shape of the radar charts can provide insights. It appears that while awareness of climate change (3.1) is fairly high in all groups, disaster preparedness (3.2) and adaptive actions (3.3) are low, indicating a need to link awareness with capacity to act.

Finally, Figure 4 shows strong divergence between Mongla and Sharonkhola among the various subcomponents of Component

4 – Empowerment. While overall empowerment is fairly low (average overall scores for component 4 are between 1 and 2), perceived influence (4.3) is much higher in Sharonkhola compared to Mongla, and among poorer households compared to wealthier households. However, households in Mongla show a greater sense of control (4.2). Finally, the total scores in Figure 5 show that the empowerment component is very low across all subgroups.

This data may be useful to inform program efforts. For example, programming in Mongla could seek to increase access to information. Access to information in Sharonkhola is already fairly high, so programming in that *upazilas* could target strengthening social support and trust. Across programs, efforts to help households feel empowered to adapt in the face of climate change and natural disasters could help to improve overall household resilience and drive the adoption of preparedness and adaptive actions.

Figure 3: R1 Score – Access to quality services, information and resources

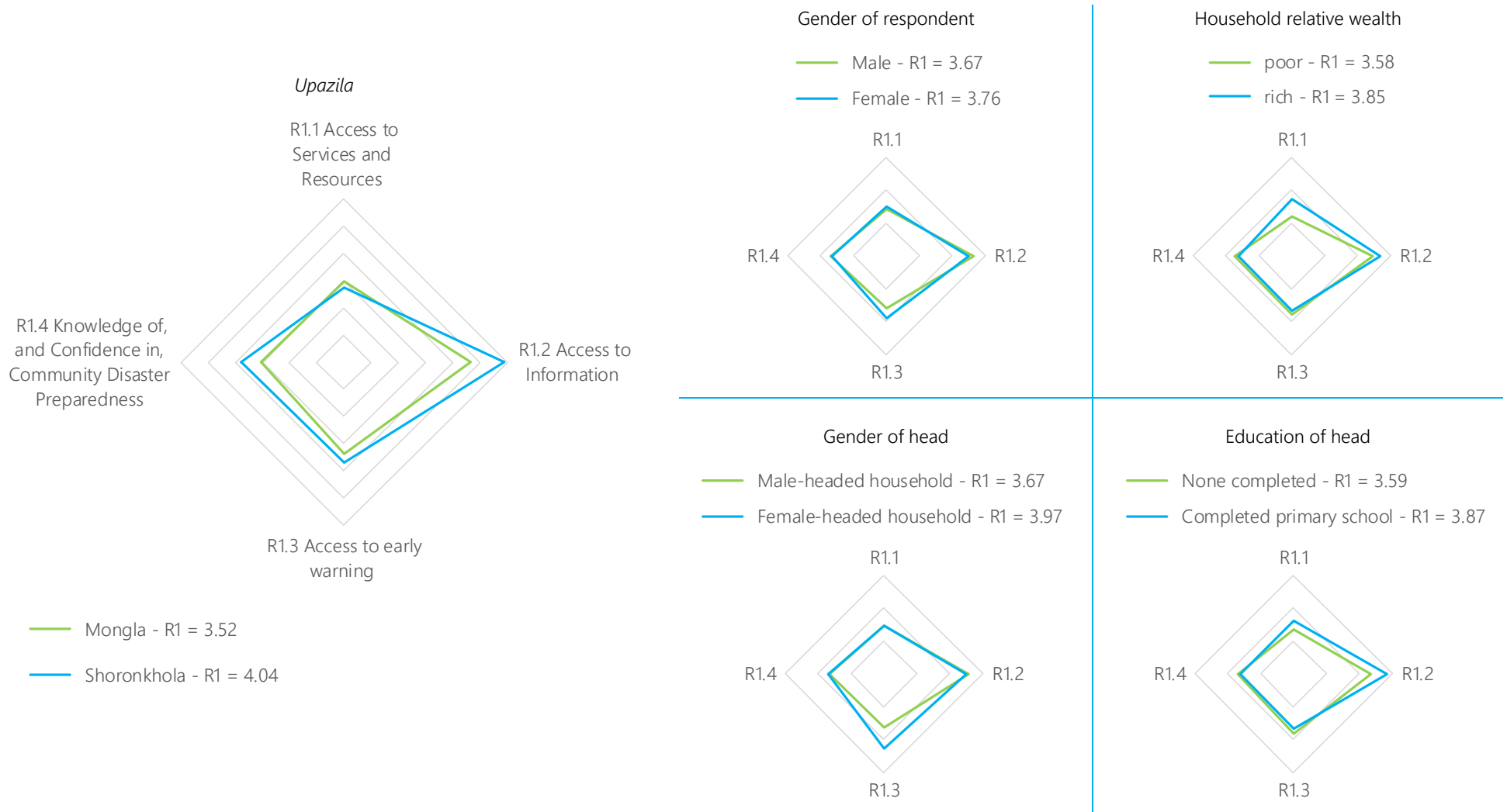


Figure 4: R2 Score – Social Support

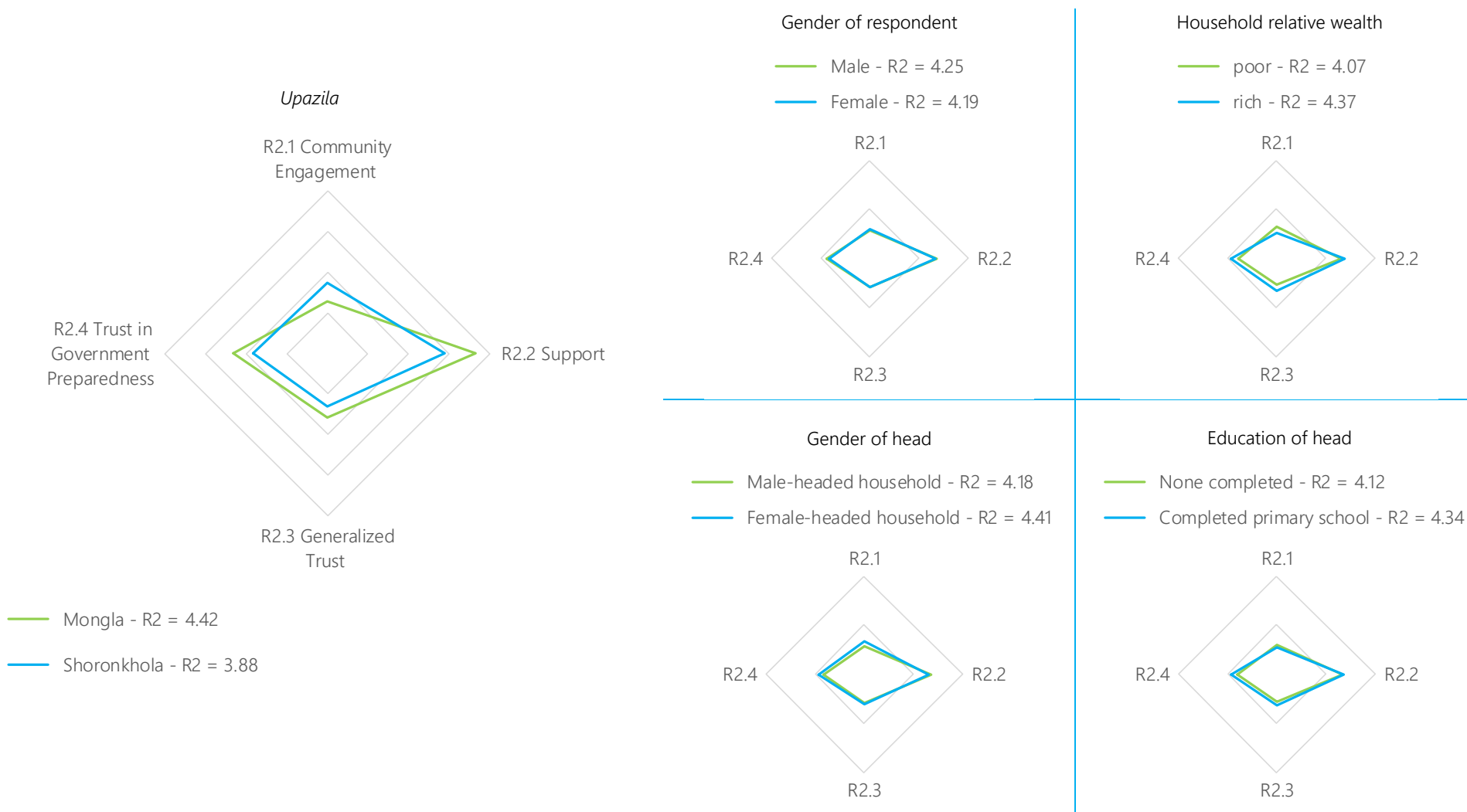


Figure 5: R3 Score – Prepare, Learn, Adapt

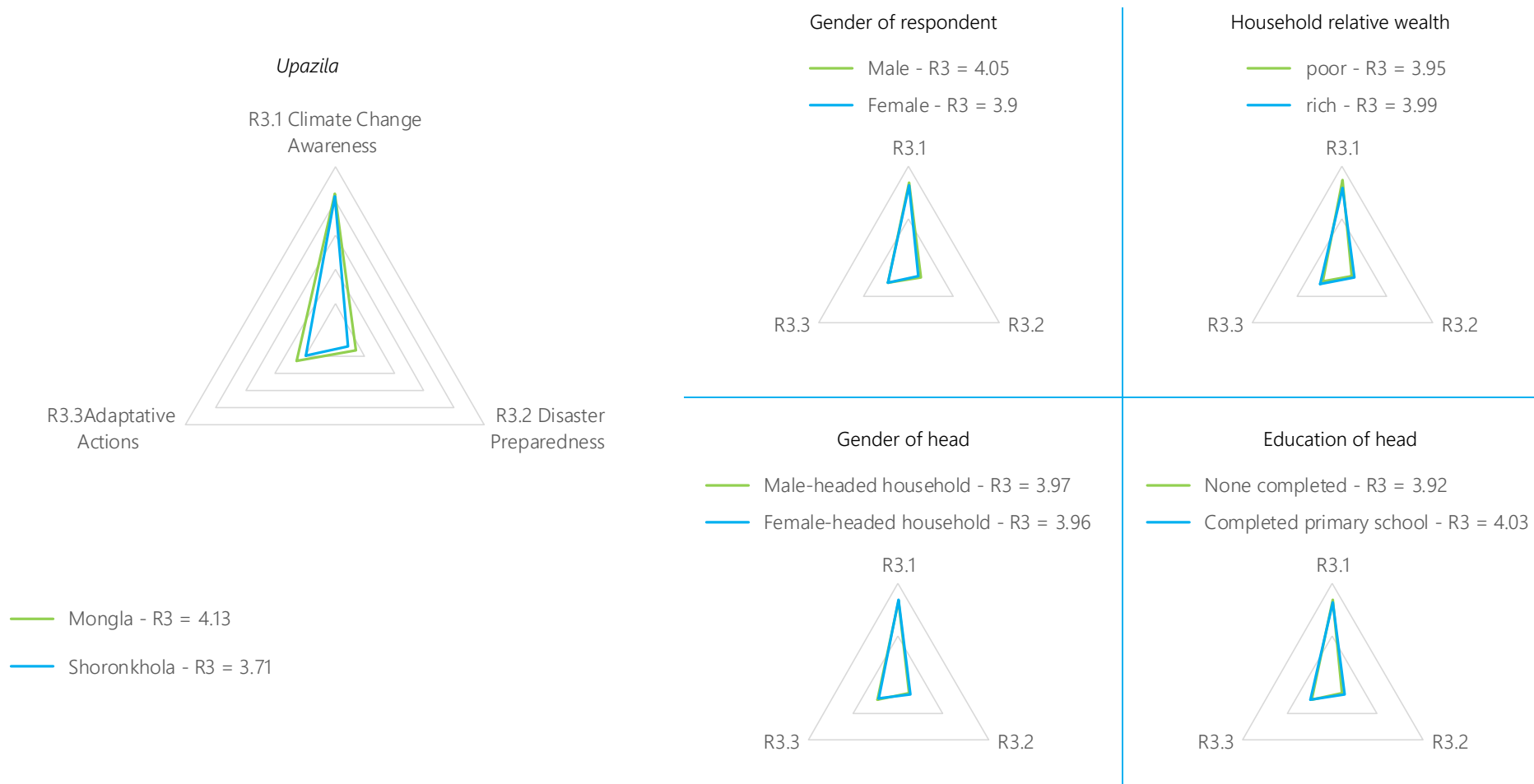


Figure 6: R4 Score - Empowerment

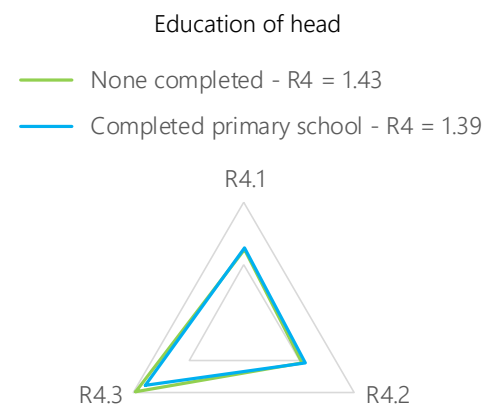
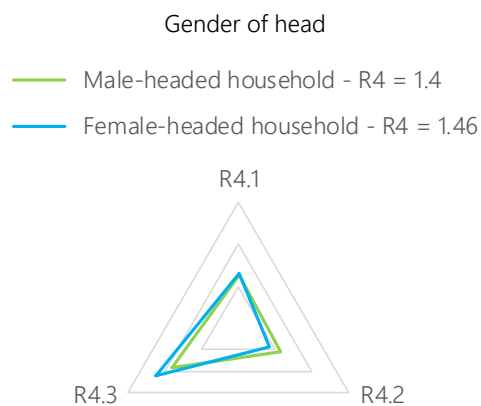
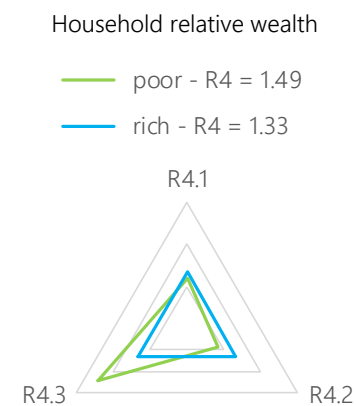
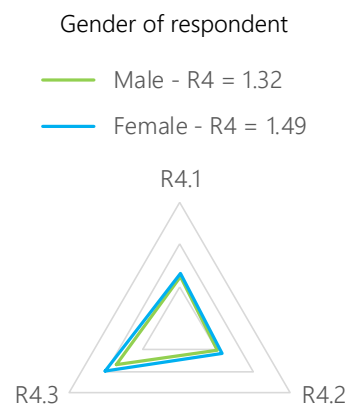
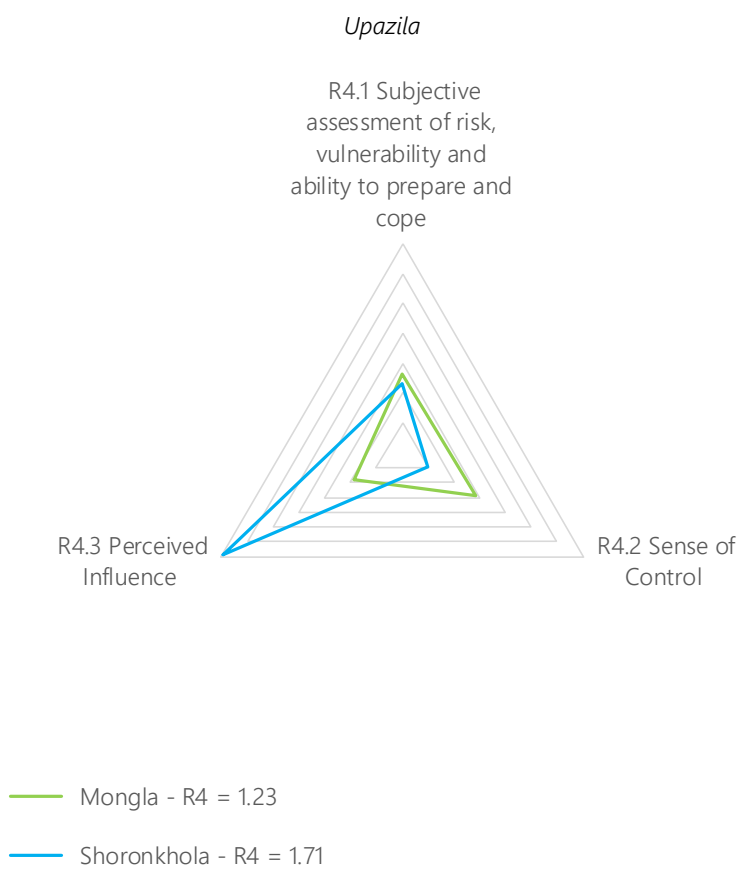
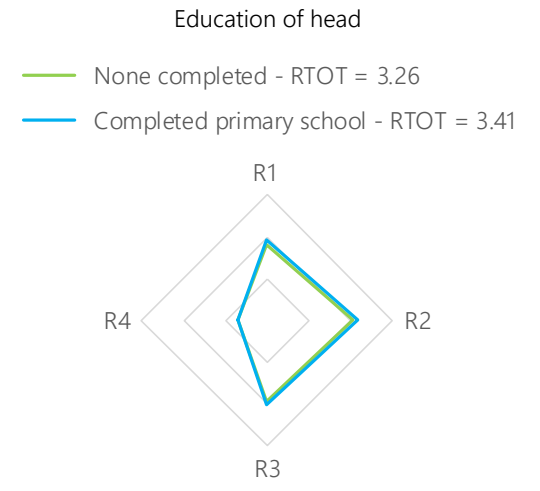
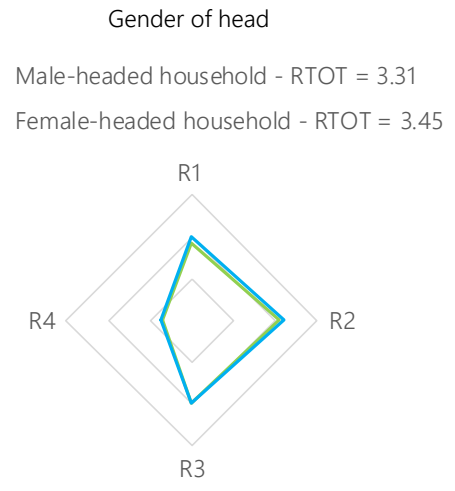
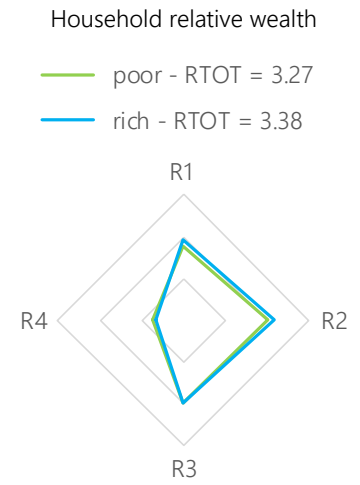
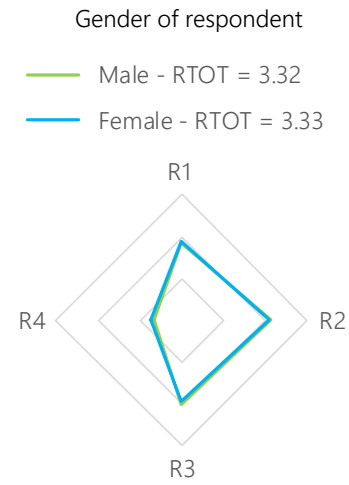
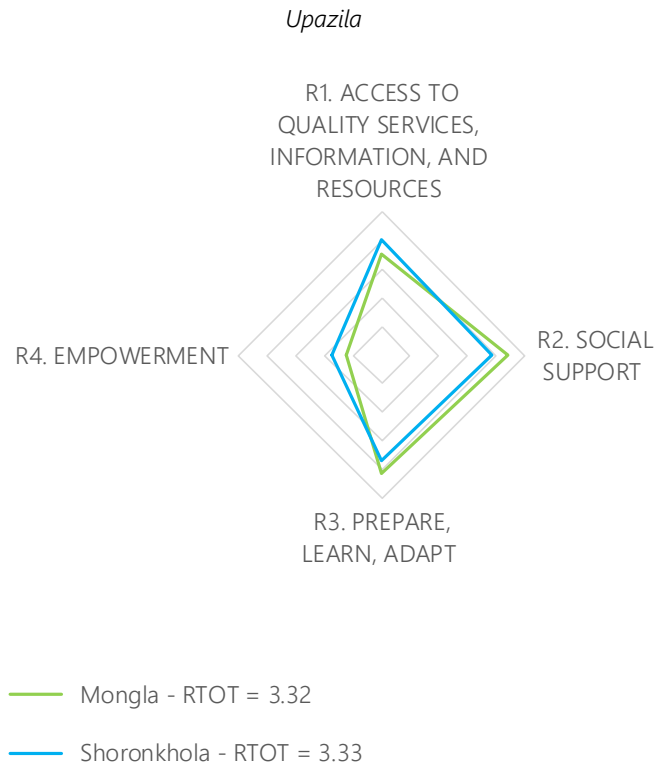


Figure 7: R Score - Total



CONCLUSION

“Resilience” is an abstract term. It is hard to quantify, and hard to measure, leaving program managers with a challenge to identify the best ways to understand and strengthen household and community resilience. While this scorecard is exploratory in nature, it seeks to translate this abstract concept into measurable, concrete components that can be used to inform program design. When used periodically within regular program monitoring, it can provide a snapshot of household resilience to support program managers in targeting key aspects of resilience that are often overlooked in other scorecard approaches, including empowerment, subjective

perceptions of ability to cope and adapt, and social support.

This scorecard is intended to be utilized in Concern Worldwide’s programs among coastal communities in Bangladesh. With use over the life of Concern Worldwide’s current program, the tool can be adapted as needed to improve the administration and/or predictive capacity of the tool for measuring household resilience. In addition, if proven useful, this factor analysis methodology could be used in other program contexts to generate useful, fairly simple monitoring tools to inform program design.

QUESTIONS?

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