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SOUTH ASIA

Impact of Climate Change on Urban Home-Based Workers in South Asia

STUDY OF WOMEN HOME-BASED WORKERS LIVING IN SLUMS AND INFORMAL SETTLEMENTS IN BANGLADESH, INDIA AND NEPAL

JANUARY 2022

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Acronyms

AR	Assessment Report
CSO	Civil Society Organisation
CUP	Coalition for the Urban Poor
FGD	Focus Group Discussion
GDP	Gross Domestic Product
GFDL	Geophysical Fluid Dynamics Laboratory
GLOF	Glacial Lake Outburst Flood
HadGEM	Hadley Centre Global Environment Model
HBWs	Home-Based Workers
HNSA	HomeNet South Asia
IEMS	Informal Economy Monitoring Study
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
MHT	Mahila Housing SEWA Trust
NGO	Non-Governmental Organisation
°C	Degrees Celsius
RCP	Representative Concentration Pathway
RL	Return Level
SLR	Sea Level Rise
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
UNDP	United Nations Development Programme
USD	United States Dollar
WHO	World Health Organisation
WIEGO	Women in Informal Employment: Globalizing and Organizing

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Executive Summary

Home-based workers (HBWs), mostly women, although a critical part of global supply chains, are often invisible in economic statistics and, by extension, development policies and programmes. This has in turn led to limited research on the impact of climate change on HBWs. A few studies (MHT, 2015; UN Women, 2016; Kjellstrom & Phan, 2017) have highlighted how HBWs' productivity is impacted by increasing temperatures and how they face losses as livelihoods are disrupted by unseasonal rain and flooding. However, there is a lack of proper evidence on the impact of climate change on them. In this context, the current study, "Impact of Climate Change on Urban Home-based Workers in South Asia" was planned to understand the implications of climate change on HBWs, especially women. The study reviewed existing literature on evidence of climate change and the nature of home-based work in South Asia to develop a conceptual framework for understanding the impact of climate change on HBWs in the region. This was followed by a primary survey of 202 women HBWs in five cities across Bangladesh (Dhaka), India (Ahmedabad and Surat), and Nepal (Bhaktapur and Lalitpur). HBWs in occupations related to the garment sector, such as ball pressing or button making, thread cutting, tailoring and bead work; or food products, such as pani puri making, chocolate wrapping and papad making, participated in the study. Most of the respondents (61%) were in the age group 30 to 50 years, married (83%) and with children under 14 (63%).

The study covered three dimensions:

a) the perception of the HBWs on climate change
b) the impact of climate change on their livelihood
c) mapping individual coping (household-level) strategies.

Key findings:

- Over 83% of the respondents reported that they had observed a rise in temperatures during summer in the last 10 years.
- More than two-thirds (66.3%) were unaware of the reasons for these changes, while around 11% believed such changes to be an "act of God".
- Around 55% shared that climate change was affecting their family.
- The most visible impact has been on women's unpaid work, with almost 46.5% of the HBWs reporting the same. Of them, almost 60% (56 respondents) said their work had increased by more than two hours daily. This increase was driven by the burden of caring for the ill, followed by the time and effort it took to fetch water and manage food stocks.
- Around 43% reported loss of cash incomes and 41% reported reduced productivity. This decline was largely attributed to climate change, especially increased temperature.
- Around 15% reported someone in the family facing heatstroke in the last couple of years, while 33% reported waterborne diseases and 34% vector-borne diseases.
- Around one in three (30%) reported that their homes were flooded during monsoons. Of these, 47% reported damage as well.
- Nearly half (48%) had to resort to extreme measures to cope with climate change. Around 20% had to change their homes, 16% their livelihoods, and 12% both homes and livelihoods.

- Almost two-thirds (57%) reported working part time with monthly income less than 5000 in local currency. [1] And although there were other sources of family income, the daily earnings for most of these HBWs are below the international poverty threshold of USD 1.90 per person per day (UN definition used for Sustainable Development Goals).
- Only 65% had a savings account, 24% had health insurance and 23% were members of collectives. This further reduces their financial resilience to climate impacts.
- There is a severe lack of information related to possible solutions for dealing with climate change. When asked about dealing with temperature rise in summers, only 55% respondents knew what could be done.
- Around 43% had also tried to implement some solutions for the same and benefitted from it. However, there are challenges, especially in purchase costs.
- Around half (51%) reported lack of information as the key reason for not trying to implement solutions. This was followed by lack of suitability (18%), higher costs (17%) and no credit support (14%).

The study thus clearly brings to light that HBWs, especially women, are profoundly impacted by climate variabilities and will be especially vulnerable to climate change. Their poverty status, low access to social protection and lack of information further reduces their adaptive capacities. Most have to resort to negative coping measures, including giving up their residence and/or livelihood. There is an urgent need to focus on building the adaptation capacities and resilience of women HBWs.

Recommendations:

First and foremost, it is important to increase the understanding of climate change among HBWs, especially on adaptation solutions. Civil society organisations (CSOs) and organisations for HBWs should train the workers through community-based vulnerability assessments, community-led surveillance and action plan development. There are already various adaptation actions that can be explored, piloted, disseminated and converted into a social enterprise. These include personal choice and behaviour change solutions such as staying hydrated, ventilation, personal hygiene, mosquito-proofing homes and sleeping areas, etc.; technology solutions such as energy-efficient equipment, heat-resistant material, building designs, rainwater harvesting models, etc.; and financial solutions including insurance and social security schemes. It is important to test and implement projects related to various adaptation solutions.

Enabling this dissemination of knowledge at a large scale, however, will require building the knowledge and capacities of the CSOs and HBW organisations themselves, as well as policy advocacy at national and global levels to help finance these activities. A multi-stakeholder regional association could be considered towards this. It would provide the backstop for knowledge sharing and cross learning, which are so important to solve the complex issue of climate change adaptation.

[1] Converted to USD, this corresponds to less than USD 59 for Dhaka (Bangladesh), less than USD 68 for Ahmedabad and Surat (India), and less than USD 43 for Bhaktapur and Lalitpur (Nepal).

This multi-stakeholder forum can be developed through collaboration between existing international and regional climate change networks, and local organisations working with HBWs. This regional association should then focus on working with governments and donor agencies, especially international financial institutions and multilateral development banks (MDBs) that manage climate funds. Allocation of funds for climate change awareness and adaptation among HBWs by governments and donor agencies is key.

Achieving concrete results will, however, require concerted action at various levels: communication and awareness, networking and multi-stakeholder partnership development, scientific knowledge transfer, exploration and promotion of adaptation solutions, as well as regional and global advocacy.

CHAPTER 1
Study Framework and Design

1. BACKGROUND

HBWs, both self-employed and homeworkers, are a critical part of global supply chains. Studies (ILO, 2002; ILO and WIEGO, 2013; Bonnet et al., 2021) have indicated that with growing industrialisation and globalisation, new forms of informal work are emerging, with a further increase in HBWs in the manufacturing sector.

Unfortunately, home-based work is still largely invisible, not only within economic statistics, but also often in research related to the informal economy (Mehrotra & Biggeri, 2007). This lack of data and analysis on home-based work and HBWs has continued in climate change research. There is hardly any literature available on the impact of climate change on home-based work and HBWs.

Field reports from Mahila Housing SEWA Trust (MHT) suggest that the increasing incidences of climate stressors (events, trends or consequences of climate change), especially relating to heat and water, as well as growing instances of extreme events such as flooding, waterlogging and drought, will have a major economic impact on HBWs.

Box 1: Definition of HBWs

The ILO Convention 177 on home work in 1996 first provided a definition of "homeworkers". This definition, which was initially limited, gradually evolved and has been amended to become more comprehensive. The term "home-based worker" (ILO, 2015) thus refers to those people who produce goods and services from their homes or areas around their homes. These include:

a) ***Homeworkers:*** Dependent, subcontracted workers who work directly or indirectly for employers or their intermediaries, usually on a piece rate; they are also known as piece-rate workers, outworkers or workers in the putting-out system.
b) ***Self-employed, own-account workers:*** Independent workers who design, produce and market their own products, but cannot be considered to be running small businesses.
c) ***Contributing family workers:*** Those who help own-account workers in production.

For example, increased summer temperatures in India directly impacted productivity in the afternoons, with some women reporting 30% decline in production (MHT, 2015). In Cambodia, studies show that a downward trend of productivity for hotter days was statistically significant in the garment industry (Kjellstrom & Phan, 2017). Unseasonal rain and hailstorms spoil raw materials that HBWs store in their homes, which are more often than not in slums and informal settlements (MHT, 2015). Increased flooding leads to disruption of the workplace as well as livelihoods (UN Women, 2016), which unfortunately are not considered while analysing the economic impacts of a disaster.

HBWs, especially in South Asia, could potentially be one of those most vulnerable to the impact of global climate change. Their vulnerability comes both from being located majorly in the tropics, which is exposed to heat waves, extreme precipitation and sea level rise, as well as from their socio-economic background, given the informal nature of their work and settlements. As most HBWs lack social and legal protections, as well as economic mobility and collective bargaining (Chen & Sinha, 2016), their concerns are also mostly unaccounted for and unaddressed in adaptation strategies and climate resilience action plans.

Furthermore, understanding or mapping the impacts of climate change on HBWs is difficult because of

(i) lack of updated statistics and analysis at national and global level on home-based work and HBWs;
(ii) intrinsic characteristics of their work profile, the multiplicity of sectors involved, the complexity of their position in the sector supply chains, their location specificity and the inter-connectedness with home-based unpaid or care work; and
(iii) their vulnerability to a range of climate and non-climate stressors.

2. PURPOSE AND SCOPE OF THE STUDY

Given the economic, gender and social implications of climate change on home-based work, it is important to understand and map the impact of climate change on HBWs, especially women. The current study "Impact of Climate Change on Urban Home-based Workers in South Asia" has been planned with this in mind.

The study reviews the available statistics and literature on the issues and concerns of HBWs, as well as the predictions of climate change in South Asia, to understand the diverse impacts of climate change on HBWs in an integrated manner. This understanding has then been used as a guiding framework to map the existing trends and identify future research needs. The study has delineated the perception of climate change and its impact on the livelihoods of HBWs. The focus is also on documenting the existing coping strategies among HBWs and identifying gap areas for building their climate resilience, both directly as well as through policy influencing.

Towards this, the study aims to:

a) Unravel the complexities of the sector, especially with respect to supply chain and market dynamics as well as the impact of climate change
b) Map the climate variability in the region and understand how HBWs perceive climate change
c) Recognise the impact of climate change on livelihoods and economic security of HBWs, and existing coping mechanisms
d) Incorporate the understanding of non-climate stressors associated with HBWs, and how they contribute to HBWs' vulnerability to climate change
e) Mark the needs and expectations of HBWs for climate change adaptation.

In particular, the study has weaved in gender dimensions across all of the above, especially in the context of unpaid care work and competing demands on women's time and work priorities. The study brings to light the different possibilities of making climate change adaptation actions more responsive to home-based work. The findings of the study should inform all climate change and gender/livelihood policies on the need to include and focus on home-based work.

The study has been undertaken in three countries: Bangladesh, India and Nepal. Within each country, two most relevant occupational groups have been identified for the study. The focus is on non-agriculture-based occupations of low-income workers, such as manufacture of food products and beverages, textiles and wearing apparel, wood products and furniture, wholesale and retail trade, etc. The study has been focused only on women HBWs.

3. ASSESSMENT CRITERIA AND RESEARCH QUESTIONS

Based on the preliminary context analysis and discussion with HomeNet South Asia's (HNSA) local partner organisations working with HBWs, the study has looked at the following criteria to assess and understand the perception and the impacts of climate change on women HBWs. Table 1 below highlights the criteria to be assessed and the corresponding research question that the study seeks to answer, as well as the means of data collection for the same.

Table 1: Research matrix

Criteria	Research question	Survey instrument
Complexities of home-based work		
Characteristics of home-based work	a. Importance of home-based work in supply chains b. Employment in home-based work c. Nature of home-based work d. Exploitations in the sector e. Sectoral vulnerabilities to climate change	Secondary literature review and focus group discussions (FGDs)
Profile of HBWs	f. Type of HBWs g. Social status h. Nature of work i. Income trend j. Poverty profiling k. Contribution of home-based work	Household survey
Climate variability, and perception and awareness of climate change		
Local climate change	a. Changing local climate conditions b. Climate change risk and expected impacts	Secondary literature review
Perception and awareness	c. Climatic variations observed by communities d. Knowledge of climate change	Household survey and FGDs
Impact of climate change on HBWs		
Overall impact of climate change	a. Changes in livelihood patterns and incomes b. Asset loss c. Relocation d. Health implications	Household survey and FGDs
Impact on home-based work	e. Changes in productivity over the last three to five years f. (In)stability of income from home-based work due to climate change in the last five years g. Payment patterns/conditions and implication of climate change on the same h. Material losses	Household survey and FGDs

Criteria	Research question	Survey instrument
Non-climatic stressors and increased vulnerability to climate change		
Infrastructure and service deprivation	a. Access to water services b. Access to sanitation services c. Access to electricity and energy services d. Access to health facilities e. Access to financial services	Secondary literature and household survey
Time poverty and drudgery	f. Change in care work in the last three to five years g. Impact of climate change stresses on care work h. Impact of change in care work on home-based work	Household survey
Coping strategies		
Knowledge of options	a. Knowledge of technology solutions b. Knowledge of costs and means of accessing solutions c. Knowledge of government social protection/ climate resilience measures	Household survey and FGDs
Access to coping strategies	d. Access to weather information e. Access to climate change adaptation training and knowledge f. Access to adaptation technology solutions g. Social capital building h. Responsive local governance system	Household survey
Resilience (pre-planned)	i. Preferred actions/options j. Actual actions adopted in the last five years k. Impact of resilience action	Household survey
Barriers to resilience planning	l. Financial barriers m. Technology barriers n. Institutional barriers	Household survey

4. RESEARCH METHODOLOGY

DESIGN

Both secondary and primary research techniques were deployed as part of the study. A detailed preliminary analysis using secondary literature was undertaken. This included a review of all existing literature and statistical profiles available on home-based work, including but not limited to ILO reports, national employment surveys, and studies by Women in Informal Employment: Globalizing and Organizing (WIEGO), HNSA and MHT. Additionally, the secondary research included creating a short country climate change projection profile to place the findings in the larger context.

Box 2: Survey Instruments

Household survey questionnaire: Detailed interviews of selected women from different clusters were undertaken using the questionnaire survey format given in Annex 1. These interviews were held telephonically or in person based on logistics.

Focus group discussions: FGDs were conducted using the checklist in Annex 2. An FGD was conducted in each cluster, with around six to eight women participating in it.

The primary research used both quantitative and qualitative data. The former was derived from the statistical analysis of the primary survey with around 202 women HBWs across the three countries. A questionnaire-based survey was undertaken to cover three prominent dimensions: i) the perception of the HBWs about climate change, ii) the impact of climate change on their livelihood and iii) mapping individual coping (household-level) strategies.

Qualitative data was collected through FGDs for: a) identification of the key climate stressors and shocks and b) understanding collective and facilitated (by government or civil society) coping strategies. A total of eight FGDs were conducted. There was also a plan to use participatory tools for the qualitative analysis. However, this could not be done because of COVID-19-related restrictions. The study also includes case studies or narratives to highlight the interlinkages and determinants of economic, gender and social vulnerabilities, and the impact of climate change.

SAMPLING PLAN

The sample selection was undertaken at three levels:

i) the selection of occupations
ii) the selection of locations
iii) the selection of women HBWs for the household survey.

Given the limitations of time and resources, the study used a more convenient yet purposeful sampling in terms of the site selection both for occupations and locations. Within these, the selection of women for household survey was done through random sampling using 'research randomiser'.

Occupation selection: The occupational groups included in the study were selected based on the inputs of the HNSA local partner organisation involved with the HBWs. The primary criteria employed here were:

a) Inclusion of only non-agriculture-based occupations
b) Inclusion of self-employed (own account) and employee (subcontracted/piece rate) groups
c) The HNSA local partner organisation's involvement with the occupational group as part of their regular work.

Cluster selection: Given the population differences in the countries, four clusters from India and two each from Nepal and Bangladesh were included in the study. The cities for the study were selected based on convenience, giving consideration to a long-standing partner presence in the city (10 years or more).

The cluster selection within the city followed the given procedure:

a) Developing a list of clusters where at least 35 HBWs involved in the particular occupation were located within a range of 2km
b) From this list, giving preference to those clusters where the linkage and rapport of the partner was high.

The list of clusters is provided in table 2.

Table 2: Cluster selection

Country	Industry	Occupation	City	Cluster
Bangladesh	Garment	Garment work (piece-rate)	Dhaka	**Cluster 1** Geneva camp, Mohammadpur
	Allied garment	Ball pressing or button making work	Dhaka	**Cluster 2** Mirhazirbagh, Jatrabari
India	Handicrafts	Bead work (*mala* making)	Ahmedabad	**Cluster 1** Vishwas Nagar Odhav, Chamunda Nagar, Thakkar Nagar
	Food processing	Multiple (*pani puri*[2] making, chocolate wrapping, *papad* making)	Ahmedabad	**Cluster 2** Vishwas Nagar Odhav, Nobel Nagar
	Allied garment	Thread cutting[3] (piece-rate)	Surat	**Cluster 1** Hariom Nagar
	Food processing	*Pani puri* (*chaat*) making	Surat	**Cluster 2** Laxmi Nagar
Nepal	Handicrafts	Bead making (piece-rate)	Bhaktapur	**Cluster 2** Madhyapur Thimi
	Garment	Tailoring (self-employed)	Lalitpur	**Cluster 1** Godawari

Household selection: Within each site, 25 households were identified for the survey. The final sample classification is shown in table 3.

[2] Pani puri is a popular street food in the Indian subcontinent. It consists of a round, hollow, deep-fried crisp flatbread, filled with a mixture of flavoured water and potato or lentil mash. The ingredients are generally prepared in advance at the home of the street vendor, while the mixing of the products is done on the spot while serving the customer.
[3] In thread cutting, workers cut the excess thread from the stitched garments prior to garment finishing. It is also known as thread trimming.

Table 3: Sample classification

Country	City	Occupation	Total Households
Bangladesh	Dhaka	Garment	25
		Allied garment	25
India	Ahmedabad	Handicrafts	25
		Food processing	25
	Surat	Allied garment	25
		Food processing	25
Nepal	Bhaktapur	Handicrafts	25
	Lalitpur	Garment	27
TOTAL			**202**

For identification of the households, the below process was followed:

a) A list was prepared of all women HBWs involved in the selected occupations within the clusters. Each list had a minimum of 35 names and a maximum of 50.
b) The list was arranged in alphabetical order and the household assigned a serial number between 1 and 50.
c) Using 'research randomiser', 25 numbers were selected between 1 and 50.
d) The numbers identified in (c) were matched with the names in (b).
e) Those women whose names were finalised in (d) were surveyed. If the woman was not available on the first visit/contact, a second visit/contact was attempted. If the woman was not available on the second visit/ contact either, then the woman after her on the household list was surveyed.

The timeline for the study is outlined in table 4.

Table 4: Study timelines

Sl. no	Deliverable	Timeline
1	Inception report with preliminary analysis, research methodology, sampling plan and survey instruments	February 2021
2	Secondary literature review	March 2021
3	Field survey and data entry	April and May 2021
4	FGD	June 2021
5	Report writing	July 2021

5. REPORT STRUCTURE

This report brings together the findings from the study. It is divided into seven chapters:

1. Study framework and design
2. Unravelling the complexities of home-based work
3. Mapping the climate variability in the region
4. Impact of climate change on HBWs
5. Non-climate stressors and vulnerability of HBWs
6. Coping strategies
7. Conclusion and recommendations

Information from the primary surveys and secondary literature review has been dovetailed to get a more comprehensive picture of the status of HBWs and the impact of climate change on their lives and livelihoods. Most of the primary data analysis in the report is at the South Asia level, with city-wise variations highlighted were pertinent. Country-wise data on major indicators has been presented in Annex 3.

6. LIMITATIONS OF THE STUDY

Inadequate secondary research on HBWs in South Asia in the context of climate change is one the major limitations of the study. This severely restricted the mapping of macro levels. However, this was anticipated as the study was planned keeping in mind the gaps and to highlight key areas related to HBWs and climate change that need the attention of researchers on climate change and the informal economy. The study was also constrained by time and resource limitations, which is why a small sample of only 202 women was included. This may not be adequate to extrapolate the trends across the large number of HBWs existing in these countries. However, it is still valid for understanding the implications of climate change on the group and will provide a basis for marking their needs and expectations for climate change adaptation. These results can be used to influence policy, but more essentially, highlight the need to focus on HBWs as a separate group in all climate change adaptation planning and data collection exercises. The study was also undertaken under difficult circumstances. The second wave of COVID-19 was in full force in South Asia during the field survey in April and May 2021, and hence most of the surveys were conducted on the phone.

CHAPTER 2
Unravelling the Complexities of Home-Based Work

1. EMPLOYMENT TRENDS IN HOME-BASED WORK

Globally, 260 million women and men are employed in home-based work. Asia and the Pacific account for 161.4 million (65%), while 35 million (14%) are in developed countries (Bonnet et al., 2021).

In South Asia, HBWs account for around 10% of the total workforce. However, women HBWs make up almost 24% of the total female employment in this region, as against only 6% for men, reflecting a vast gender disparity in the sector. Most HBWs are involved in the non-agriculture sector: 45.4 million (67%) of the total 67.5 million men and women HBWs. More than half of the total HBWs, as well as the non-agriculture HBWs, are women. Around 32% of HBWs in the region work in urban areas; this trend is greater among men (37% of all male HBWs work in urban areas) than women (28%) (ibid).

Among the countries in the study, India has the lowest share of HBWs among total workers and female workers. Nepal has a higher share among total workers, while Bangladesh has a higher share among female workers. The share of non-agriculture HBWs, for total and women HBWs, is also high in India and Nepal, while being comparatively low in Bangladesh (Table 5).

Table 5: Estimates of HBWs in Bangladesh, India and Nepal (numbers in million)

(Year of data)	Total	HBWs as percentage of all workers	Number of women	Women HBWs as percentage of all female workers	Total	As percentage of all HBWs	Number of women	As percentage of women HBWs
Bangladesh (2016–17)	11	17.3	8.7	46.1	3.1	28.2	2.1	24.1
India (2017–18)	41.85	9.1	17.19	16.4	33.23	79.4	12.48	72.6
Nepal (2017–18)	1.6	22.1	0.9	34.4	1	62.5	0.6	66.7
Source: WIEGO and HNSA statistical briefs, No. 25 for Bangladesh (Koolwal & Vanek, 2020); No. 23 for India (Ravendran, G., 2020); No. 28 for Nepal (Koolwal & Vanek, 2021)								

It must be noted here that these numbers could be underestimates, given the lack of standard definitions as understood by the enumerators. There is growing acknowledgement that the number of HBWs in the region has been increasing over the years, especially in Bangladesh and India. In India for example, the number of HBWs rose from 23.3 million in 1999–2000 to 37.4 million in 2011–12 and further to 41.85 million in 2017–18 (WIEGO and HNSA, 2014; WIEGO and HNSA statistical brief No.23 for India, 2020).

2. NATURE OF HOME-BASED WORK

ILO (2015) recognises that since the 1980–90s, with globalisation and economic liberalisation, the trend of subcontracting the work has been rising, leading to an increase in the number of HBWs worldwide. Much of the production work in today's domestic and global supply chains is carried out by HBWs. Although positioned at the end of the supply chains that connect factories, contractors, subcontractors, homes and workshops across the globe, HBWs are fundamental to all production activities.

Furthermore, while most home-based work falls within the purview of the informal economy, thus depriving HBWs of the benefits of decent work and social protection, such work has very strong links to the formal economy. Chen (2014) highlights how many HBWs are linked to formal firms through both backward and forward production linkages, with around 30% of self-employed HBWs purchasing inputs from formal firms and just under 30% of both piece-rate and self-employed HBWs selling goods to or producing goods for formal firms.

Earlier estimates had shown that most HBWs, especially in South Asia, were predominantly in the manufacturing sector. Recent estimates, however, indicate a shift from manufacturing to the service sector. Bonnet et al. (2021) reported an equal proportion of HBWs involved in manufacturing and service sectors. For women HBWs, the proportions were different: 33% were in manufacturing and only 20% in the service sector.

There is variation at the country level, though. In Bangladesh, both women (67.7%) and men (75.6%) HBWs were overwhelmingly concentrated in the service sector in urban areas. The share is more evenly distributed across manufacturing (53.8% women and 57% men) and services (46.2% women and 42.7% men) in rural areas. In both urban and rural areas though, women were mainly in textile and apparel or tailoring services (Koolwal & Vanek, 2020).

India saw a drop from 42.8% to 37.8% in the manufacturing sector and an increase from 34% to 39% in the service sector. Within these, most HBWs were involved in trade, followed by apparel and textiles. In fact, for the first time, trade surpassed agricultural HBWs in the country. More men than women are shifting towards the service sector though, with women reporting an increase in share of manufacturing while men reported a decrease in the same (Raveendran, G., 2020).

Nepal also saw a shift from manufacturing to services in both urban and rural areas. The percentage of men HBWs in services rose from 48% to 66% in urban areas, and 41% to 53% in rural areas. Among women, service employment rose from 54% to 62% in urban areas, and from 43% to 56% in rural areas. However, while urban women HBWs were more involved in retail services and textiles, rural HBWs were more involved in retail services and food products. The retail services sector has in fact seen a major increase in women HBWs from 26.4% in 2008 to 49.9% in 2017–18 (Koolwal & Vanek, 2021).

Undoubtedly, though, a large percentage of women HBWs are involved in garment-related jobs, including tailoring, weaving, stitching, embroidery, embellishing garments and packaging. For example, Bangladesh is one of the top exporters of readymade garments and employs a large number of women HBWs, mainly in Dhaka city. And, it is estimated that in India there are 5 million homeworkers contributing to garment and textile supply chains (Chen & Sinha, 2016).

3. SOCIO-ECONOMIC PROFILE OF HBWS

Exact estimates of the type of HBWs are not available because of definitional constraints and also the lack of lucidity about the types of HBWs. Sudarshan and Sinha (2011), in their study of HBWs in South Asia, reported that the piece-rate worker dominates sectors such as garments, while handmade paper production, weaving, shell/pearl making are more of a self-employed nature.

A similar trend was reported in the current survey, with around 11% HBWs reporting working as self-employed, 72% as piece-rate workers and 17% as a contributing family member (unpaid family labour). Within sectors, food processing was the only one with 32% working as self-employed and 43% as a contributing family member. The two other sectors (garment and handicrafts) had around 98% of the respondents as subcontracted piece-rate workers (Figure 1).

Figure 1: Activity status of the HBWs surveyed

Of the respondents, 61% were in the age group 30 to 50, followed by 30% who were younger than 30. Around 83% were currently married, while 7% were widowed, 5% divorced or separated and 5% never married. The average family size was 4.42. About 25% had children below 6 years at home, while 48% had children aged 6 to 14. About 15% had older persons also in their households (Table 6).

Table 6: Family profile of the respondents

Age	Less than 30 years	30 to 50 years	Above 50 years
	60 (30%)	122 (61%)	17 (8.5%)
Marital status	Currently married	Divorced/ Separated/ Widowed	Never married
	168 (83%)	25 (12%)	9 (4.5%)
Family profile	Households with older persons (above 60)	Households with children (6–14 years)	Households with younger children (0–6 years)
	32 (18%)	96 (54%)	51 (28.5%)
Note: Figures in parenthesis depict percentage			

Many of the respondents belong to discriminated social castes/tribes, exposing them to exploitation and marginalisation (Figure 2). It needs to be mentioned here that although data on (dis)ability and religious minority status were also sought in the survey, none of the respondents fell into that category.

Almost half the respondents had either never gone to school or had not completed elementary education, reflecting a lack of basic literacy among them (Figure 3).

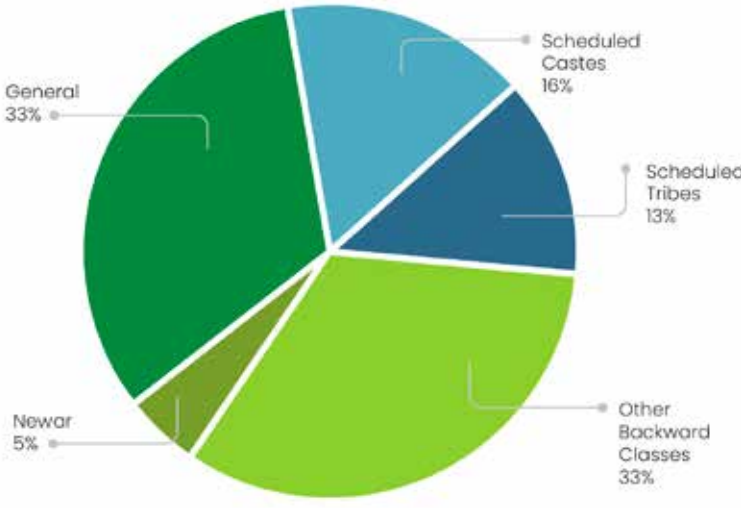


Figure 2: Categorisation of surveyed HBWs by social groups

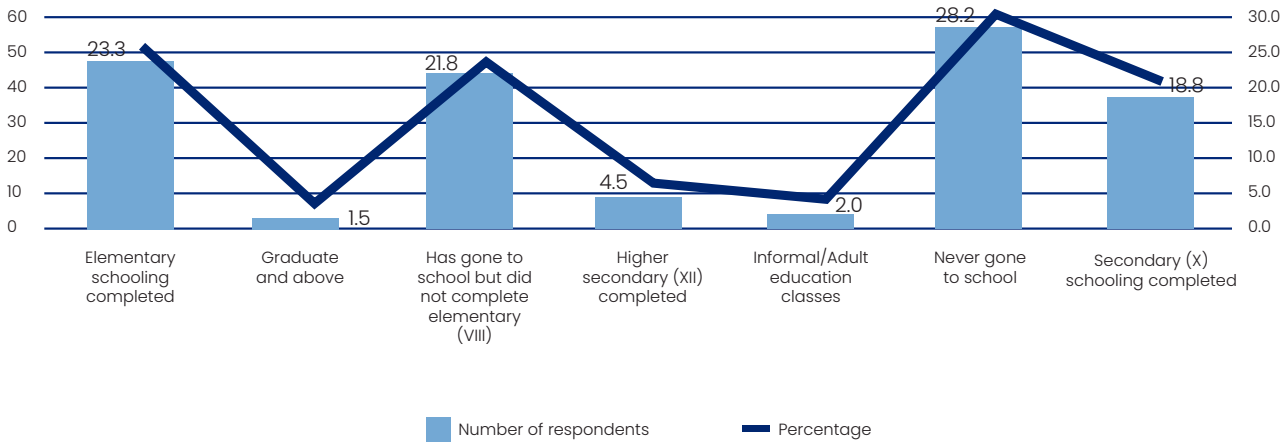


Figure 3: Education status of the surveyed HBWs

It is not surprising that only 27% of the HBWs surveyed reporting taking decisions by themselves and another 6% reported joint decision-making with their spouse. Almost 54% of the HBWs surveyed reported that their husbands took the major decisions in their homes. The rest reported decisions being taken by parents (6%), in-laws (5%) and others (8%).

An important feature of the families was the high dependency ratio of 2.077, even though the survey was focused on women. Although family sizes were not that large, with an average 4.42 members per household, the average number of earning members per household was only 2.12. Although almost 144 households (71%) did have a full-time earning member, the average number of full-time earning members per family was only 0.85 as against 1.30 for part-time workers. Around 47% of the families had a primary occupation in factories and shops, around 7% had their own stores, 11% were dependent on wage labour and 16% had home-based work as their primary occupation. On an average, a family reported working for around 24.34 days a month.

The average monthly income of the family was 5000 to 20,000 in the local currency (Figure 4). For a more comparative analysis, these figures have been converted into USD based on the exchange rate on 31 May 2021 (Table 7). Given that most of these are families of four or more, the daily earnings are often below the international accepted poverty threshold of USD 1.90 per day (UN definition used for SDG).

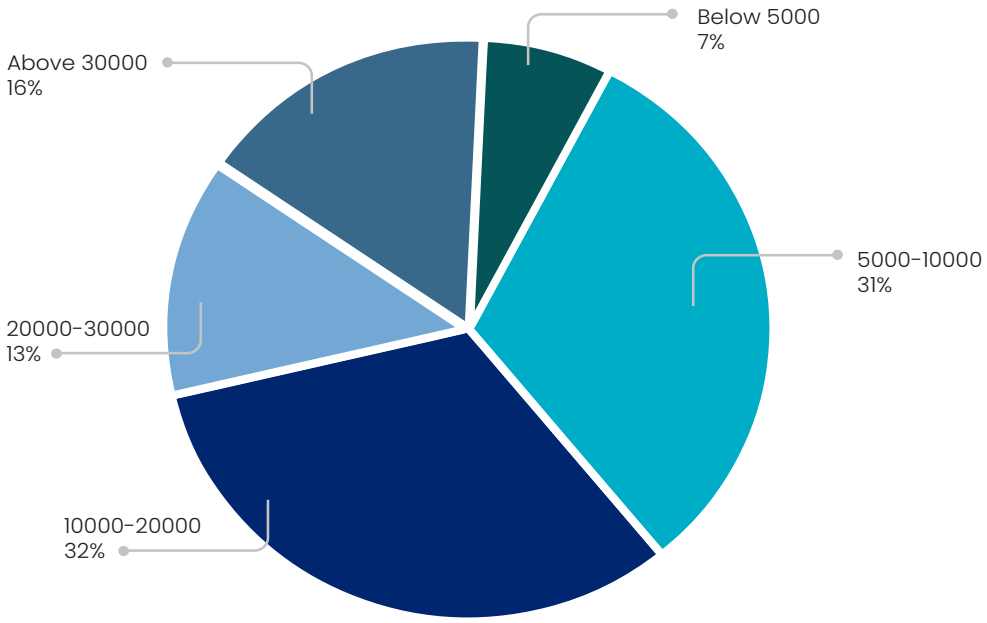


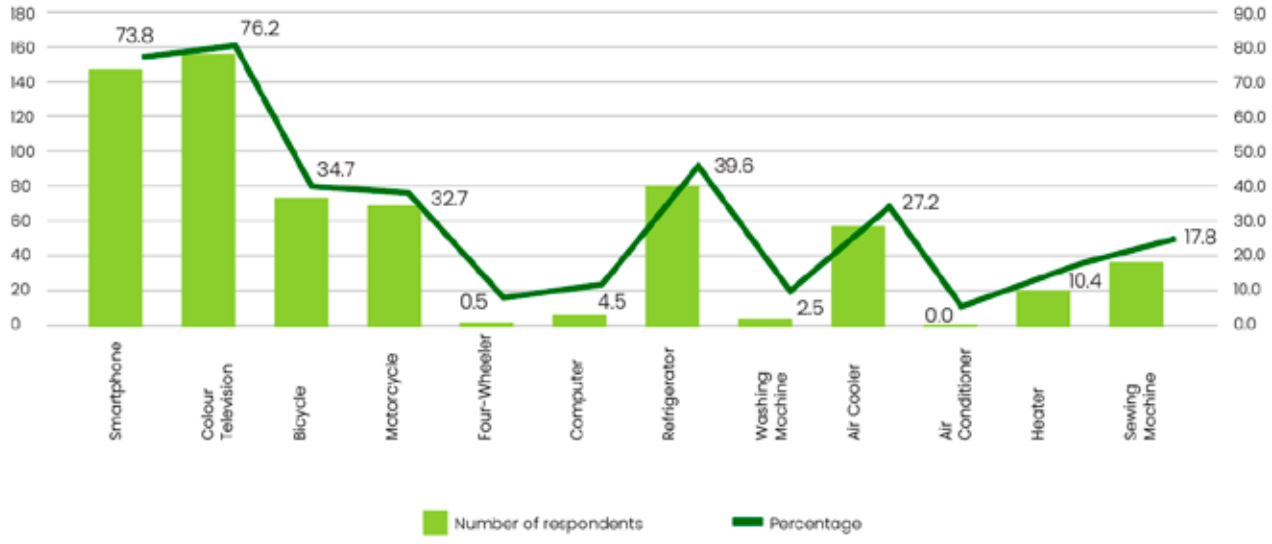
Figure 4: Average monthly family income of the HBWs

Table 7: Average month family income of the HBWs in USD

Country/ City	Local currency	Below 5000	5000-10,000	10,000-20,000	20,000-30,000	Above 30,000
Bangladesh	**In USD**	**Below 59**	**59-117**	**117-235**	**235-352**	**Above 352**
Dhaka	No of HBWs	6	23	19	2	0
India	**In USD**	**Below 68**	**68-136**	**136-273**	**273-410**	**Above 410**
Ahmedabad	No of HBWs	0	5	28	11	6
Surat	No of HBWs	9	33	7	1	0
Nepal	**In USD**	**Below 43**	**43-86**	**86-171**	**171-257**	**Above 257**
Lalitpur	No of HBWs	0	1	5	9	12
Bhaktapur	No of HBWs	0	1	6	4	14

The economic vulnerability of the HBWs' families is further seen in the household equipment and asset profile. Of the 202 HBWs surveyed, around 6% did not own any comfort equipment or assets. Another 14% owned only smartphones and/or bicycles, which are more a necessity today. Figure 5 gives details of ownership of comfort assets.

Figure 5: Availability of comfort assets in HBWs' homes



4. WORK PROFILE OF HBWS

On an average, home-based work was the primary occupation for almost 87% of the HBWs surveyed. Dhaka was an exception, with only 19% of the respondents from the city reporting home-based work as their primary occupation.

The study also highlighted that HBWs laboured for an average of 23.3 working days a month. This data is in line with other studies (Kala, S., 2020) in which 82% of HBWs interviewed said they worked for five to seven days a week. There is a clear need to recognise home-based work as full-time work and account for it as such in national statistics, rather than as part-time work. Unfortunately, even the HBWs themselves (almost 81%) saw themselves as part-time workers. Surat was the only city where 56% of the HBWs reported that they were working full time.

The major reason for this is the phenomenon of income patching. The low earnings from home-based work pushes workers to engage "in multiple occupations — known as income patching — so that very often both of these kinds of home-based work are only one of many income-generating activities" (Pearson, 2004). This was also reflected in the study, with many women involved in multiple types of home-based work.

The seasonal nature of jobs of HBWs, especially self-employed workers, further contributes to the lack of clarity on the nature of home-based work. In South Asia, festivals such as Rakhi, Diwali, kite-flying, Ramzan, Eid and Eid-ul Azha are important (peak) times for increased work and incomes (FGDs, all cities). Workers prepare for production for these times months in advance, by purchasing raw materials, investing considerable money and time in production, and getting ready for sales in advance.

The nature of their work also results in HBWs being often considered as micro-entrepreneurs (ILO, 2015). Although data on home-based work is scarce, there is a strong consensus in the literature that the majority of homeworkers are women, while men are more involved in self-employed home-based work. Studies (Harvey, J., 2019) indicate that many women take on homework because of constraints that relate directly to gender norms, including those that limit women's mobility outside of the home or assign disproportionate responsibility for unpaid care work to women.

Young women especially take on homework in part to be able to manage both the responsibilities within the home (caring for children or other family members) and the need or desire for remunerative work. Chen (2014) and Hale and Wills (2005) also point to how homework appeals to some women because of the flexibility of timings and the ability to work from home. Mehrotra and Biggeri (2007) report that part-time homework is a useful way for women to diversify their household incomes. Since this current study was targeted at women HBWs, the quantitative survey does not throw light on these aspects. However, the FGDs and discussions with key partners revealed this to be true even in the study areas. For example, in both Surat and Ahmedabad where self-employed HBWs in the food processing sectors (food stalls for pani puri) were the focus, it was clear that the men took the lead and owned the stall, while the women provided unpaid labour at home. Hence, it is not surprising that 42% of the respondents in the food processing sector were self-employed contributing family members.

Box 3: Intrinsic characteristics of home-based work and workers in South Asia

- Home-based work is an important part of domestic and global supply chains.
- It is mostly informal work but strongly linked to the formal economy.
- It is concentrated in the manufacturing sector, but also has an important role in the retail sector.
- Garment and textile sector is the single largest employer of HBWs.
- Home-based work includes both homeworkers and self-employed workers, depending on the sector.
- Unpaid family labour also contributes to home-based work in some sectors.
- Income patching through multiple occupations is something many HBWs do.
- Home-based work need not always be part-time work, but can also be full time, considering the number of days of work and average per-day work hours being put in.
- The seasonal nature of many jobs is an important characteristic of many home-based jobs.
- Homework is highly gendered, although not all HBWs are women.

5. VULNERABILITY OF HBWS

It is a well-recognised fact that "homework is one of the most vulnerable and lowest paid types of work, with some of the poorest working conditions within the informal economy" (ILO, 2012). HBWs face many challenges, especially with respect to recognition and legal identity, irregularity of work, low incomes, exposure to global market fluctuations, poor working and living conditions in substandard housing, and lack of access to public or private support services (Chen, 2014).

Invisibility of HBWs in the economy: HBWs are an 'invisible workforce' in terms of the national employment/workforce policies as well (Esim, 2003). The invisible nature of the work means that homeworkers are typically not recognised as part of the workforce and their numbers not captured in national statistics (Chen, 2014; Freeman, 2003). This exposes them to unfair value chain dynamics (Chen, 2014), resulting in HBWs lacking social and legal protections, as well as opportunities for economic mobility and collective bargaining — all the four pillars of the decent work agenda outlined by the ILO (ILO, 2002; Chen & Sinha, 2016).

This study also reported similar trends, with only 65% of the HBWs having savings accounts and 23% having membership of collectives. A silver lining was that around 24% did have health insurance (Figure 6).

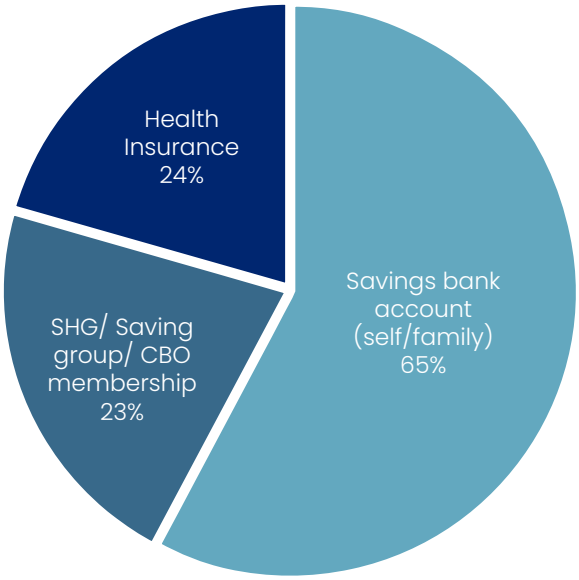


Figure 6: Access to financial services for HBWs families

Further, the invisibility keeps them out of the policy planning network. Even when recognised, HBWs, especially self-employed workers, are often defined and treated as micro-entrepreneurs. Thus, in policy terms, they are perceived as potential small business owners, who with appropriate support can take care of their own business needs, as well as their social protection needs through private healthcare and pensions from their profits and savings. The reality, however, is that most of these workers have no capital to invest, no access to loans and no potential or prospect to develop into a viable business. They have little to no access to business development infrastructure and services, and are excluded from the most basic labour and social protection legislation (ILO, 2015). Largely absent from government records, these HBWs also lack access to government relief packages, especially during crises and disasters (Kala, S., 2020).

Unfair work terms leading to irregularity of work and incomes: Hale and Wills (2005), in a study on supply chain mapping of nine locations, revealed how HBWs are at the bottom of the value chain, subject to irregular demand and pay, long hours and hidden deductions — even when working for major brands. Mehrotra and Biggeri (2007) also looked at three sectors in India from the value chain perspective and found that there are usually four to five intermediaries between the HBW at one end and the retailer at the other. The study also found the share of the final price paid by the consumer that reaches the HBW varies across sectors: Of INR 100 paid by the consumer, homeworkers received INR 15 for *zardosi* (gold thread embroidery) work, INR 17 in *beedi* or cigarette making and just INR 2.3 in *agarbathi* (incense sticks; perfuming, which adds most value, is done at a subsequent stage) making.

In 2016, HNSA carried out a study specifically on women homeworkers in three cities of Nepal and India. The study reported that while all the HBWs produced items for global brands (including from Australia, Europe and Japan), none of the homeworkers had written contracts with their employers. Earnings were also highly irregular; delayed payments were common, and even when payments were made on time, they had long gaps, such as once a month in Tirupur and Delhi, and once in two months in Kathmandu (Sinha & Mehrotra, 2016).

Box 4: HBWs, especially women HBWs, placed in unfair global supply chains

Other researchers (Freeman, 2003; Mehrotra & Biggeri, 2007; Chen & Sinha, 2016) have pointed to the unfair nature of the terms in which HBWs, especially women, are placed in global supply chains:

- The burden of fluctuating demands is transferred to the HBWs. Firms outsource or subcontract production to increase labour flexibility — drawing upon HBWs when demand is high and ceasing to do so when demand is low — instead of having employees who must be paid regularly, irrespective of whether there is work.
- The subcontracting allows firms to avoid payments towards labour and social security benefits, including leave, pension, insurance, etc.
- Firms are able to transfer the non-wage overhead costs of production, such as for workplace, electricity, equipment and transportation.
- Firms benefit from unequal wages between men and women, employing more women than men because of their lower wages, especially in export-oriented sectors.

"Feminisation of labour" has in fact been a defining feature of capitalist globalisation (Mehrotra & Biggeri, 2007). The same study also highlighted how this impacts the care work of women, both in terms of quality of care, especially of children, and in transfer of care work to girl children, affecting their access to education. This "intergenerational transfer of poverty" not only affects the families of the HBWs, but is also a major constraint for achieving the human development goals of poverty reduction and social wellbeing.

Years later, the situation has not changed, according to another study by HNSA in 2021 in the same area. The study also found that while organised homeworkers in the supply chains enjoy some benefits, are treated properly and are not abused by contractors, they are still deprived of employee-employer agreements, minimum wage and social security.

It is not surprising, thus, that most HBWs get paid less than the minimum wage prescribed in their country. Kala, S. (2020) reported that this could be as less as 48% of the minimum wage in Ahmedabad. In fact, the average weekly earnings of HBWs reported in her study were only USD 12.9, 10.89 and 15.3 for Ahmedabad, Dhaka and Kathmandu respectively. The vulnerability of piece-rate workers is higher as they earn half of or less than that earned by own-account workers.

The FGDs in this current study corroborate the above findings across all the four study cities. For example, as shared in one FGD, "We get INR 50 for making 12 malas (necklaces). It takes three days to make 12 *malas*." (FGD, Ahmedabad).

Table 8: Nature of home-based work in study clusters

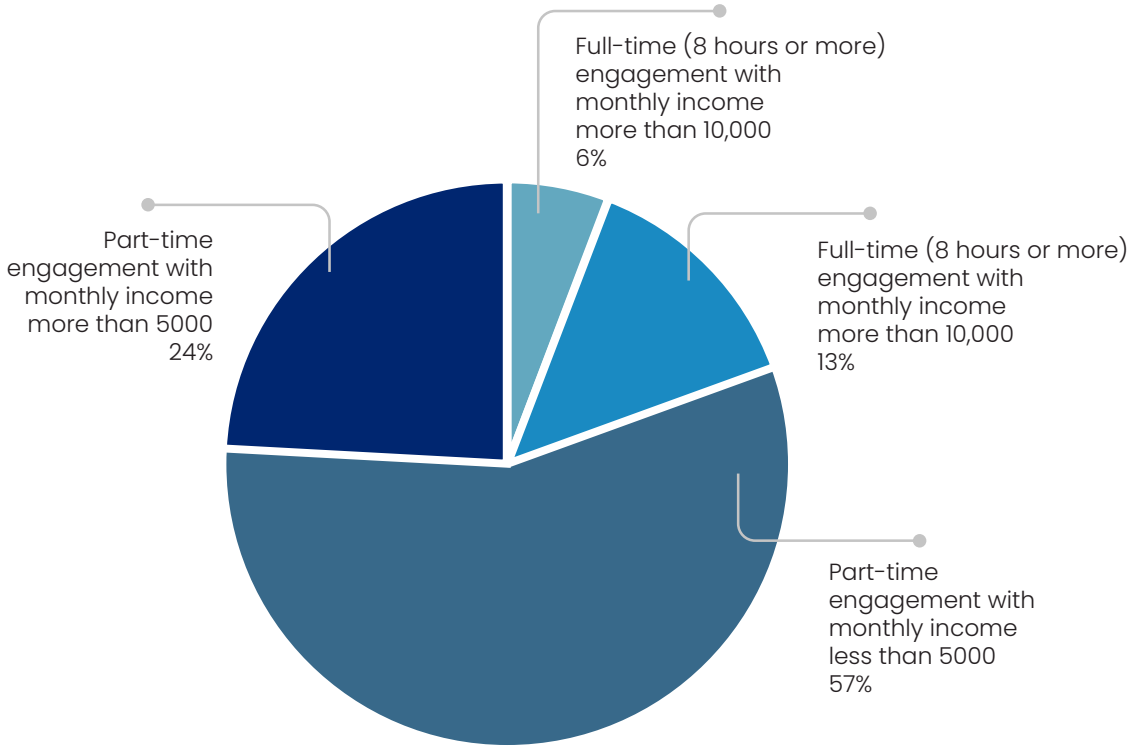
Parameter	Bangladesh	India		Nepal	
	Dhaka	Ahmedabad	Surat	Bhaktapur	Lalitpur
Recognition of work	Part-time	Part-time	Part-time	Part-time	Part-time
Number of hours of work	5 to 6 hours in the garment sector	6 to 7 hours (11am–6pm) in food processing 4 to 5 hours (1pm–6pm) in garment sector	6 to 7 hours (11am–6pm) in food processing 4 to 5 hours (1pm–6pm) in garment sector	6 to 7 hours for garment workers	6 to 7 hours for handicraft workers
Type of contract for home workers	Verbal	Verbal with main trader	Verbal with main trader No contract for *pani puri* makers, sold directly to customers	Verbal with contractor	Verbal with contractor
Terms of payment	Piece rate	INR 100 for 1000 pieces in cash within 15 days of delivery for chocolate makers INR 50 for 12 malas paid in cash	INR 10 for six *puri* at the stall Cash payment within one month for thread cutters	NPR 10 per piece in cash paid within six months to a year	In cash within 15 days of delivery for bead workers

Raw material purchase patterns	Provided by contractor	From local vendor/ wholesaler	*Pani puri* makers buy directly from the market Provided by contractor to thread cutter	Provided by contractor	Provided by contractor
Marketing patterns	Supplied to contractor who provides raw materials	Supplied to local vendor/ wholesaler who provides raw materials	*Pani puri* makers sell through stall directly to customers After thread cutting given back to contractor	Supplied to contractor	Supplied through contractor
Source: *FGDs in all clusters*					

A WIEGO IEMS study in 2012–13 had reported that when piece-rates are converted into daily gross earnings (by estimating how many pieces a HBW can make per day), earnings are mostly between USD 1 and 3 per day (Chen, 2014). This results in very low income for the HBWs. The current study also reported similar levels of income for the HBWs surveyed. Almost two-thirds (57%) reported working part-time with a monthly income of less than 5000 in local currency[4] (Figure 7). HBWs in Nepal earned the least, with 56% getting less than USD 1.90 a day.

[4] Converted to USD, this comes to less than USD 59 for Dhaka (Bangladesh), less than USD 68 for Ahmedabad and Surat (India), and less than USD 43 for Bhaktapur and Lalitpur (Nepal).

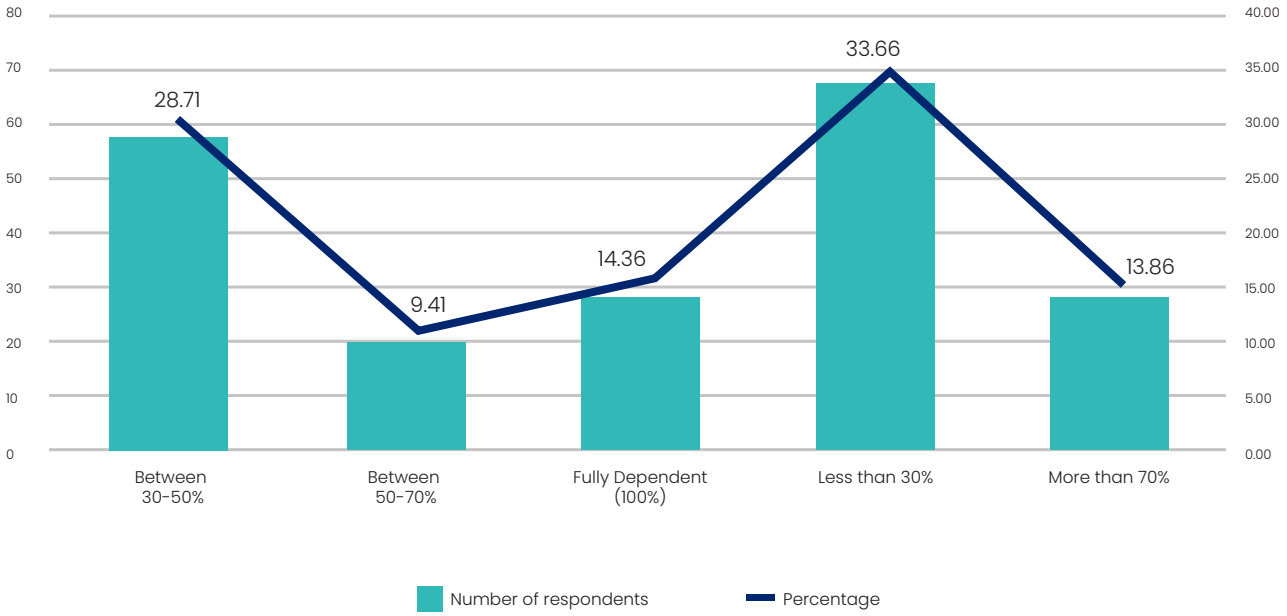
Figure 7: Monthly income (in local currency) from home-based work reported in the survey



The WIEGO study also highlighted that despite HBWs' earnings being low and irregular, their income is crucial to household subsistence: Over 75% reported that their principal source of household income was their home-based work, and over 25% were their families' breadwinner (Chen, 2014). In another study of around 600 subcontracted HBWs drawn from three sectors in India, the contribution of home-based work to household income was 22.3–46.8% in rural areas and 26.4–70.8% in urban areas (Sudarshan et al., 2007).

The current study reports similar findings, with around one-third (28%) reporting 70–100% contribution to household income and another one-third (29%) reporting 30–50% contribution (Figure 8). However, a significant 34% report less than 30% contribution, which could be another indication of the declining incomes of some HBWs, although there is not enough conclusive evidence for the same.

Figure 8: Contribution of home-based work income to household income reported in the survey



Box 5: Vulnerability to global markets, demand fluctuations

Global uncertainties affect production plans at the higher level and fluctuations in demand are transferred to the bottom rung of the supply chain, affecting HBWs directly. For example, during the COVID-19 pandemic, supply disruptions affected production and mobility restrictions affected regular functioning of markets; this resulted in a drop in both global and domestic sales. Many global garment brands cancelled or suspended orders, resulting in severely diminished work and a drastic slump in income for HBWs involved in garment work.

Besides, international movement of goods slowed and there were shortages in raw materials in the initial days of the pandemic, resulting in a decline in earnings for HBWs. The loss of work continued until late August, much after the lockdown restrictions were removed (Kala, S., 2020).

The same study reported that compared to these workers, HBWs involved in supplying food products in local markets, while also being hit by the pandemic, recovered their working status much faster.

CHAPTER 3
Mapping the Climate Variability in the Region

1. CLIMATE CHANGE IN ASIA

The Intergovernmental Panel on Climate Change (IPCC), in the Fifth Assessment Report (IPCC AR 5, 2015), has clearly highlighted that:

a) Global warming due to human activities has caused an approximate 1.0°C rise in global temperatures from pre-industrialisation levels.
b) Between 1901 and 2010, global mean sea level rose by 0.19 metres. The rate of sea level rise since the mid-19th century has been larger than the mean rate during the previous two millennia and it is very likely that extreme sea level rise and storm surges have increased since 1970.
c) Direct and insured losses from weather-related disasters have increased substantially in recent decades, both globally and regionally.

The report further goes on to state with a very high confidence that, "Impacts from recent climate-related extremes, such as heat waves, droughts, floods, cyclones and wildfires, reveal significant vulnerability and exposure of some ecosystems and many human systems to current climate variability."

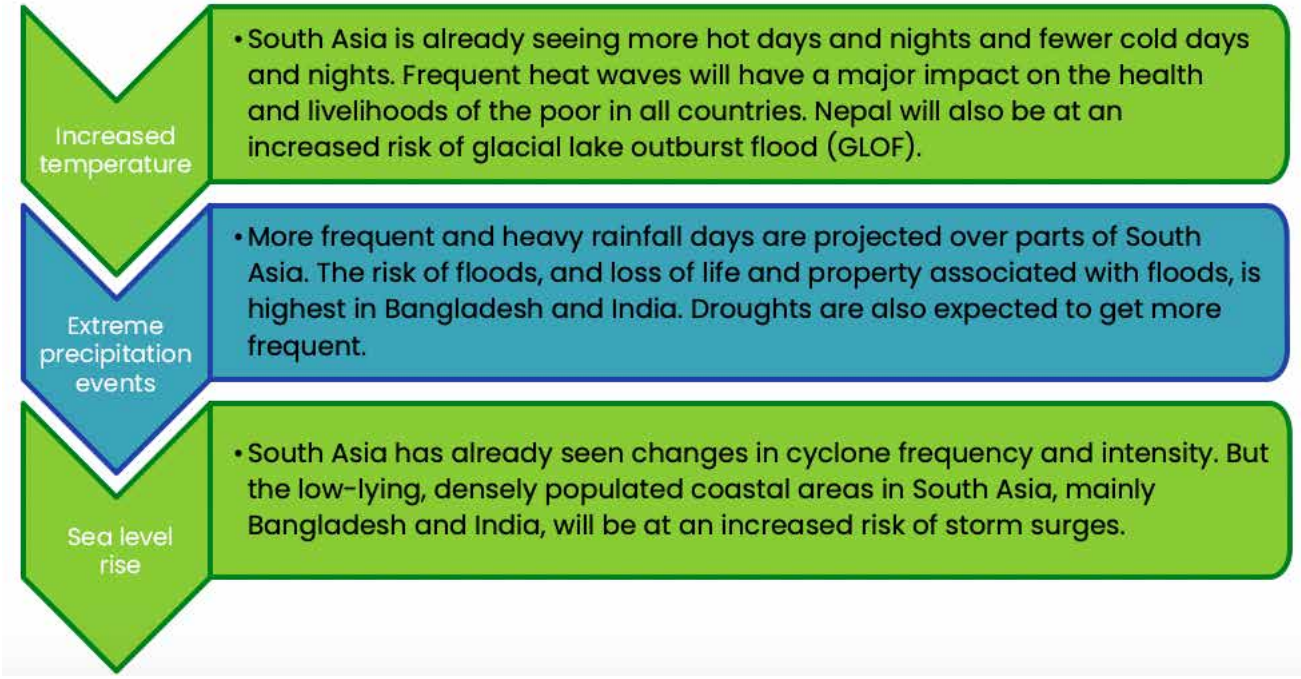
Most of the Asian region will be extremely vulnerable to these impacts of climate change. As per the World Risk Report 2016:

- Five of the most at-risk countries were in Asia
- 90% of the global deaths from disasters were in Asia
- Asia accounted for 50% of the world's total damage due to disasters and climate change.

2. CLIMATE CHANGE IN SOUTH ASIA

Within Asia, South Asia is more vulnerable. The region is witnessing more frequent and more intense extreme weather events, such as heat waves, droughts, floods and tropical cyclones, in recent decades. Some of the critical observed changes in climate in the region are given in Figure 9.

Figure 9: Observed climate change in South Asia
Source: Based on data compiled from (IPCC AR5: Asia, 2014)



All the three study countries, Bangladesh, India and Nepal, will be impacted by multiple climate variabilities. The World Bank Climate Change Knowledge Portal projections on climate change using multi-model ensembles for the three countries are in Table 9.

Table 9: Country climate projection profile

Parameters	Bangladesh	India	Nepal
TEMPERATURE	Mean temperatures are projected to increase between 1.4°C and 2.4°C by 2050 and 2100, respectively.	Mean temperatures are projected to increase by approximately 4°C by 2080–99 under RCP (Representative Concentration Pathway)[5] 8.5 and around 1.1°C under RCP2.6.	Mean annual temperatures are projected to increase between 1.3°C and 3.8°C by the 2060s, and 1.8°C and 5.8°C by the 2090s.
	This warming is expected to be more pronounced in the winter months. (December–February).	Warming is stronger in annual minimum and maximum temperatures than in the average. Warming on higher emissions pathways is strongly biased towards the winter and pre-monsoon months.	This warming is expected to occur more rapidly during the dry months (December–May).
	Average temperatures are expected to increase between 1°C and 2°C by 2100, with similar rates of warming projected across the country.	Under all emissions pathways, the rise in annual minimum temperatures is around 18–21% higher than the rise in average temperatures.	
	Mean annual temperature will rise by 1.69°C (0.91°C to 2.76°C) in 2040–59.	Mean annual temperature will rise by 1.89°C (1.11°C to 2.84°C) in 2040–59.	Mean annual temperature will rise by 2.08°C (1.23°C to 3.19°C) in 2040–59.
PRECIPITATION	Annual precipitation will rise by 74.03mm (-304.45mm to 499.79mm) in 2040–59.	Annual precipitation will rise by 51.56 mm (-234.40 mm to 370.88 mm) in 2040–59.	Annual precipitation will rise by 46.24mm (-304.57mm to 488.27mm) in 2040–59.
	The frequency of tropical cyclones in the Bay of Bengal may increase; the peak intensity may increase 5–10% and precipitation rates may increase 20–30% (IPCC 2001). Cyclone-induced storm surges are likely to be exacerbated by a potential rise in sea level of over 27cm by 2050.	Future changes in the seasonality of monthly precipitation at the national level are also highly uncertain under all emissions scenarios.	Winters are projected to be drier and monsoon summers wetter, with some estimating a threefold increase in monsoon rainfall. This could result in more frequent summer floods and winter droughts.
	Runoff, a measure of water availability, is projected to increase. The time between rainy days is expected to increase. Peak five-day rainfall intensity (a surrogate for an extreme storm event) is projected to increase.	There is greatest agreement on increases in the intensity of extreme precipitation events in south India and in the vicinity of the Himalayas in the north.	Currently, it is not possible to get a clear picture of precipitation change because of large model uncertainties. However, increases in rainfall are more consistent for south-east Nepal.
	Annual Maximum 5-day Rainfall (25-yr RL) will rise by 67.09mm (-106.43mm to 638.48mm) in 2040–59.	Annual Maximum 5-day Rainfall (25-yr RL) will rise by 35.17 mm (-89.97 mm to 302.90 mm) in 2040–59.	Annual Maximum 5-day Rainfall (25-yr RL) will rise by 59.99mm (-129.49mm to 807.62mm) in 2040–59.

[5] It is a scenario stating time series of emissions and concentration of greenhouse gases, aerosols and chemically active gases to help set pathways for greenhouse gas concentration to indicate amount of warming.

3. LOCAL EXPERIENCE AND PERCEPTION OF HBWS ON CLIMATE CHANGE

Across all the cities, the locals have been experiencing changes in climate. Communities have especially felt a rise in temperatures during summers and an increase in the number of hot weather days. This was not only highlighted in all the FGDs, but also emerged prominently in the household survey. Over 83% of the respondents reported that they had observed a rise in temperatures during summer in the last 10 years. The response was more pronounced in Dhaka and Bhaktapur, where more than 95% reported the same, but surprisingly less marked in Ahmedabad, Lalitpur and Surat, although the majority in these cities too reported a rise in temperatures (Figure 10).

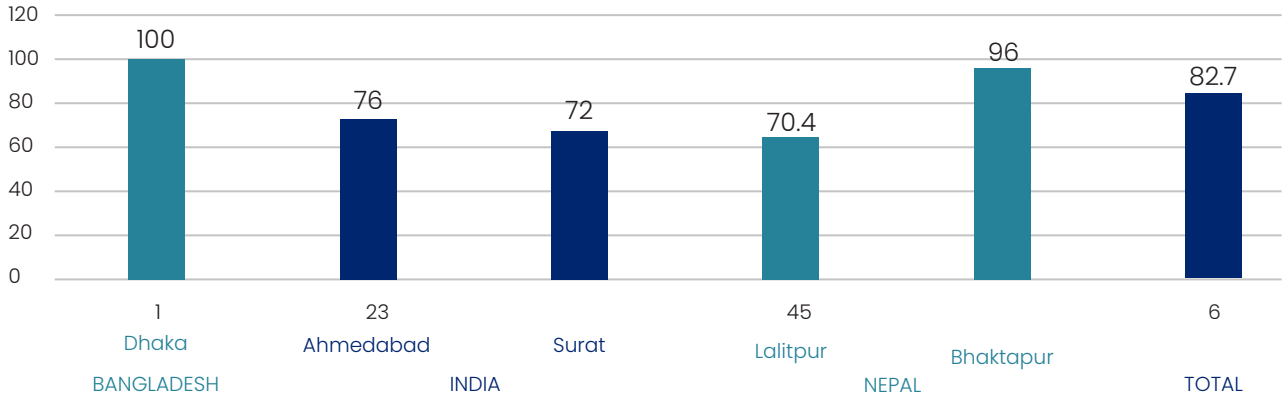


Figure 10: Percentage of respondents reporting temperature rise in summers in the last 10 years

The experience of increase in temperatures during winter, however, was not so obvious, with a little more than half the respondents reporting the same (Figure 11). The rise in temperatures in winter was most reported in Dhaka (94%) and least in Ahmedabad (16%). Also, in the FGDs in Nepal, participants clearly reported that they have been witnessing a rise in temperatures during winter days. "It used to be freezing cold during the winter, resulting in decreased working hours, but now they have been witnessing warmer days during the winter season," (FGD, Bhaktapur). In the FGD in Surat, it was reported that, "Although the temperatures have risen in winters, often there is rainfall and hail."

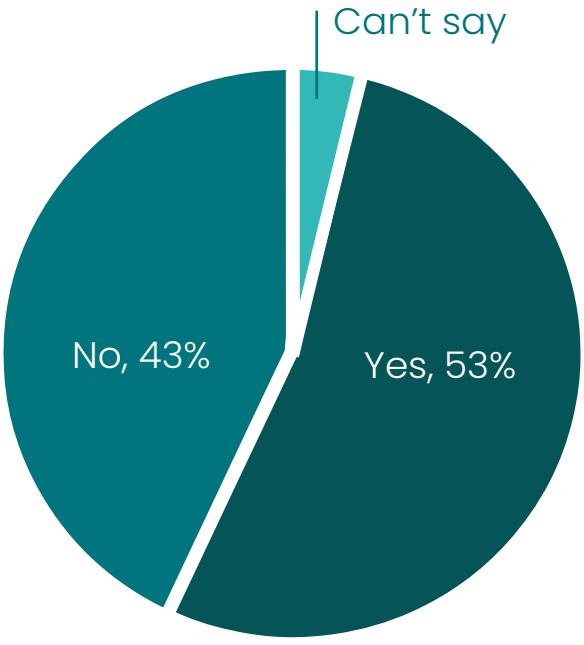


Figure 11: Percentage of respondents reporting increase in temperatures in winter in the last 10 years

More than half the respondents also reported observing changes in rainfall patterns, with 61% reporting increase in heavy rainfall days and 55.4% an increase in irregular rainfall. This again was more pronounced in Bangladesh and Nepal than in India (Table 10).

Table 10: Respondents' observations of changing rainfall patterns in the last 10 years

Country	City	Number of HBWs who reported observing an increase in heavy rainfall days over the last 10 years	As a percentage of the total	Number of HBWs who reported observing an increase in irregular rainfall over the last 10 years	As a percentage of the total
Bangladesh	Dhaka	44	**88**	49	**98**
India	Ahmedabad	15	**30**	9	**18**
	Surat	18	**36**	7	**14**
Nepal	Lalitpur	23	**85.2**	24	**88.9**
	Bhaktapur	23	**92**	23	**92**
Total		**123**	**60.9**	**112**	**55.4**

Box 6: Extreme heat and unseasonal rain — the dual burden of climate change on Mamtaben in Surat, India

Mamtaben is a young widow, living in Surat city in India with her three children. She runs a *pani puri* stall with the help of her 14-year-old son. She prepares all the ingredients at home herself. However, given that running a *pani puri* stall is a male-dominated job in the area, she can't run the stall herself; her son does that for her. They have a fixed stall, which they run on the main street near their home. This is their main source of income; she manages to earn less than INR 5000 (USD 68) a month.

Mamtaben says she faces the dual burden of extreme heat and unseasonal rain: "Evenings are the critical times for our work. But nowadays, because of high temperatures even in the evenings in summer, we have to start our stall very late and the number of hours of business has reduced. Also, because the weather is so hot, all the food prepared gets spoilt and wasted if we don't sell it the same day. In addition, nowadays, there is rainfall at any time of the year and any time of the day. When it rains, people don't come out to have street food. But because we would have already prepared the ingredients, when we don't meet our expected sales, we have to bear the loss."

To cope with this, she has tried moving to another location and seeks the help of a local shopkeeper to store her non-perishable materials so that they are not destroyed by rain. She has also taken up tailoring work to supplement her income. Since she has only gone to school till class 4, and with three children at home, she sees being a home-based worker as her best option.

Unseasonal rains were particularly highlighted in the FGDs in all the countries. For example, "Monsoon season usually starts from June–July, but this year, it started earlier in April–May and it rained much more than last year. This increase in rain caused flooding. Also, the rain comes down at a high intensity in short durations," (FGD, Lalitpur). And, "Earlier, monsoons used to be for four months, but now it rains any time during the year," (FGD, Surat).

Increase in storms and cyclones was the only aspect wherein less than half (48%) of the respondents reported in the affirmative. Here again there were country and city-wise variations: The observation was stark in Dhaka and Bhaktapur, while very few people in Ahmedabad and Surat reported it (Figure 12). The data from Dhaka is not surprising, considering that the city faces frequent storms and cyclones. However, it is surprising to see the higher level of awareness in Nepal (Bhaktapur and Lalitpur) than in India (Ahmedabad and Surat), given that the risk of storms and cyclones in the coastal state of Gujarat, where both these cities are located, is considerably higher, especially with Surat being a coastal city.

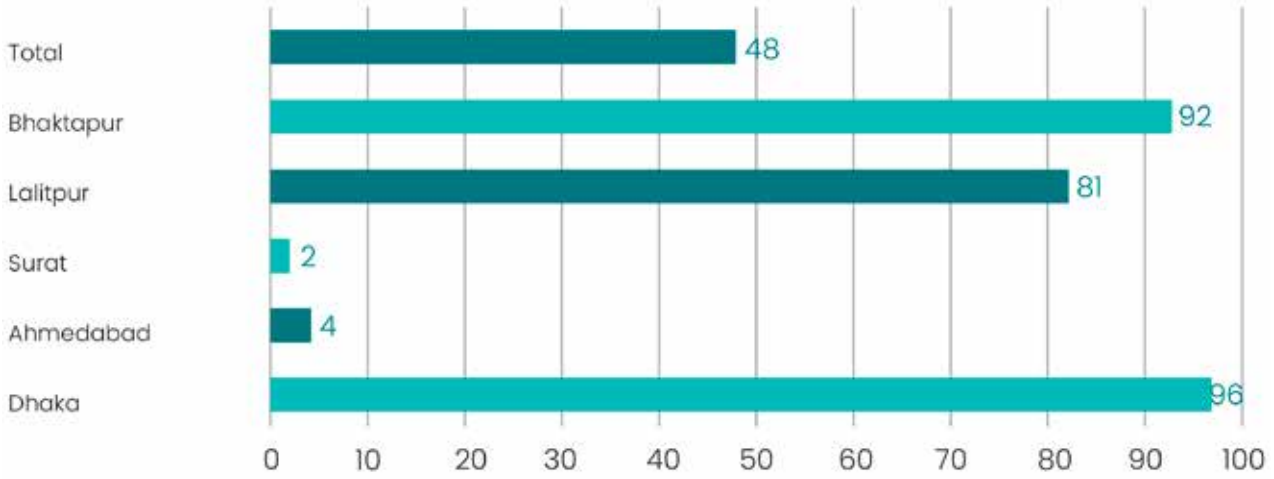


Figure 12: Percentage of respondents observing increase in storms and cyclones in the last 10 years

More than two-thirds of the respondents (66.3%) were not aware of the reasons for these weather changes, while around 11% believed them to be "acts of God". Even the 22% who provided explanations had limited understanding, with only a few people citing environmental concerns and global warming (forest fires, deforestation, pollution, plastic use, waste generation, industrialisation, etc.) as responsible for the climate change. This is surprising as almost 71% had heard about climate change (Figure 13).

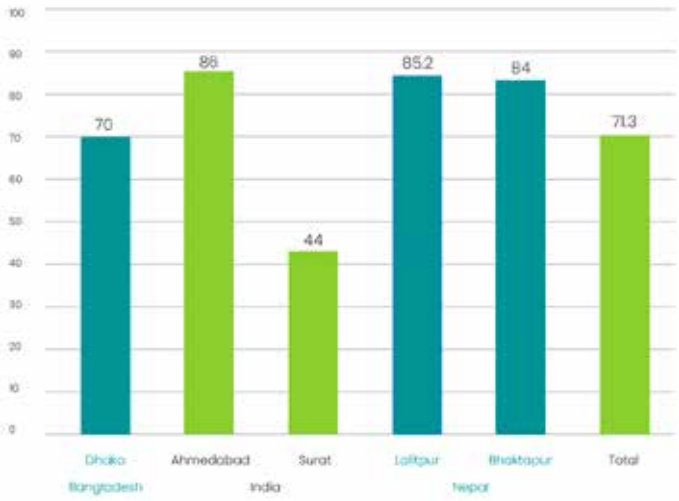
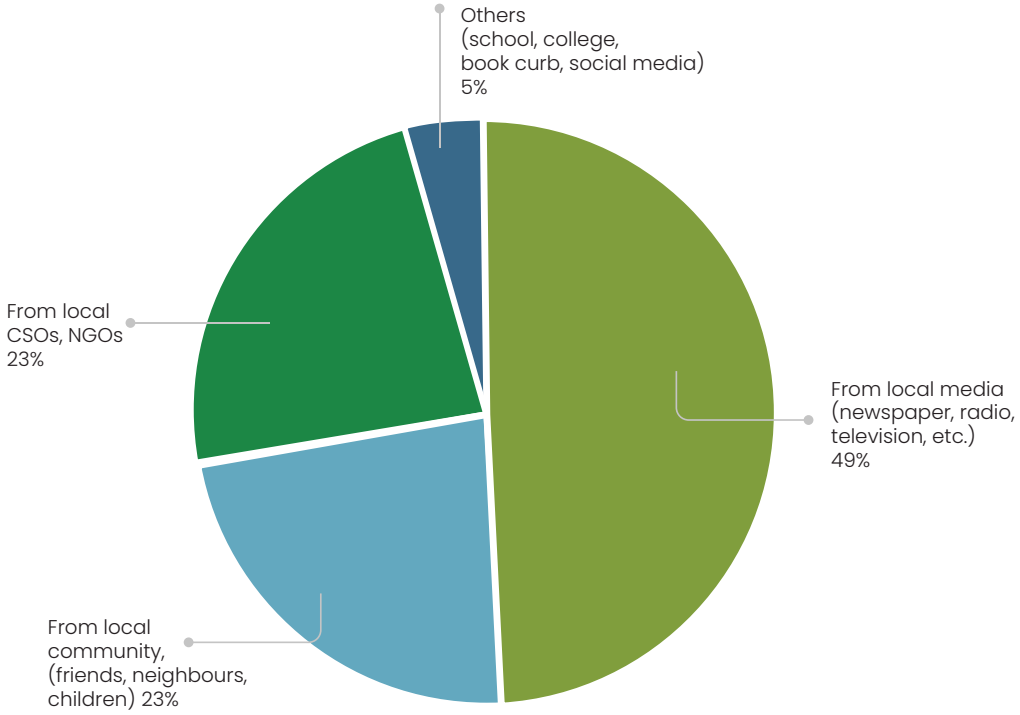


Figure 13: Percentage of respondents who had heard about climate change

However, most (49%) had heard about it from local media (newspapers, radio and television) and the message seems to have not been communicated properly. The share of people learning about it from civil society organisations (CSOs) and educational institutions, which can provide customised or targeted information, was less than 30% (Figure 14).

It is thus very important to have properly designed and scientifically vetted communication strategies to increase the understanding of climate change among the respondent population, especially on the causes of climate change.

Figure 14: Current source of information on climate change



CHAPTER 4
Impact of Climate Change on HBWs

1. CLIMATE CHANGE IMPACTS IN SOUTH ASIA

The adverse impact of climate events is expected to be felt in a number of ways: Water shortage will grow, even as there is fluvial flooding, coastal degradation and damage to coastal resources. There is expected to be constrained agricultural production, with the declining crop yields threatening food security, as well as forest fires and the loss of rich forests. Health risks will be greater, with more outbreaks of water and vector-borne diseases. In addition comes the associated economic loss and human suffering.

Box 7: Impacts of climate change in South Asia

The dense urban population in South Asia is particularly susceptible to negative climatic changes, especially temperature extremes, flooding and vector-borne diseases. The most vulnerable are those living in informal settlements.

Increased temperature and heatwaves

- Increased frequency and intensity of heatwaves across South Asia will increase the mortality and morbidity among the elderly and children, especially infants, informal sector workers and slumdwellers.
- According to recent estimates by the World Health Organization (WHO, 2014) regional heat-related deaths among the elderly (over 65 years) are thought to increase by approximately 20,000 cases due to climate change by the 2030s and approximately 52,000 cases by the 2050s.
- The risks from heat stress will be higher for those living without proper ventilation and those who are engaged in outdoor jobs, such as street vendors.
- Excessive workplace heat is also a well-known occupational health and productivity danger. High body temperature or dehydration causes heat exhaustion, heat stroke and, in extreme cases, death. A worker's natural protection is to slow down work or limit working hours, which reduces productivity, economic output, pay and family income.

Urban flooding

- Usual, expected precipitation in cities will change, having direct impacts such as flooding of buildings and residences, damage to structures, belongings and vehicles being washed away, destruction of public infrastructure, and mud and silt everywhere, not to mention the injuries and loss of life.
- The not-so-visible impact will be the loss to livelihoods, especially for daily-wage earners and HBWs. Not only will there be a loss in work days, but also a loss in raw materials, equipment, finished goods, etc., compounding the earning loss.

Increase in weather-related disasters

- Projected SLR will likely create additional problems for urban flood management. SLR, coupled with the increase in strong storms (and hurricanes), can cause direct flooding of urban areas along coasts, deltas or major rivers, through storm surge and high water. Even a small SLR, with or without storm surges and increased tides, will create significant back pressure on both natural and constructed urban drainage channels.
- Disaster risk data shows than more than 226 million people are affected annually by disasters associated with natural hazards and around 81% of these are weather-related disasters (floods, cyclones, drought, etc.) These weather-related disasters also account for 23% of fatalities and 72% of all economic loss, often forcing more people into poverty.
- Inland and coastal flooding, and storm surges will affect those communities living in low-lying and exposed areas.

Risk of water and vector-borne diseases

- Increases in heavy rain and temperature will also increase the risk of water and vector-borne diseases such as diarrhoea, dengue fever and malaria.
- According to WHO (2014), attributable mortality of vector-borne diseases (malaria and dengue) is estimated to be in the order of 3000 annual deaths in the 2030s and 10,000 annual deaths in the 2050s in the region.

Water scarcity

- Freshwater availability is expected to decline because of not only low rainfall, but also the rise in temperature that will affect the glacier melting in the Himalayan region, which is a significant source of freshwater for many South Asian countries.
- Already reeling under water shortage as a massive population is even today deprived of basic drinking water facilities, any further decline in water availability will increase problems in the region. Water scarcity and related diseases will be amplified for those lacking access to basic services and infrastructure.

2. EMPLOYMENT RELATED RISKS AND VULNERABILITIES

Climate change stressors and risks related to extreme weather events will have a significant negative impact on employment (ILO, 2018). While jobs that rely on ecosystems, such as jobs in agriculture, fisheries, forestry and tourism, will be most affected, the overall supply and value chains will also be affected, amplifying the impact. For example, if cotton productivity declines, it will have a direct bearing on the garment sector; coastal degradation will impact shell and pearl-making works; and a drop in food production will increase costs of raw materials for those involved in food and beverage sectors.

Further, safe, healthy and decent working conditions depend on the absence of environmental hazards (such as storms and air pollution) and the maintenance of environmental stability (such as temperatures staying within a particular range and predictable precipitation patterns). Climate change, in so far as it affects temperature and rain patterns, may render entire regions unproductive and make workplaces too hot for work, thereby leading to climate-induced migration, the proliferation of precarious and informal work, and an increase in unemployment (ILO, 2018).

Box 8: Climate change and sectoral vulnerabilities

The seasonal nature of the jobs of HBWs has a profound implication on their earnings. Global climate change is expected to make the seasons more unpredictable and bring in abnormal weather patterns, which will have a significant impact on the lives and livelihoods of HBWs.

For example, Sinha and Mehrotra (2016) highlighted how changing fashion trends and short lead times can affect homeworkers in the garment sector. As one homeworker in Delhi explained, "The company changes the design many times, so we have to do multiple alterations, for which we are not paid extra."

But, as Lee and Lee (2007) explained, many decisions in the garment sector are made based on weather forecast data, and as Khan, Son and Cho (2011) described, climate change and abnormal weather patterns will not only have an influence on consumers' clothing behaviour, but also affect garment companies' production and sale of fashion products. These difficulties faced in understanding the unpredictable environmental factors and applying this understanding in business decisions will likely be transferred to the HBWs.

Chen (2014) also reported how the monsoon rains force HBWs who make incense sticks to suspend or reduce production. HBWs interviewed in her study cited several reasons for this: Raw materials or finished goods get damaged when roofs leak or during transport; products cannot dry due to leaks and humidity; and factories, firms or contractors reduce work orders due to decreased demand and/or difficulties associated with transport during the rains.

3. POTENTIAL IMPACTS ON PRODUCTIVITY

The increasing frequency and intensity of various environment-related hazards caused or exacerbated by human activity have already reduced labour productivity. Between 2000 and 2015, 23 million working-life years were lost annually at the global level as a result of such hazards. India was among the most affected countries, with 1.5 working-life years lost per person per year during the period 2008–15 (ILO, 2018).

Globally, 1.4% of the total hours worked were lost in 1995 because of high heat levels, which is equivalent to around 35 million full-time jobs worldwide (ILO, 2018). Assuming a global temperature rise of 1.5°C by the end of the century (in the best-case scenario), estimates based on labour force trends suggest that by 2030 the percentage of total hours of work lost owing to heat stress may rise to 2% — a labour productivity loss equivalent to 72 million full-time jobs. It is expected that India and Indonesia will be the most affected, with a reduction in total hours worked of 5.2% and 2.6% respectively (ILO, 2018). Preliminary and indicative results for a selection of countries based on model data by IPCC analysis (Table 11) show that for a range of countries, increases in lost work hours between the current situation and 2.7°C of warming is often considerable and can be as high as 10% by 2075 (UNDP, 2016).

Table 11: Loss in productivity due to heat impacts of climate change in Bangladesh, India and Nepal

COUNTRY	POTENTIAL ANNUAL DAYLIGHT WORK HOURS LOST FOR WORK AT 300W, %; BASED ON A BUSINESS-AS-USUAL SCENARIO (RCP8.5, AVERAGE OF HadGEM2 AND GFDL MODELS) CURRENT (1995) AND UP TO 2085				
	1995	2015	2025	2055	2085
Bangladesh	1.06	1.4–2.0	2.53	4.61	8.56
India	2.04	2.6–3.1	3.61	5.22	7.98
Nepal	0.61	0.88–1.1	1.27	1.98	3.38
Source: UNDP, 2016					

The overall trend in climate change effects is towards an increase in the frequency and magnitude of climate-related natural disasters (IPCC, 2014). Hazards become disasters when they overwhelm local risk management capacity. They destroy jobs, force people to migrate, and slow down economic activity as a result of the destruction of capital stock, transport systems and other infrastructure. Although rebuilding capital stock after a disaster may stimulate the growth of gross domestic product (GDP) and employment, the short- and long-term economic consequences of disasters are negative, particularly for developing and smaller economies (Felbermayr & Gröschl, 2014; Noy, 2014). Between 2008 and 2015, China, Brazil and India were the most affected countries, with 8.7, 3.2 and 1.5 working-life years respectively lost to hazards per person per year (ILO, 2018).

Box 9: Climate change impacts on garment workers

While not much data is available on the direct impact of climate change on garment workers, a study by BSR's HERproject on more than 15,000 garment workers from factories in Dhaka highlights significant implications for them:

- In garment factories, the humidity, combined with the heat and fabric dust emitted by sewing machines, makes breathing difficult. These conditions exhaust workers' energy and focus, affecting their efficiency and productivity, which in turn may also affect the performance of the readymade garment sector.

- Rising temperatures and more frequent flooding events are likely to increase with climate change. In Bangladesh, this will affect the lives of the 4 million people working in the garment industry.

- When data on workers' sick leave and productivity rates was mapped against data on extreme weather conditions (measured by excessive precipitation and above-average temperature), a significant relationship between climate-related weather events and workers' performance was found.

    - The abundant rainfall in July, which is the peak of the monsoon season, correlated with an increase in monthly sick leave rate (calculated as the number of workers absent because of health reasons, out of the total number of workers absent).

    - An increase in 100mm of average monthly rainfall precipitation — expected between the start of the monsoon season and its peak — is associated with an increase in sick leave rate by 10 percentage points per month.

    - In addition, months with a 30°C average temperature correlated with a drop in productivity of more than two percentage points, compared to the winter months.

While these are preliminary insights rather than conclusive evidence, the data presents a worrying relationship between extreme climate events, worker wellbeing and industry performance. However, recent experiments in the garment sector in Bengaluru, India, also demonstrated how heat can reduce worker productivity by a magnitude similar to what this study found, showing that the results, while needing higher statistical confidence, also need more in-depth research.

Source: Sebastio, F., 2018

4. IMPACT ON HBWS

HBWs are now starting to feel the heat of these impacts. During the survey, around 55% of the respondents agreed that climate change affected their family (Figure 15).

The most visible impact of climate change has been on women's unpaid work, with almost 46.5% of the HBWs surveyed reporting the same. This was followed by loss of cash income, reported by 43% of the HBWs, and reduced productivity, reported by 41% (Figure 16).

Figure 15: Respondents who think climate change is affecting their family

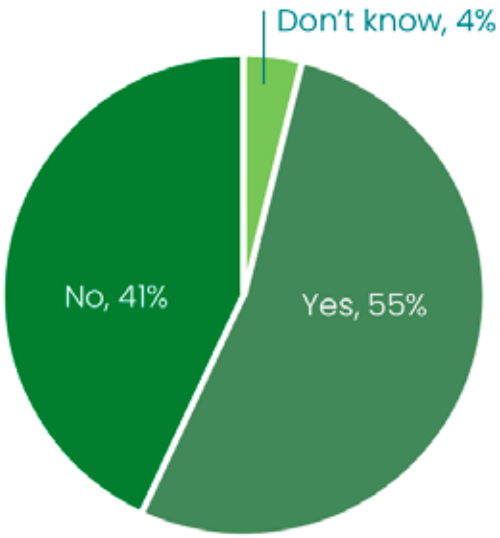
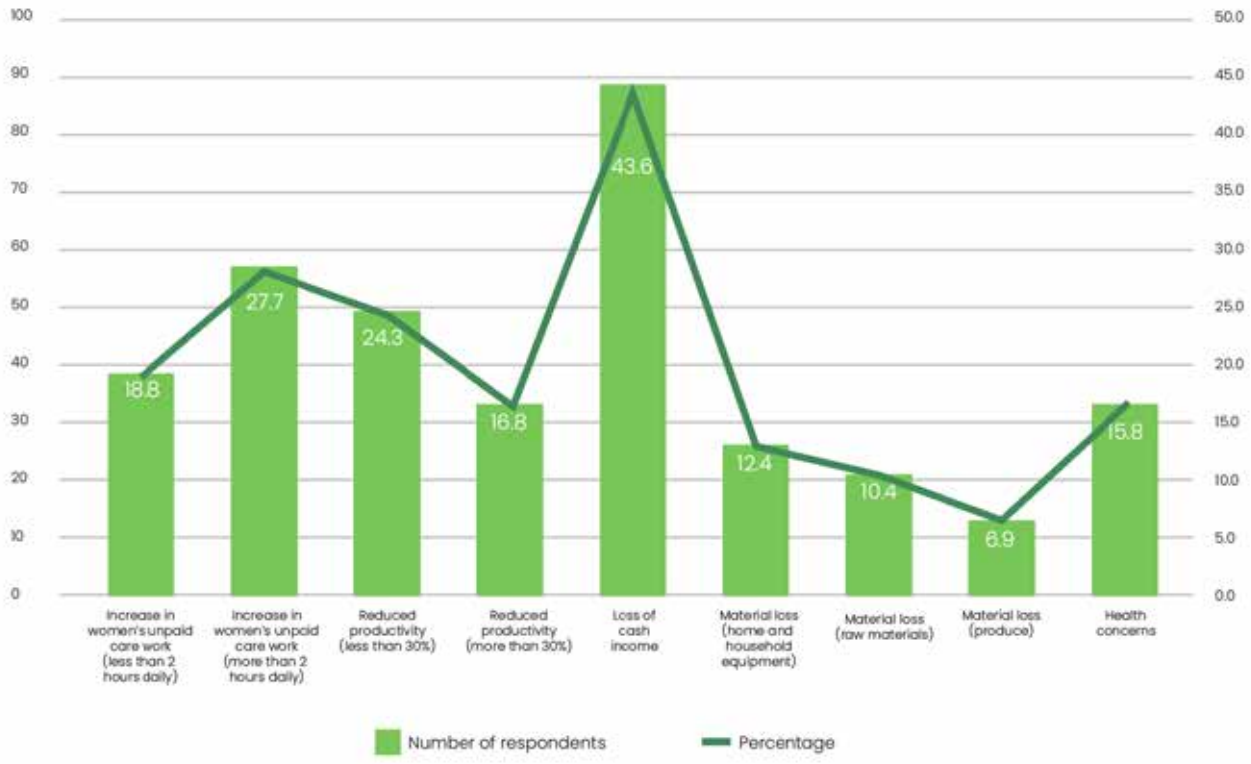


Figure 16: Impact of climate change as reported by HBWs surveyed



Reduction in cash income and productivity

The reduction in cash incomes is not surprising, since most of the HBWs (66%) reported a fall in income from home-based work in the last five years. While COVID-19 and the resultant lockdown has contributed to this decrease, around one-fourth of the responses cited lower productivity of HBWs as one of the major causes (Figure 17).

Decline in productivity for reasons besides climate change was in fact felt by almost 58% of the respondents. Around 30% of the respondents did not feel a decline in productivity, while 11% reported 'can't say'. The affirmative response was more pronounced in Dhaka and the least in Lalitpur (Figure 18).

Figure 17: Reasons for decrease in income from home-based work in the last five years

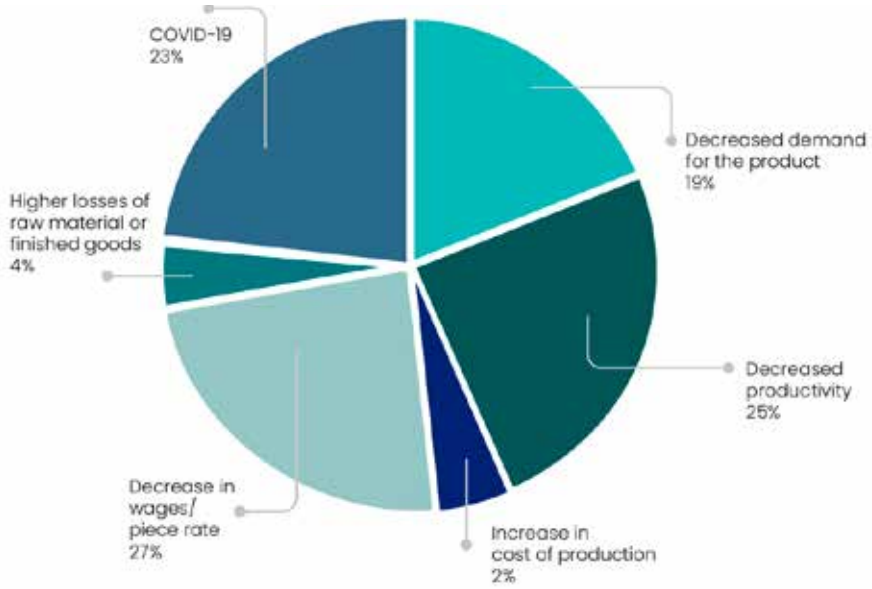
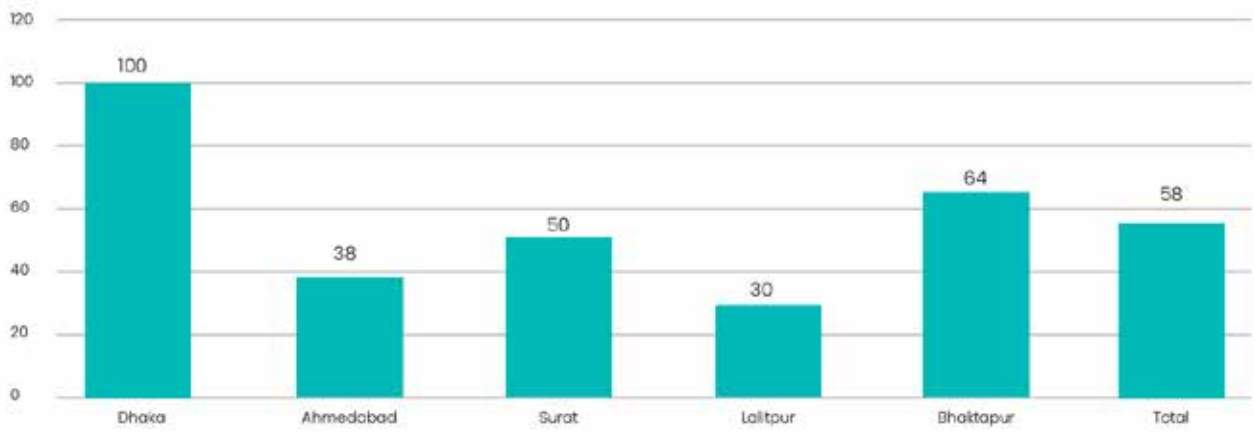


Figure 18: Percentage of respondents reporting a decline in productivity in the last five years (multiple answers, n=329)



Box 10: Goma Darji from Bhaktapur on loss of productivity in all seasons

Goma Darji is a middle-aged woman working as a piece-rate garment worker. With an alcoholic husband, domestic violence at home and the death of her only son, life has been a struggle for her. She used to manage somehow with her tailoring work, earning between NPR 10,000 and NPR 20,000 (USD 86–171) per month. Now, she faces challenges from climate change.

She says: "Living in a semi-pucca house with a tin roof, it becomes so hot inside that working in the afternoon is very difficult in summer. If I use the fan, the electricity bill goes up, which I can't afford. Added to this, we have now started facing frequent flooding during monsoons. My house is flooded and often damaged, so I can't work much during that season either. In winters, we used to work outside, but now there is a lot of haze because of pollution. Thus, my overall productivity has reduced all year round.

"With more and more women taking up such work, the piece-rate has reduced as well, and now that my productivity has decreased, my earnings will also decline. The broker also uses this as an excuse to delay payments, always citing flooding as a cause of delay."

However, much of the decline in productivity can be attributed to climate change, especially increased temperature, with almost 64% of the responses related to hot weather (Figure 19). Here again, Dhaka had the most responses about decreased working hours during summer due to temperature rise, while Lalitpur reported the least impact. Ahmedabad had the most responses related to loss or spoilage of raw materials due to hot weather, as also loss of raw materials and finished goods from flooding/ waterlogging. Surat had the most responses about unseasonal rain that resulted in loss of raw materials and finished goods (Table 12).

Figure 19: Reasons for decline in productivity

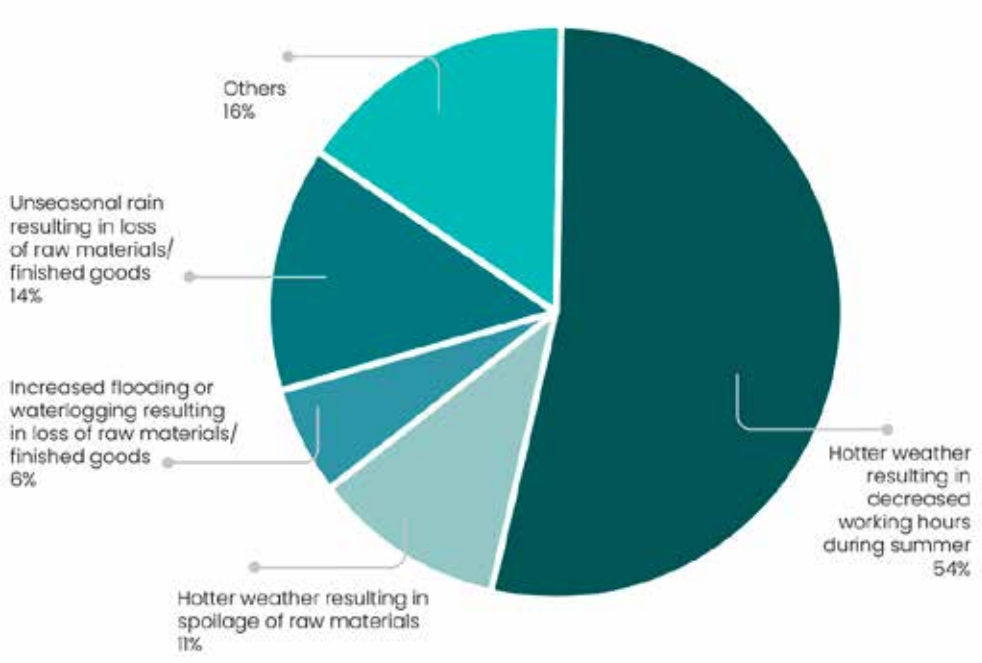


Table 12: City-wise trends in reasons for decline (n=160)

Country	City	Hotter weather resulting in decreased working hours during summer	Hotter weather resulting in spoilage of raw materials	Increased flooding or waterlogging resulting in loss of raw materials/ finished goods	Unseasonal rain resulting in loss of raw materials/ finished goods	Others
Bangladesh	Dhaka	47	1	1	1	9
India	Ahmedabad	14	12	7	9	1
	Surat	11	4	1	12	3
Nepal	Lalitpur	2	0	0	0	7
	Bhaktapur	13	0	0	0	5
Total		**87**	**17**	**9**	**22**	**25**

The HBWs reflected upon the impact of climate change on incomes and productivity levels in more detail during the FGDs. Except for bead making, all other occupational groups reported a high impact of climate change on production and productivity. For example, an FGD participant in Nepal said: "Earlier, I could make 10 pieces per hour, but now I can make only four or five because it is very hot inside the house," (FGD, Bhaktapur). In another instance, a participant shared that, "A few days ago, after sudden, heavy rain, a worker lost his assets worth BDT 1,08,000," (FGD, Dhaka).
Key responses have been summarised in table 13.

Table 13: Impact of climate change on home-based work

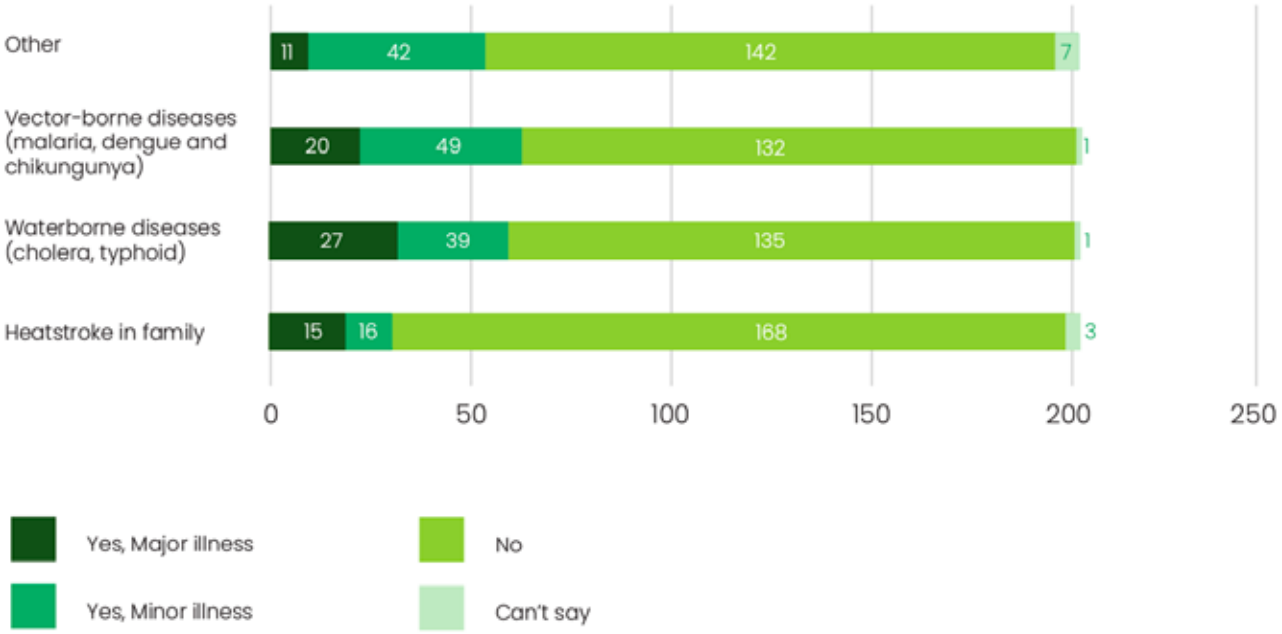
Bangladesh		India				Nepal	
Dhaka		Ahmedabad		Surat		Lalitpur	Bhaktapur
Tailoring	Ball pressing	Chocolate making	Bead work	Thread cutting	*Pani puri* making	Bead work	Tailoring
Due to the heat, the number of working hours in summer has decreased.	Heavy rainfall results in loss of assets and raw materials.	Chocolates must be kept in a dry place. During the rains, workers have to make more pieces to account for produce getting spoilt.	Work done is reduced because of illness from vector and water-borne diseases.	Waterlogging in homes during monsoons results in loss of raw materials.	Unseasonal rain as well as high temperatures spoil perishable raw materials.	Excessive heat causes lethargy, which makes it difficult to work in summer.	Workers are unable to work inside the house because it is too hot.

Bangladesh		India				Nepal	
Dhaka		Ahmedabad		Surat		Lalitpur	Bhaktapur
Tailoring	Ball pressing	Chocolate making	Bead work	Thread cutting	*Pani puri* making	Bead work	Tailoring
		Raw materials and finished goods are damaged in monsoons, resulting in loss of work.		Excessive heat and rain mean HBWs can work neither inside nor outside their homes.	Rains limit the sale of produce as stalls can't be set up and fewer customers venture out.	More time is spent on home maintenance during monsoons, resulting in a decrease in working hours.	More time is spent on home maintenance during monsoons, resulting in a decrease in working hours.
				Work hours fall from six hours to two–three hours during monsoons.		There is a delay in completing work orders because of heat and unseasonal rain.	There is a delay in completing work orders because of heat and unseasonal rain.
				Waterlogging restricts mobility, which in turn limits access to raw materials.		Faced difficulties to go and buy materials from the market because of unseasonal rain.	
						Flooding of the house results in the loss of finished goods and raw materials.	
Source: FGDs conducted as part of the study							

Health implications

Climate change has a profound health impact. Increased heatwaves result in heatstroke, waterborne diseases such as diarrhoea, cholera and typhoid, and vector-borne diseases such as malaria, chikungunya and dengue. Around 15% of the HBWs surveyed reported someone in the family facing heatstroke in the last couple of years, around 33% reported waterborne diseases and 34% reported vector-borne diseases (Figure 20). The instances of heatstroke and waterborne diseases were more severe than vector-borne diseases. In the FGD in Dhaka, it was shared that, "A couple of years ago, an HBW died of heart attack brought on by extremely high temperatures." However, this could not be verified.

Figure 20: Reported health implications for HBWs from climate change

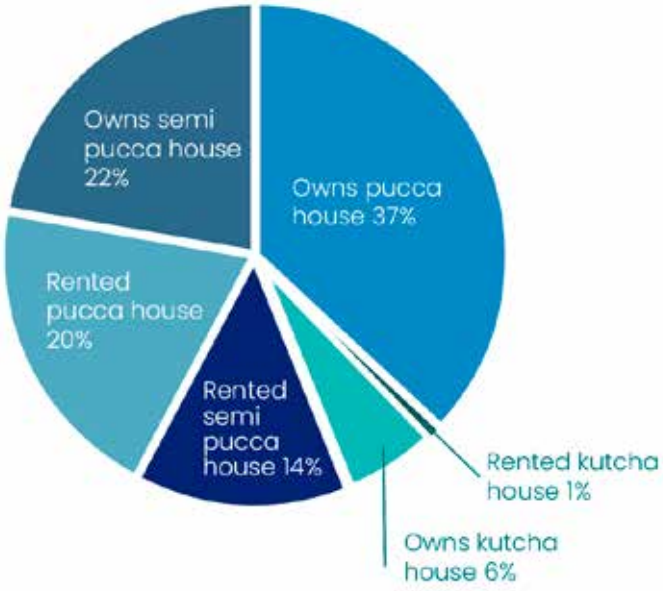


CHAPTER 5
Non-Climate Stressors and Vulnerability of HBWs to Climate Change

1. INFRASTRUCTURE AND SERVICE DEPRIVATION

Most HBWs live in underserviced or informal settlements, meaning that their working conditions are typically inadequate or even unsafe. This was also true of the respondents of the study. Although 65% of the HBWs surveyed had their own house, only 37% had a pucca house of their own[6] (Figure 21). Considering that the home is also the workplace for HBWs, this is a major impediment to their livelihoods. Studies by WIEGO and HNSA (Chen, 2014; Sinha, 2013; Sudarshan & Sinha, 2011) found inadequate housing conditions to be the major obstacle to productivity and incomes of HBWs. Small, cramped workspaces restrict workers from taking on big orders as they cannot store raw materials.

Figure 21: Condition and ownership of homes of the HBWs surveyed

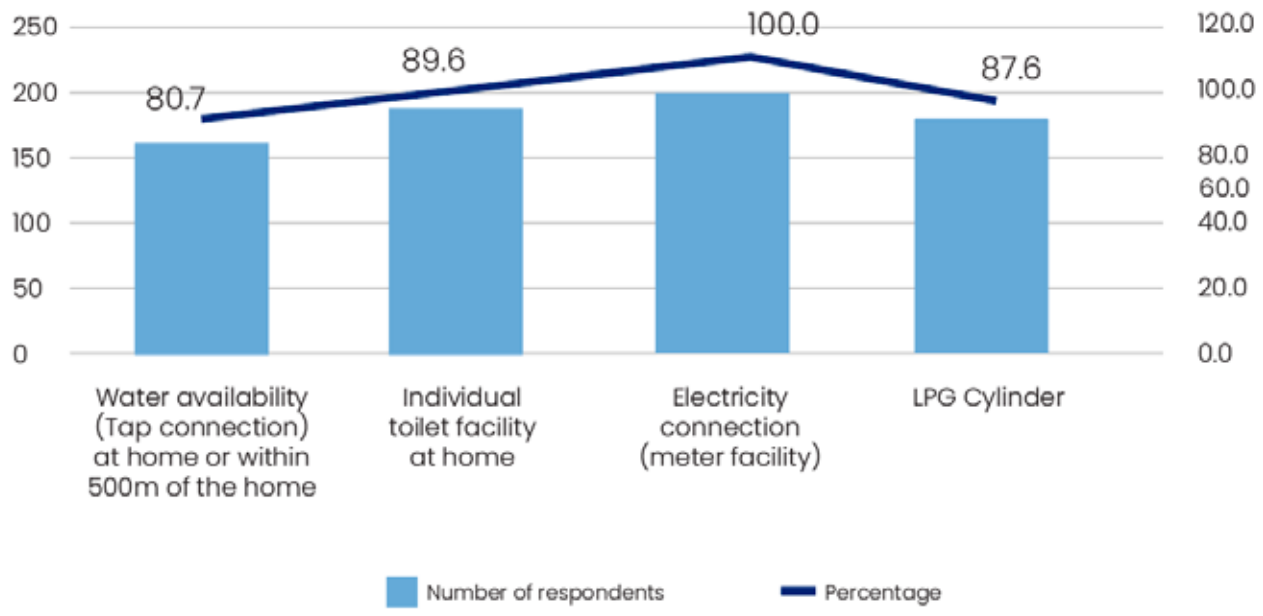


Further, many of these homes are vulnerable to flooding and waterlogging during monsoons. Around 30% of the HBWs in the study reported that their homes were flooded during monsoons. Of them, 47% (28 respondents) reported that the homes got flooded and damaged. Poor housing conditions, especially flooding and leaky roofs, can cause damage to equipment, raw materials and finished products. Repairs are costly in the absence of a stable income. As shared during an FGD in Nepal: "A person committed suicide because they were not able to repay a loan taken for changing the roof," (FGD, Lalitpur).

Problems are compounded by the lack of appropriate infrastructure and access to basic services. Often, there is poor sanitation, no individual water connection or drainage and no proper garbage collection. Most study respondents (more than 80%) did have access to these services, though (Figure 22).

[6] Pucca house is defined as one that has both a tiled floor and cement roofing, while semi-pucca has either tiled floor or cement roofing. A kutcha house has neither.

Figure 22: Access to basic services among the survey respondents



Along with accessibility, quality of service and its affordability also impact the lives of HBWs. For example, high cost and poor supply of electricity, or limited access to affordable transportation to purchase raw materials and sell finished products, also increases the costs and risks of production for HBWs (Chen, 2014). In Nepal, for example, HBWs reported that load-shedding hampers their work on an average of 3.75 hours per day (Sinha, 2013). This means they are unable to fulfil orders on time and, in some cases, it leads to cancellation of orders.

Further, home-based work can make already precarious living situations more unsafe by reducing the amount of space in the home and by introducing chemicals, fumes or hazardous materials used in the work (Mehrotra & Biggeri, 2007).

Compounding these employment challenges are urban planning and development issues. HBWs who reside in informal settlements have high insecurity on land tenure and fear eviction. In a study in Ahmedabad, for example, participants reported the threat of eviction and relocation as a major negative force hampering investment in work, and thus affecting productivity and incomes (Sinha, 2013).

Again, 'home-based' does not necessarily mean 'home-bound'. Often, HBWs have to move outside the home as part of their work: They may have to buy raw materials or other inputs (self-employed and subcontracted), get work orders or raw materials from a contractor/firm and return finished goods to them (subcontracted), or sell finished goods (self-employed). So, the distance between the market/contractor and the home-cum-workplace is of critical importance to their productivity and earnings, as is the time and money spent on the commute and in transporting goods. In Ahmedabad, 8% of the subcontracted HBWs reported that a contractor comes to their home to give work orders, deliver raw materials and pick up finished goods; over 75% reported that the contractor or firm/shop/factory that subcontracts the work to them is nearby (often within walking distance); only 16% reported that they have to use transport, usually public transport, to commute to where the contractor/firm is located. However, none of these are major considerations in urban planning, transportation or slum development programmes.

2. GENDER WORK DIVISIONS AND RESTRICTIONS ON WOMEN

The lack of infrastructure and basic services increases women's time poverty, as efficiency is "interrupted by the competing needs of other household activities" (Chen, 2014). While access to services is improving, the limitations on affordability and quality of delivery continue to impact HBWs. For example, in the FGD in Ahmedabad, the mala workers said, "The need for electricity is higher in the monsoons when workers cannot work outside, resulting in an increase of INR 200–250 in electricity bills. Thus, half of the INR 500 per month that the workers generally earn from part-time work goes into paying for more electricity."

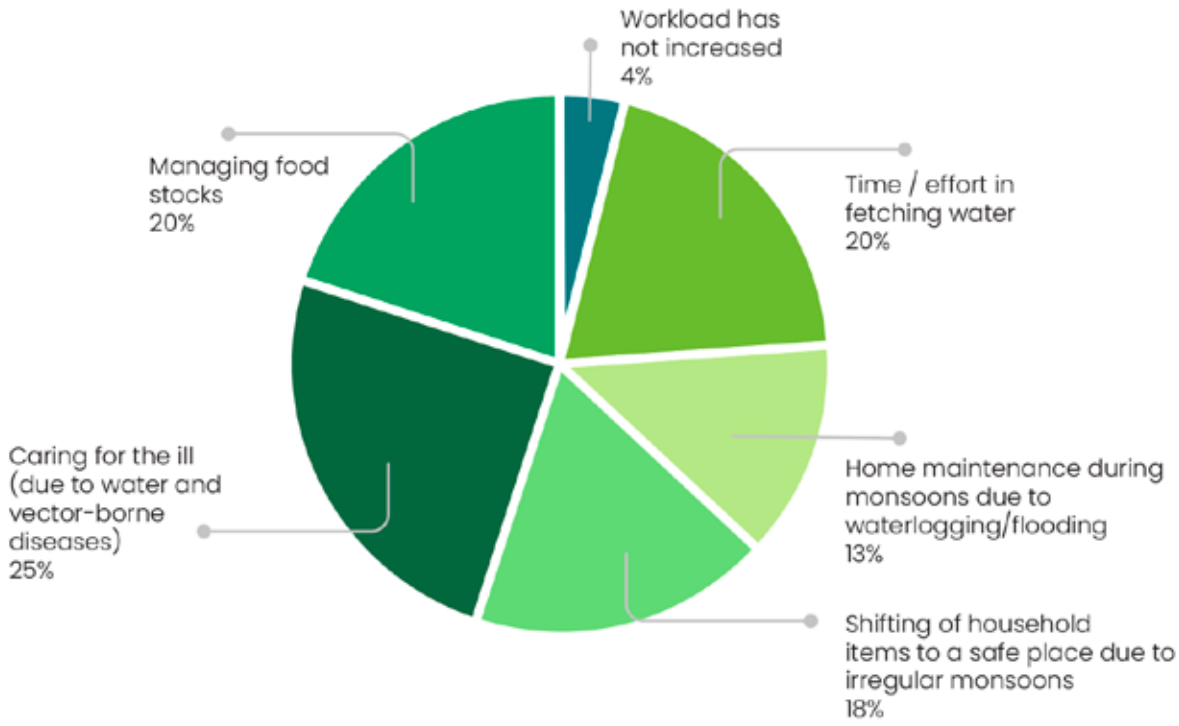
The risks and hazards associated with climate change and environmental degradation will affect vulnerable workers the most, including women, migrant workers, people in poverty, indigenous and tribal people, persons with disabilities and other disadvantaged groups, depending on the country or region, thereby generating and perpetuating inequality (ILO, 2018). Given the prevailing social, cultural, economic and political factors that contribute to the low status of women and girls in Asia, they are known to be disproportionately affected by climate change and disaster impacts (UN Women, 2016).

One of the biggest challenges for many women and girls in rural areas in Asia is an increase in working hours because of disaster and climate change. Women and girls spend twice as much time as men on unpaid domestic work.

After a disaster, working hours escalate; reproductive tasks such as caregiving to the injured and the sick, and productive activities such as agriculture become more burdensome and time-consuming. In times of drought, women and girls have to walk long distances to fetch clean water or household use (UN Women, 2016). Also, extra tasks such as reconstruction work in the community are often added to this already unequal burden (Bradshaw & Linneker, 2014; Nellemann et al., 2011). In the context of a disaster, time poverty means women are unable to generate income at a time when income is most needed.

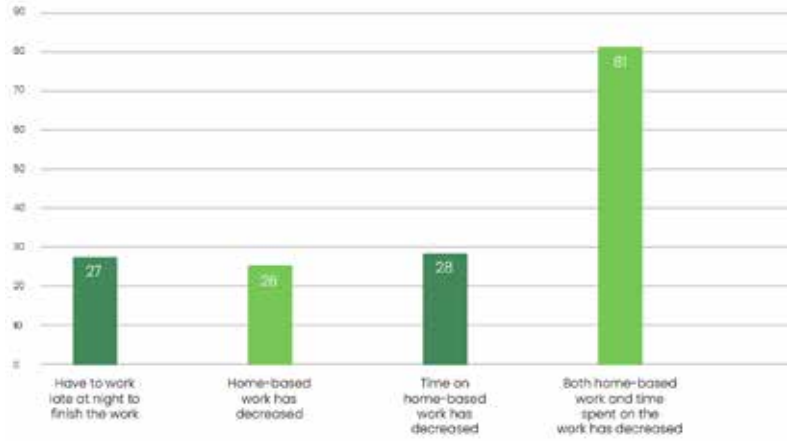
Similar impacts are also being observed due to climate change. As reported in the study, around 47% of the HBWs surveyed pointed to an increase in women's unpaid care work. Almost 60% of these (56 respondents) reported an increase in work of more than two hours daily. The maximum increase (25%) was down to the greater burden of caring for the ill, followed by time and effort to fetch water and manage food (Figure 23).

Figure 23: Increase in women's unpaid care work because of climate change in the last three to four years



Women's reproductive roles, compounded by time poverty, also limit their livelihood after disasters or in response to climate change. Among the study respondents, 81% reported the impact of unpaid care workloads on home-based work. HBWs either have to work late at night to finish tasks or spend less time on home-based work or both. (Figure 24)

Figure 24: Impact of unpaid care work on paid home-based work



Reproductive roles restrict mobility — a limitation that men do not face. Even when female migration is on the increase in Bangladesh and Nepal (Sujapati, 2015), this option is usually only available to women who are single or have able parents who can take care of children. Furthermore, while migration remains a livelihood option for many women escaping poverty, such mass movement is not without difficulties. The gendered perception of female migrant workers, that they are a "young, needy, pliable, portable and disposable labour force", has meant that the demand for their services is primarily in the domestic, hospitality, health and care, garment and entertainment sectors (UN Women, 2013).

The situation also applies to most women HBWs, who have additional responsibilities of childcare and families. Disasters and other shocks tend to increase these responsibilities. For example, Kala, S. (2020) reports in her study that during the COVID-19 lockdowns, over 65% of the HBWs had to face increased cleaning work and almost 50% had additional work of childcare. Poor health of her family means not only added expenditure on healthcare and medicines, but also more time spent in taking care of the ill (Sinha, 2013).

Further, disasters have an added implication for HBWs. For example, during the Amphan cyclone, many weavers in Phulia, India, lost their working capital when their looms were damaged (Kala, S., 2020). Destruction of domestic buildings can mean not just the loss of a home but also an end to a home-based livelihood for women. While men often use homes for resting and sleeping, homes and kitchens have a different function for many rural women: They play a critical role in enabling women to pursue economic activities, such as weaving, pottery, food-vending and other home-based income-generating activities (UN Women, 2016).

Box 11: Nigar Sultana from Dhaka faces debt and reduced work due to care responsibilities

Nigar Sultana is a widow, living with her two children at Geneva camp, in the Mohammadpur area of Dhaka, Bangladesh. Two years ago, when the summer temperatures were extremely high, she lost her husband to a heatstroke. She sold her jewellery and got into debt to pay the medical bills. She somehow managed her household with her tailoring work of up to 20 days a month, earning between BDT 5000 and 10,000 (USD 58–117). However, two months ago, her son fell from the bed and broke his leg. Now she has to take care of him and can hardly work three days a week. COVID-19 further complicated her life at a time when she was facing financial trouble, and she has come close to losing her job.

CHAPTER 6
Coping Strategies

1. COPING WITH CLIMATE CHANGE

Low incomes and lack of social protection measures make HBWs vulnerable to shocks, and affect their ability to respond and recover. For most HBWs, cutting back on expenditure, digging into savings, selling assets and borrowing are the only means of coping in a crisis. Reducing expenditure is the most common coping strategy, followed by borrowing money, adjusting current work and/or taking on new work (Chen, 2014).

The current study revealed that around 48% of the HBWs had to resort to extreme measures to cope with climate change. Around 20% had to change their homes and 16% their livelihoods, while 12% had to change both homes and livelihoods. The most pronounced impact was reported in Surat while the least was reported in Lalitpur (Table 14).

Table 14: Coping strategy of HBWs to climate change — change in home and livelihood (n=208)

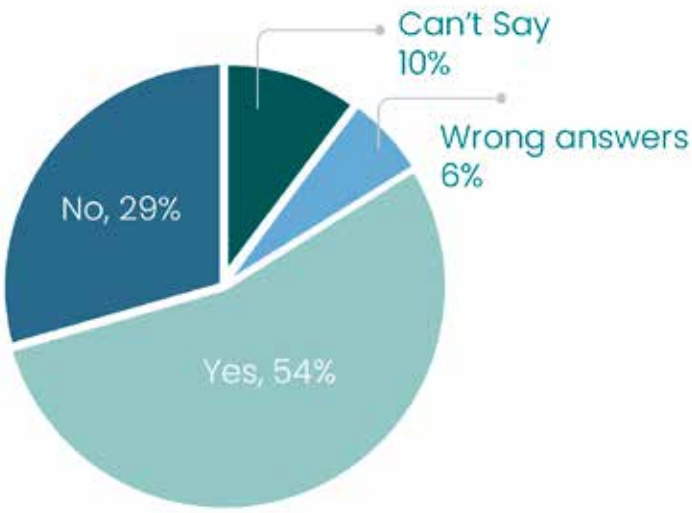
Country	City	Had to change home	Had to change livelihood	Had to change home and livelihood
Bangladesh	Dhaka	10	6	1
India	Ahmedabad	0	18	5
	Surat	7	7	19
Nepal	Lalitpur	5	0	
	Bhaktapur	18	1	
Total		40 (20%)	32 (16%)	25 (12%)

Around 10% of the surveyed HBWs had also resorted to selling off major assets in the last five years. While this trend can't all be attributed to climate change, at least 30% of the workers (six respondents) sold the assets to meet health expenses following a bout of dengue, malaria, cholera, typhoid or similar vector or waterborne diseases.

2. KNOWLEDGE AND ACCESS TO SOLUTIONS

This is not surprising since there is a severe lack of information related to possible solutions for dealing with climate change: When asked about dealing with temperature rise in summers, only 55% respondents knew what to do (Figure 25). Even among them, the proposed options were very basic, including ideas such as the use of fans and shade, bathing, plantation efforts, drinking more water and wearing light clothes. None of the more technical options, such as cool roofs, efficient ventilation, etc. were reported in the survey, although they were shared by the HBWs during the FGDs, especially in Ahmedabad and Surat.

Figure 25: Knowledge on adapting to temperature rise



With respect to other climate variabilities, such as increase in heavy rainfall days and irregular rainfall, the number of respondents mentioning any knowledge of solutions was even lower at 34% and 26% respectively. Although some respondents did mention more technical solutions such as raising the plinth level of homes and having proper drainage systems, most mentioned drinking safe water and using a water purifier, using mosquito nets, and having mechanisms to store food and documents in case of a disaster or disease.

Around 43% of the respondents had also tried to implement some of these solutions, and all of them reported benefitting from them. However, there are also challenges faced, especially in purchase costs (Figure 26).

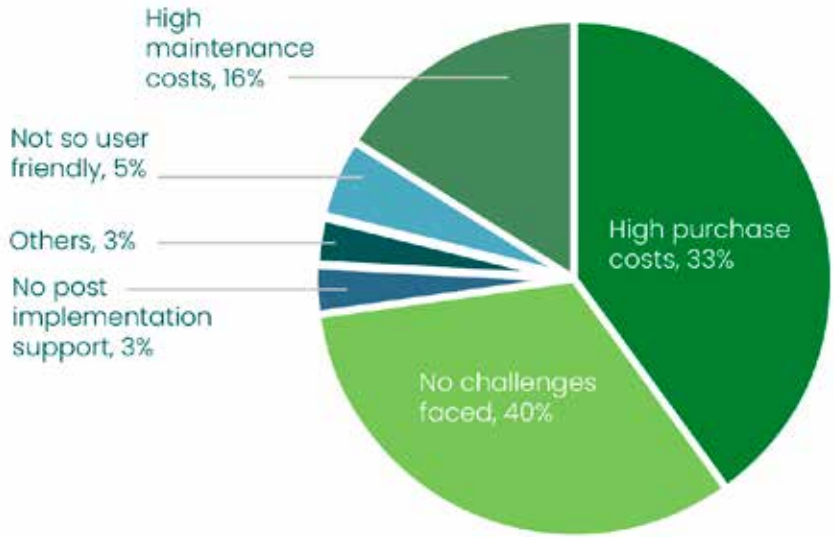


Figure 26: Challenges faced in implementing the solutions

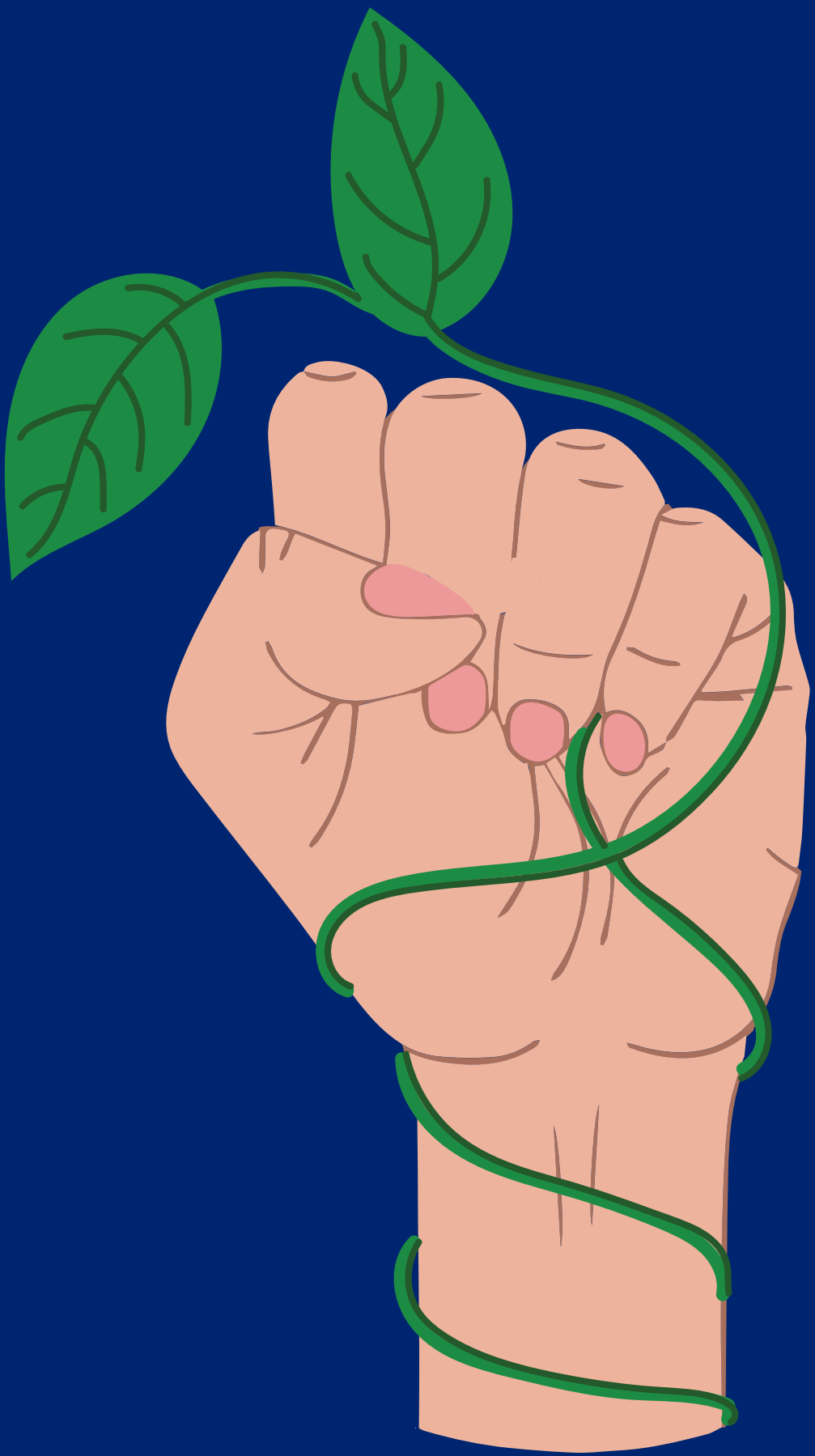
3. BARRIERS TO RESILIENCE

Costs were not the prime factor for not implementing solutions to impacts of climate change, though. Around half reported lack of information as the key reason, followed by unsuitability (18%), high costs (17%) and no credit support (14%).

This is not surprising, since around 63 respondents (31%) had no idea how to access even basic solutions. Among those with some knowledge, maximum affirmative responses were related to market (37%) or local NGO (38%), while only 25% knew how to gain government support (Figure 27).

Working towards increasing awareness on government linkages for climate change adaptation is thus key for HBWs.

Figure 27: Knowledge on how to access solutions for adapting to changes in temperature and precipitation



CHAPTER 7
Conclusion and Recommendations

1. CONCLUSION

In conclusion, one may say that HBWs will suffer impacts of climate change that are locally specific as well as those with global implications. Given that a large number of HBWs are located in South Asia, which is extremely vulnerable to climate change, they will suffer the direct implications of temperature rise; extreme precipitation events, especially flooding; sea level rise and associated storm surge; and cyclone events. These will impact the people irrespective of their occupational status, but the vulnerable nature of their occupations will make HBWs more exposed. At the global level, their incomes will be affected by the impact of climate change in the source and market countries along their product value/supply chain; as well as by the adaptation strategies of the sector, especially of the major brands they work with and those of local governments. However, as they are at the bottom of the value chain, and given their often unequal and exploitative working relationships, a lot of the risks could end up being transferred to the HBWs.

Additionally, HBWs will also be impacted by the location and poor condition of their residence, especially those living in urban informal settlements and slums. Lack of basic facilities and poor-quality housing already has an impact on their earnings and profits. With climate change-related heatwaves, water stress and disasters such as urban flooding, the risks to their work and earnings will be higher. Lack of social protection and recognition by government means their losses will not even be estimated in disaster assessments and they are bound to be left out of any relief packages. Women HBWs will especially be affected because of the increase in their time poverty following the shocks and stresses, as they will spend more time on collecting water, cleaning their homes, or taking care of the sick and the elderly.

Given this context, it is important to work on the adaptation needs of the HBWs. The current coping strategies of reduce, sell and borrow, without any social protection or insurance support, will not last for long and the HBWs will find themselves more deeply entrenched in the cycle of poverty.

2. RECOMMENDATIONS

Building adaptation capacities and resilience of HBWs requires work at various levels: communication and awareness generation, networking and multi-stakeholder partnership development, scientific knowledge transfer, exploration and promotion of adaptation solutions, and regional and global advocacy. The study findings clearly point to the need for the above. Some recommended actions have been highlighted below.

The study clearly brings to light the knowledge gaps on the impact of climate change on HBWs with research and literature. While the study has attempted to highlight some of the key impacts, it would be important to convert the key findings from the study into an infographic tool for increasing the awareness among key climate change advocates, researchers, policy makers and civil society organisations on the impact of climate change on HBWs and the need to identify them as a vulnerable occupational group in all adaptation planning.

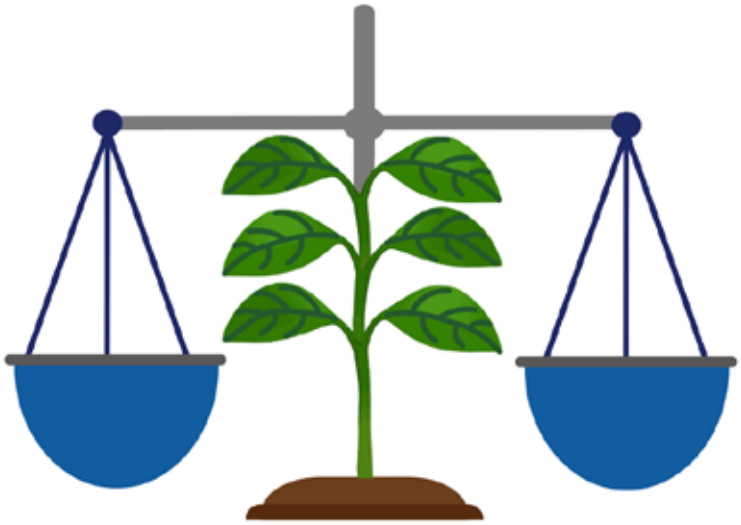
Such advocacy should also be aimed at pursuing further in-depth research within different sectors and value chains. It is especially important to highlight the risk to HBWs because of the impact of climate change on the value chain. Current climate change research work is often focused on sectors such as agriculture, fisheries, etc.; there is a definite need to further understand the impact of climate change on sectors such as garment manufacturing and food processing, which have more HBWs. A key strategy for this would be to work with global brands linked to HBWs, particularly in the garment sector, for adaptation and skill building.

Equally vital is to have a properly designed and scientifically vetted communication strategy to increase the understanding around climate change among the respondent population, especially on adaptation solutions. The HBWs' current understanding of climate change is limited to environment concerns and increase in temperature. CSOs and home-based worker organisations should train HBWs to understand the impact of climate change on their lives through community-based vulnerability assessments, community-led surveillance and action plan development.

The first step towards this, however, would be to build the capacities of the CSOs and home-based worker organisations themselves, so that they can disseminate knowledge on climate change adaptation. MHT, a key partner of HNSA, has already developed greater understanding and knowledge tools in this regard.[7] There was also an earlier attempt to transfer knowledge and tools to Saathi in Nepal, with encouraging results. This process of capacity building should be streamlined and strengthened across the region from South Asia to other HomeNet International partners in Asia and Africa.

Making the agenda of climate change and HBWs a global movement will help provide a stronger voice to the concerns of HBWs and bring them into the mainstream climate debate. A critical gap currently is to ensure that HBW leaders are part of climate change adaptation planning and decision-making processes so that they can present their views on the different risks and help identify solutions. Concentrated policy advocacy efforts will be needed to develop any Heat Action Plan and Energy Conservation Building Code for public housing and private residences, or in afforestation efforts. And HBWs will have to be an integral part of the leadership team for this.

[7] See MHT's work on Climate Resilience at https://www.mahilahousingtrust.org/our-work/climate-resilience/



There are already a number of technical options that can be explored, piloted, disseminated and even converted into a social enterprise. Unfortunately, the knowledge about these options among HBWs remains limited. In the absence of demand from the workers, there is no supply from the market or even government, which leads to lack of adaptation options available to the HBWs. It is important to test and implement projects related to various adaptation solutions available. This can include:

- Promoting personal choices such as drinking more water to keep hydrated, wearing light-coloured cotton clothes, ensuring proper ventilation, maintaining personal hygiene, consuming only clean, safe drinking water, mosquito-proofing homes and sleeping areas, not letting water stagnate and become breeding grounds for mosquitos, and planting more trees in one's own spaces.

- Promoting energy efficient bulbs, fans, coolers and household equipment, and renewable energy options such as solar rooftop panels, solar-powered lighting, fans and machines (sewing machines, soldering irons, refrigerators, milking machines, etc.) Energy audits, which can be done by HBWs themselves, can be promoted as an awareness generation and marketing strategy to take this forward.

- Promoting heat-resistant building materials and technologies to reduce heat stress. This includes modular roofs, Airlite roof ventilation, bamboo roofs, solar reflective white paint, compressed agro-based panels for roof and walls, puff sheet and honeycomb panels for roof and walls.

- Adopting better design layouts for houses to ensure, better ventilation and light, and promoting well considered and planned incremental improvement of housing.

- Promoting rainwater harvesting among HBWs and others in their community.

- Improving access to finance for housing improvement (and thus workplace improvement).

- Improving access to existing social security schemes and advocating for special social security schemes for HBWs.

- Designing insurance products to cover livelihood loss of home-based workers.

Enabling the above requires different actors — government, CSOs, HBW organisations, academics and researchers, climate change advocates and networks, and donors — to all come together to deliberate, analyse and co-create solutions that support HBWs to have a dignified life while facing the adverse impacts of climate change. Towards this, a multi-stakeholder regional association could be considered, to provide the backstop of knowledge sharing and cross learnings, which are so important to solve the complex issue of climate change adaptation.

To begin with, the multi-stakeholder forum can also build upon existing international and regional climate change networks in collaboration with local organisations working with HBWs.

This regional association should then focus on working with governments and donor agencies, especially international financial institutions and multilateral development banks that manage climate funds. Allocation of funds for climate change awareness and adaptation of HBWs by governments and donor agencies is key for any adaptation action on the ground. The regional association could play a major role in enabling this. It could also register as a 'regional entity' with the Adaptation Fund or Green Climate Fund to channel funds for HBW-related projects.

ANNEXURES

ANNEX 1: Women Home-based Worker Survey Questionnaire

Survey Code										

The survey code is a 10-digit code that covers Country, City, Occupation, Cluster and Interviewer Codes. These will be fixed. The Respondent number needs to be assigned by the interviewer based on the sequence beginning from 01. Each call/visit made, irrespective of whether the interview was successfully completed, needs to be assigned a number and the background information on the coversheet recorded. Only female/ women HBWs are to be interviewed.

Q. No.	Background Information (to be pre-filled before calling)	
i.	Name of the interviewer	
ii.	Name of the city	
iii.	Name of the location/ cluster	
iv.	Name of the respondent	
v.	Mobile number of the respondent	
vi.	Occupational group	▫ 1. Handicraft (beadwork) ▫ 2. Handicraft (stone craft) ▫ 3. Garment (tailoring) ▫ 4. Garment (other work) ▫ 5. Allied garment (ball pressing) ▫ 6. Allied garment (button making) ▫ 7. Allied garment (thread cutting) ▫ 8. Food processing (*pani puri* making) ▫ 9. Food processing (chocolate making) ▫ 10. Food Processing (*papad* making) ▫ 11. Food processing (other) ▫ 12. Other (please specify_____)
vii.	Type of occupation	▫ 1. Self-employed employer ▫ 2. Self-employed own-account worker ▫ 3. Self-employed contributing household member ▫ 4. Sub-contracted (piece-rate worker) ▫ 5. Employee

A. BASIC DETAILS

Q. No.	Question	Response	Instructions for interviewer
1.	Do you confirm the name and mobile number?	▫ 1. Yes ▫ 2. No	Confirm the name and mobile number of the respondent.
2.	Do you agree to provide the details?	▫ 1. Yes ▫ 2. No	Introduce yourself and seek permission for the interview. Tell them that the survey is to understand the impact of climate change on HBWs. Tell them that currently local and national governments are making many policies and action plans to deal with climate change. However, much of this is based on how it impacts agriculture and industry (factory/businesses). There is hardly any information about the impact on HBWs. Hence you are doing the survey to capture those impacts and take them to the government so as to make the climate plans more responsive to HBWs. Explain that climate change refers to the changing local weather conditions/ seasonality over the period. Explain that it might take 20 to 30 minutes for the interview. If the respondent is not able to give time immediately, seek a suitable time. If the respondent refuses, stop the interview and go to the person whose name is just after the respondent on the household list.

<table>
<tr><td>3.</td><td>What is your age?</td><td>▫ 1. Less than 20 years
▫ 2. 20 to 30 years
▫ 3. 30 to 40 years
▫ 4. 40 to 50 years
▫ 5. 50 to 60 years
▫ 6. Above 60 years</td><td>Some older respondents may not know exact age. May need to estimate. Use prompts like:
• A govt identity card
• Asking the age at marriage and number of years being married
• Asking the age of the oldest child and tentative age (school level) at which the child was born</td></tr>
<tr><td>4.</td><td>What is your marital status?</td><td>▫ 1. Married
▫ 2. Separated
▫ 3. Divorced
▫ 4. Widow
▫ 5. Never married</td><td>Don't call out the options aloud. Wait for the answer. If the respondent doesn't understand then read out all the options and then wait for their response.

"Separated" refers to married persons not living together.</td></tr>
<tr><td>5.</td><td>Do you belong to any of these categories?</td><td>▫ 1. Scheduled Castes/ Dalits
▫ 2. Scheduled Tribes/ Adivasi/ Janajati
▫ 3. Backward Classes/ Other Backward Classes
▫ 4. Newar
▫ 5. Madhesi
▫ 6. Religious minority (Please specify _____)
▫ 7. (Dis)abled
▫ 8. General/ Others (Please specify _____)</td><td>For religious minorities, please use your country definitions.

For (Dis)abled from specific social groups please tick both options as applicable. Also do not ask this directly but try to deduce from observation. If still unconfirmed ask "Do you have any problems in hearing or seeing". Remember to ask this especially to older persons (those above 50 years).

For no response, tick general category.</td></tr>
<tr><td>6.</td><td>What is the total number of residents in your household?</td><td>Please give the details as required below:
<table><tr><th>Category</th><th>Male</th><th>Female</th></tr><tr><td>Elderly (Above 60)</td><td></td><td></td></tr><tr><td>Adults (18-60)</td><td></td><td></td></tr><tr><td>Adolescents (14-18)</td><td></td><td></td></tr><tr><td>Child (6-14)</td><td></td><td></td></tr><tr><td>Child (below 6)</td><td></td><td></td></tr><tr><td>Total</td><td></td><td></td></tr></table></td><td>A household constitutes members sharing the same chullas/ kitchen.

Include family members who have migrated for work, if they come back to this house from time to time.

For people using common kitchens, this would include all those members whose food is cooked together, not all members using the common kitchen.</td></tr>
<tr><td>7.</td><td>What is your level of education?</td><td>▫ 1. Never gone to school
▫ 2. Has gone to school but did not complete elementary (VIII)
▫ 3. Elementary schooling completed
▫ 4. Secondary (X) schooling completed
▫ 5. Higher secondary (XII) completed
▫ 6. Graduate and above
▫ 7. Diploma/ITI course
▫ 8. Informal/Adult education classes</td><td>If they have failed a grade, select the previous level. For example, for X fail select elementary completed and for XII fail select secondary completed.</td></tr>
<tr><td>8.</td><td>Who is the main decision maker in your household?</td><td>▫ 1. Myself
▫ 2. Husband
▫ 3. In-laws
▫ 4. Parents
▫ 5. Others (Pls specify _____)</td><td>If there is no clear response on first try or the response is "joint", then probe using:
• Who takes the final call on major decisions like sale of assets, change of residence/home, in relation to children, etc.?
• Ask who they consider as the head of the household
If the answer is still "joint" then use the options "others" and specify as "joint".</td></tr>
<tr><td>9.</td><td>What is the number of earning members in your household?</td><td>Full time:____
Part time: _____
Total:____</td><td>• Full-time earners are those who are working at least eight hours a day, 6-7 days a week (not seasonal), and have a reasonably regular monthly income. Eg. Contractual labour
• Part time: Mainly all seasonal workers and open labours.</td></tr>
</table>

<table>
<tr><td>10.</td><td>What is the primary occupation of your household members and for how many working days?</td><td><table><tr><td></td><td>Primary occupation</td><td>Average number of days of work per month</td></tr><tr><td>Respondent (self)</td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td>Household members</td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table></td><td>Use the following Codes for primary occupation
▫ 1. Government job/ Private full-time job
▫ 2. Own store/shop
▫ 3. Work at a store/shop
▫ 4. Housemaid
▫ 5. Food/ snack/ tea stall
▫ 6. Construction/ open labour
▫ 7. Factory worker
▫ 8. Home-based worker
▫ 9. Others

Primary occupation can be full time or part time. There may be more than one primary occupation for the respondent. Need to capture both.

For household members, do not write names of the members but their relationship to the respondent.</td></tr>
<tr><td>11.</td><td>What are the monthly income levels of your household?</td><td>▫ 1. Below 5000
▫ 2. Between 5000 and 10,000
▫ 3. Between 10,000 and 20,000
▫ 4. Between 20,000 and 30,000
▫ 5. Above 30,000</td><td>In country currency
You may need to probe more using the following prompts:
• Ask daily wages and calculate with number of days of work.
• Ask for monthly expenditure and debt/savings.</td></tr>
<tr><td>12.</td><td>What type of house do you have?</td><td>▫ 1. Own pucca house
▫ 2. Own semi-pucca house
▫ 3. Rented pucca house
▫ 4. Rented semi-pucca house
▫ 5. Own kutcha house
▫ 6. Rented kutcha house</td><td>Ask only about rental status and use observation for answering the status of house based on the following:
• Pucca house defined as having both tiled floor and cement roofing
• Semi-pucca defined as having either tiled floor or cement roofing
• Kutcha defined as neither of the two
Select own house option by default if not rented. The legality of the ownership does not matter.</td></tr>
<tr><td>13.</td><td>Does your house get flooded and damaged during monsoons?</td><td>▫ 1. Yes, gets flooded and damaged
▫ 2. Yes, gets flooded but not damaged
▫ 3. No</td><td>Capture only flooding and waterlogging-related damage, not roof leakage-related damages.</td></tr>
<tr><td>14.</td><td>Do you have a smartphone at your home?</td><td>▫ 1. Yes, with self
▫ 2. Not with self but other members of the household have
▫ 3. No one in the household has a smartphone</td><td></td></tr>
<tr><td>15.</td><td>Do you have any of the following other items at home?</td><td>▫ 1. Colour television
▫ 2. Bicycle
▫ 3. Motorcycle
▫ 4. Four-wheeler vehicle (car, etc)
▫ 5. Computer
▫ 6. Refrigerator
▫ 7. Washing machine
▫ 8. Sewing machine
▫ 9. Air cooler
▫ 10. Heater
▫ 11. Air conditioner
▫ 12. None of the above</td><td>Read out all the options one by one and tick all that are applicable</td></tr>
<tr><td>16.</td><td>Do you have the following facilities at your home?</td><td>▫ 1. Water availability (tap connection) at home or within 500m of your home
▫ 2. Individual toilet facility at home
▫ 3. Electricity connection (meter facility)
▫ 4. LPG cylinder
▫ 5. Savings bank account (self/ household)
▫ 6. SHG/ Saving group/CBO membership
▫ 7. Health insurance
▫ 8. None of the above</td><td>Read out all the options one by one and tick all that are applicable</td></tr>
</table>

B1. Perception and awareness of climate change			
17.	Have you ever heard about climate change?	▫ 1. Yes ▫ 2. No ▫ 3. Don't know	If "yes", then go to 17.1 If "no" or "don't know", go to 18. Do not explain the concept in detail and for terminology clarity use the term "weather change".
17.1	If yes, from where did you hear?	▫ 1. From local media (newspaper, radio, television, etc.) ▫ 2. From local community (friends, neighbours, children) ▫ 3. From local civil society organisation (CSO)/ non-governmental organisation (NGO) ▫ 4. Others (please specify_____)	
18.	Over the last 10 years have you observed any change in the following?		Please read all the four columns 18.1, 18.2, 18.3, 18. 4 and 18.5 aloud and take responses for each separately. Explain using the following: 18.1: Feeling more heat during summer (April to June) 18.2: Feeling less cold during winter (November to February) 18.3: Number of days when there is heavy rainfall in monsoons (July to September) 18.4: Rainfall in non-monsoon season (October to May) 18.5: Increase in frequency or impact of cyclones and storms.

	18.1 Temperature rise in summer	18.2 Temperature rise in winters	18.3 Increase in heavy rainfall days	18.4 Increase in irregular rainfall	18.5 Increased storms and cyclones
▫ Yes					
▫ No					
▫ Can't say					

19	Why do you think these changes are happening?	▫ 1. Not aware ▫ 2. Act of God ▫ 3. Other (_____)	Don't call out the options aloud. Wait for the answer or select not aware by default.
B2. Impacts on Home-based Work			
20	Do you think these changes are affecting your household?	▫ 1. Yes ▫ 2. No ▫ 3. Don't know	If "yes", then go to 20.1. If "no" or "don't know", go to 21.
20.1	How are these changes affecting your household?	▫ 1. Increase in women's unpaid care work (less than 2 hours daily) ▫ 2. Increase in women's unpaid care work (more than 2 hours daily) ▫ 3. Reduced productivity (less than 30 %) ▫ 4. Reduced productivity (more than 30 %) ▫ 5. Loss of cash income ▫ 6. Material loss (home and household equipment) ▫ 7. Material loss (raw materials) ▫ 8. Material loss (produce) ▫ 9. Health concerns (please specify _____) ▫ 10. Any other (please specify _____) ▫ 11. None of the above	Read out all the options one by one and tick all that are applicable. For unpaid care work explain that we are referring to works like washing, cleaning, cooking, fetching water, fetching fuel, etc. For health concerns, explain that you are referring to increase in water and vector-borne diseases like cholera, typhoid, malaria, dengue, chikungunya, etc. Clarify that this does not include COVID. You need to spend at least two to three minutes in explaining this question and getting the proper responses.
21	Has any unpaid care work of yours increased in the last three to four years?	▫ 1. Time/effort in fetching water ▫ 2. Home maintenance during monsoons due to waterlogging/ flooding ▫ 3. Shifting of household material to safe place due to irregular monsoons ▫ 4. Caring for the ill (due to water and vector borne diseases) ▫ 5. Managing food stocks ▫ 6 Any other (please specify _____) ▫ 7. None of the above	Don't call out the options aloud. Wait for the answer. If the respondent doesn't understand then read out all the options and then wait for their response. Tick all that are applicable.

22.	Does this change in unpaid care work affect time spent on home-based income work?	▫ 1. Yes, home-based work has decreased ▫ 2. Yes, have to stretch out late at night to finish my work ▫ 3. Both of the above ▫ 4. No impact	
23.	What is the exact nature of your home-based work?	▫ 1. Full time (8 hours or more) engagement with monthly income more than 10,000 ▫ 2. Full time (8 hours or more) engagement with monthly income less than 10,000 ▫ 3. Part-time engagement with monthly income more than 5000 ▫ 4. Part-time engagement with monthly income less than 5000	Use local currency. Please cross check with monthly income, it can't be less than this.
24.	What percentage of your household income is contributed from this work/money?	▫ 1. Fully dependent (100%) ▫ 2. More than 70% ▫ 3. Between 50 and 70% ▫ 4. Between 30 and 50% ▫ 5. Less than 30%	You may need to help calculate based on the previous responses. Use their monthly household income figure and income from home-based work and help them calculate.
25.	Has there been any major changes in your income from home-based work in last five years?	▫ 1. Yes, it has increased ▫ 2. Yes, it has decreased ▫ 3. No change	If "yes, increased" go to 25. 1. If "yes, decreased" go to 25. 2. Else go to 26.
25.1.	What are the causes of the change?	▫ 1. Increased demand for the product ▫ 2. Increased productivity ▫ 3. Decrease in cost of production ▫ 4. Increase in wages/ piece rate ▫ 5. Due to Covid-19 (Pls specify _____) ▫ 6. Other (Pls specify _____) ▫ 7. Can't say	Don't call out the options aloud. Wait for the answer. If the respondent doesn't understand then read out all the options and then wait for their response.
25.2.	What are the causes of the change?	▫ 1. Decreased demand for the product ▫ 2. Decreased productivity ▫ 3. Increase in cost of production ▫ 4. Decrease in wages/piece rate ▫ 5. Higher losses of raw material or finished goods ▫ 6. Due to Covid-19 (Pls specify _____) ▫ 7. Other (Pls specify _____) ▫ 8. Can't say	Don't call out the options aloud. Wait for the answer. If the respondent doesn't understand then read out all the options and then wait for their response.
26.	Have you felt any decline in productivity levels in the last five years?	▫ 1. Yes ▫ 2. No ▫ 3. Don't know	If "yes", then go to 26.1. If "no" or "don't know", go to 27. Productivity refers to number of units produced per day. Clarify to them that you are not asking about the money earned but about their own production capacity. Are they taking more time to produce the same number of units now?
26.1.	What was the reasons for the same?	▫ 1. Increased hot weather resulting in decreased working hours during summer ▫ 2. Increased hot weather resulting in spoilage of raw materials ▫ 3. Increased flooding or waterlogging resulting in loss of raw materials/finished goods ▫ 4. Unseasonal rains resulting in loss of raw materials/finished goods ▫ 5. Others (Pls specify_____) ▫ 6. Can't say	Don't read out the options but probe on climate-related reasons by asking if any weather or climate-related changes like heat/ flooding has contributed to this decline. Tick all that are applicable.

27.	Do you or any of your household members face any health impacts due to the changing climatic conditions?		27.1 Heats-troke	27.2 Waterbo-urne diseases (cholera / typhoid)	27.2 Vector borne diseases (malaria/ dengue/ chikun-gunya)	27.4 Any other	Please read all the four columns 27.1, 27.2, 27.3 and 27. 4 aloud and take responses for each separately.
		□ 1. Yes, there was a major illness					
		□ 2. Yes, but it was minor					
		□3. No					
		□4. Can't say					
B3. Coping strategies							
28.	Have you ever had to change/shift your home or livelihood due to these?	□ 1. Change of home only □ 2. Change of livelihood only □ 3. Change of home and livelihood both □ 4. No					
29.	Have you had to sell any major assets in the last five years?	□ 1. Yes (Pls specify name of asset sold_____) □ 2. No □ 3. Don't know					If "yes", then go to 29.1. If "no" or "don't know", go to 30.
29.1	Did any of the following reasons contribute to the need to sell the asset?	□ 1. To meet immediate household needs after a flood or waterlogging incident □ 2. To meet health expenses due to dengue, malaria, cholera, typhoid or similar vector or waterborne diseases □ 3. Major loss in business due to flooding-related loss of raw materials/finished goods □ 4. Other (please specify_____)					Do not read the options. Wait for the response and then tick all that are applicable.
30.	Are you aware of what needs to be done to deal with the following at your household level?		30.1 Temper-ature rise in summers	30.2 Temper-ature rise in winters	30.3 Increase in heavy rainfall days	30.4 Increase in irregular rainfall	Please read all the four columns 30.1, 30.2, 30.3 and 30. 4 aloud and take responses for each separately. You can prompt using the following examples. 30.1: Put in a cooler, more windows, more fan, go outside in shade to work/sleep, changes in roofs, etc 30.2: Use fan in winters too 30.3: Raised plinth level of home, created racks to shift things on higher levels, water purifier, etc. 30.4: Work more inside home, have made changes to house, etc.
		□ Yes					
		□ No					
		□Can't say					
31.	Do you know how you can get access to these solutions	□ 1. From market □ 2. From local NGO □ 3. From government □ 4. Others (please specify _____) □ 5. Don't know					
32.	Have you ever tried to implement these solutions	□ 1. Yes □ 2. No					If "yes", then go to 32.1. If "no", go to 33.
32.1	If yes, what did you implement?						Describe in detail.
32.2	Did you face any challenges in implementing the same?	□ 1. High purchase costs □ 2. Higher maintenance costs □ 3. Not so user-friendly □ 4. No post implementation support □ 5. Others (please specify _____) □ 6. No challenges faced					Please tick all that are applicable.

33.	If no, can you share the reasons for not considering?	▫ 1. Lack of information ▫ 2. Lack of suitability ▫ 3. Higher costs ▫ 4. No credit support ▫ 5. Others (please specify ----------) ▫ 6. Can't say	Please tick all that are applicable.
34.	Do you have any suggestions or recommendations for improving the life of HBWs?		Describe in detail.

ANNEX 2: Format for Focus Group Discussion (FGD)

Sr. No	Discussion agenda	Discussion pointers
1.	What is the nature of your home-based work?	• Type of work • Terms of contract • Terms of payment • Raw material purchase patterns • Marketing patterns
2.	Have you been witnessing any change in the local climate conditions over the last 10 years or so?	• Has the local average temperature changed? • Has the number of hot days increased? • Has the number of cold days increased or decreased? • What have been the changes in rainfall patterns?
3.	How have these changes impacted your life?	• Has your domestic responsibility increased? • How has it impacted your employment sources (full-time and part-time)?
4.	How has it impacted home-based work?	• Has it impacted your productivity? • Has it impacted your number of hours of work? • Payment patterns? • Has it impacted your income, especially from home-based work? If yes, how? • Have there been any extreme incidents of loss of asset/ life due to this in your area?
5.	What do you do to deal with these impacts?	• On your own • At the community-level • With support from the local trader • With support from local CSO/NGO • With support from government?
6.	What do you think can be done to reduce the risks from climate change?	

ANNEX 3: Country- Wise Data

Parameters	Bangladesh		India		Nepal	
	No.	%	No.	%	No.	%
Number of respondents	50		100	100	52	100
Handicraft workers			25	25	27	52
Garment workers	50	100	25	25	25	48
Food processing			50	50	0	0
Type of worker						
Self-employed own-account workers			23	23		
Subcontracted (piece-rate workers)	50	100	43	43	52	100
Self-employed contributing household member			34	34		
Age profile						
Less than 30 years	14	29	33	33	13	25
30–60 years	32	67	65	65	37	73
Above 60 years	2	4	2	2	1	2
Marital status						
Single women (divorced/ seperated/ widow/ never married)	18	36	90	90	6	12
Married	32	64	10	10	46	88
Caste						
Scheduled Castes	NA		20	20	12	23
Scheduled Tribes	NA		11	11	15	29
Other Backward Classes	NA		52	52	15	29
Newar	NA				10	19
General	NA		17	17	0	0
Education profile						
Elementary schooling completed	17	34	24	24	6	12
Secondary (X) schooling completed	7	14	16	16	15	29
Higher secondary (XII) completed	1	2	5	5	3	6
Graduate and above	0	0	2	2	1	2
Informal/Adult education classes	0	0	0	0	4	8
Has gone to school but did not complete elementary (VIII)	3	6	20	20	21	40

Never gone to school	22	44	33	33	2	4
Family size						
Average number of residents	4.24		4.59		4.25	
Households with elder members (above 60)	8	16	10	10	14	27
Households with children (6–14)	21	42	48	48	27	52
Households with smaller children (0–6)	9	18	24	24	18	35
Livelihood profile						
Average number of working days (HH)	18.02		27.4		24.57	
Average number of working days (self)	18.3		26.93		21.15	
Average number of earning members	2.18		2.06		2.2	
Average number of full-time earning members	0.36		1.25		0.55	
Average number of part-time earning members	1.72		0.96		1.63	
Primary occupation self (HBW)	9	19	76	76	51	98
Primary occupation self (wage labour)	2	4	19	19		
Primary occupation self (own store)	0	0	5	5		
Primary occupation self (job)	23	48	6	6		
Primary occupation self (others)	14	29	0	0		
Income status (in local currency)						
Below 5000	6	12	9	9	0	0
5000-10000	23	46	38	38	2	4
10000-20000	19	38	35	35	11	21
20000-30000	2	4	12	12	13	25
Above 30000	0	0	6	6	26	50
Housing						
Own pucca house	15	30	44	44	15	29
Own semi-pucca house	0	0	19	19	25	48
Rented pucca house	28	56	12	12	1	2
Rented semi-pucca house	6	12	18	18	4	8
Own kutcha house	1	2	5	5	7	13
Rented kutcha house	0	0	2	2	0	0
Impact of flooding						
House gets flooded but not damaged	5	10	19	19	8	15
House get flooded and damaged	6	12	6	6	16	31
House does not get flooded	39	78	75	75	28	54
Asset profile						

Smartphone	20	40	71	71	49	94
Colour television	32	64	79	79	43	83
Bicycle	1	2	51	51	18	35
Motorcycle	0	0	53	53	13	25
Four-wheeler	0	0	0	0	1	2
Computer	1	2	4	4	4	8
Refrigerator	18	36	43	43	19	37
Washing machine	0	0	4	4	1	2
Air cooler	6	12	16	16	33	63
Air conditioner	0	0	0	0	0	0
Heater	0	0	9	9	12	23
Sewing machine	0	0	26	26	10	19
None of the above	13	26	4	4	2	4
Access to basic services						
Water availability (tap connection) at home or within 500m of home	39	78	98	98	26	50
Individual toilet facility at home	31	62	99	99	51	98
Electricity connection (meter facility)	50	100	100	100	52	100
LPG cylinder	25	50	100	100	52	100
Savings bank account (self/ family)	3	6	84	84	44	85
SHG/ Saving group/CBO membership	0	0	3	3	43	83
Health insurance	0	0	34	34	15	29
None of the above	0	0	0	0	0	0
Awareness of climate change						
Not heard about climate change	15	30	35	35	8	15
Heard about climate change	35	70	65	65	44	85
From local media (newspaper, radio, television, etc.)	31	84			18	35
From local community (friends, neighbours, children)	1	3	52	80	8	15
From local civil society organisation (CSO)/ non-governmental organisation (NGO)	2	5	39	60	31	60
Others (school, college, book club, social media)	3	8	15	23	6	12
Observed changes in climate						
Over the last 10 years, have you observed any temperature rise in summer?	50	100	74	74	43	83

Over the last 10 years, have you observed any temperature rise in winter?	47	94	23	23	37	71
Over the last 10 years, have you observed any increase in heavy rainfall days?	44	88	33	33	46	88
Over the last 10 years, have you observed any increase in irregular rainfall?	49	98	16	16	47	90
Over the last 10 years, have you observed any increase in storms and cyclones?	48	96	3	3	45	88
Perception of causes of climate change						
Act of God	7	14	15	15	0	0
Not aware	37	74	81	81	16	31
Others	6	12	4	4	36	71
Impact of climate change						
Do you think the changes are affecting your family?						
Yes	38	76	37	37	37	73
No	10	20	60	60	12	24
Don't know/Can't say	2	4	3	3	3	6
How are they impacting?						
Increase in women's unpaid care work (less than two hours daily)	9	18	18	18	11	22
Increase in women's unpaid care work (more than two hours daily)	26	52	10	10	20	39
Reduced productivity (less than 30 %)	21	42	18	18	10	20
Reduced productivity (more than 30 %)	14	28	6	6	14	27
Loss of cash income	32	64	27	27	29	57
Material loss (Home and household equipment)	3	6	16	16	6	12
Material loss (raw materials)	2	4	18	18	1	2
Material loss (produce)	2	4	11	11	1	2
Health concerns	2	4	11	11	19	37
Increase in women's unpaid work in last three to four years	N=	80	N=	210	N=	152
Time/effort in fetching water	44	55	10	5	27	18
Home maintenance during monsoons due to waterlogging/ flooding	5	6	18	9	28	18
Shifting of household material to safe place due to irregular monsoons	3	4	40	19	27	18
Caring for the ill (due to water and vector-borne diseases)	27	34	48	23	24	16

Managing food stocks	1	1	48	23	34	22
Workload has not increased	0	0	46	22	12	8
Has the increase in unpaid work impacted the time spent on your paid home-based work?						
Have to stretch out late at night to finish my work		0	26	26	1	2
Home-based work has decreased	26	52		0		0
Time on home-based work has decreased		0	21	21	7	13
Both of the above	24	48	32	32	25	48
No impact	0	0	21	21	19	37
Nature of home-based work (amount in local currency)						
Full time (eight hours of more) engagement with monthly income less than 10,000		0	9	9	3	6
Full time (eight hours of more) engagement with monthly income more than 10,000		0	27	27		0
Part-time engagement with monthly income less than 5000	32	64	53	53	29	56
Part-time engagement with monthly income more than 5000	18	36	11	11	20	38
Percentage of household Income contributed by HBW						
Between 30 and 50%	21	42	17	17	20	38
Between 50 and 70%	1	2	14	14	4	8
Fully dependent (100%)	5	10	18	18	6	12
Less than 30%	18	36	37	37	13	25
More than 70%	5	10	14	14	9	17
Changes in income from home-based work						
No change in income	3	6	48	48	14	27
Income from HBW has increased in the last five years	0	0	2	2	1	2
Income from HBW has decreased in the last five years	47	94	50	50	37	71
Reasons for decline	N=	112	N=	126	N=	91
Decreased demand for the product	28	25	30	24	4	4
Decreased productivity	37	33	28	22	16	18
Increase in cost of production	6	5	10	8	0	0
Decrease in wages/ piece rate	16	14	28	22	35	38
Higher losses of raw material or finished goods	0	0	14	11	0	0

Managing food stocks	1	1	48	23	34	22
Workload has not increased	0	0	46	22	12	8
Has the increase in unpaid work impacted the time spent on your paid home-based work?						
Have to stretch out late at night to finish my work		0	26	26	1	2
Home-based work has decreased	26	52		0		0
Time on home-based work has decreased		0	21	21	7	13
Both of the above	24	48	32	32	25	48
No impact	0	0	21	21	19	37
Nature of home-based work (amount in local currency)						
Full time (eight hours of more) engagement with monthly income less than 10,000		0	9	9	3	6
Full time (eight hours of more) engagement with monthly income more than 10,000		0	27	27		0
Part-time engagement with monthly income less than 5000	32	64	53	53	29	56
Part-time engagement with monthly income more than 5000	18	36	11	11	20	38
Percentage of household Income contributed by HBW						
Between 30 and 50%	21	42	17	17	20	38
Between 50 and 70%	1	2	14	14	4	8
Fully dependent (100%)	5	10	18	18	6	12
Less than 30%	18	36	37	37	13	25
More than 70%	5	10	14	14	9	17
Changes in income from home-based work						
No change in income	3	6	48	48	14	27
Income from HBW has increased in the last five years	0	0	2	2	1	2
Income from HBW has decreased in the last five years	47	94	50	50	37	71
Reasons for decline	N=	112	N=	126	N=	91
Decreased demand for the product	28	25	30	24	4	4
Decreased productivity	37	33	28	22	16	18
Increase in cost of production	6	5	10	8	0	0
Decrease in wages/ piece rate	16	14	28	22	35	38
Higher losses of raw material or finished goods	0	0	14	11	0	0

Due to COVID-19	25	22	16	13	36	40
Changes in productivity						
Felt a decline in productivity	50	100	44	44	24	46
Not felt a decline in productivity			41	41	21	40
Don't know/Can't say			15	15	7	13
Reasons for decline	N=	59	N=	74	N=	27
Increased hot weather resulting in decreased working hours during summer	47	80	25	34	15	56
Increased hot weather resulting in spoilage of raw materials	1	2	16	22	0	0
Increased flooding or waterlogging resulting in loss of raw materials/ finished goods	1	2	8	11	0	0
Unseasonal rains resulting in loss of raw materials/ finished goods	1	2	21	28	0	0
Others	9	15	4	5	12	44
Health impacts						
Heatstroke in family						
Major illness	3	6	12	12		
Minor illness	0	0	16	16		
No/ Can't say	47	94	72	72	52	100
Waterborne diseases (cholera, typhoid)						
Major illness	3	6	12	12	12	23
Minor illness	20	40	9	9	10	19
No/ Can't say	27	54	79	79	30	58
Vector-borne diseases (malaria, dengue, chikungunya)						
Major illness	1	2	19	19	0	0
Minor illness	10	20	22	22	17	33
No/ Can't say	39	78	59	59	35	67
Coping mechanisms	N=	54	N=	102	N=	52
Had to change home	10	20	7	7	23	44
Had to change livelihood	6	12	25	25	1	2
Had to change home and livelihood both	1	2	24	24	0	0
No change	33	66	44	44	28	54
Had to sell a major asset	4	8	2	2	0	0
Knowledge of coping strategies						
What needs to be done to deal with						

Temperature rise in summer	29	58	31	31	50	96
Temperature rise in winter	20	40	5	5	47	90
Increase in heavy rainfall days	1	2	21	21	47	90
Increase in irregular rainfall		0	6	6	46	88
How to access the solutions						
From local market	29	58	52	52	0	0
From local NGO	5	10	50	50	28	54
From government	0	0	49	49	7	13

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