

GENDER AND CLIMATE CHANGE

**How Environmental Degradation
Amplifies
Women's Vulnerability**



**Huqooq-ul-Ebad
Development Foundation**

NGO in Special Consultative Status With The Economic & Social Council (ECOSOC), United Nations Since 2014 And Accredited From United Nations Environment Assembly (UNEA) Since 2018.



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Gender and Climate Change

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Welcome

Words from our President



“

Addressing climate change is not only an environmental necessity but a moral imperative.

”

On behalf of Huqooq-ul-Ebad Development Foundation (HEDF), I am honored to present our latest research report titled “Gender and Climate Change: How Environmental Degradation Amplifies Women’s Vulnerability.” HEDF is deeply committed to addressing critical societal issues and remains dedicated to producing comprehensive, evidence-based research that can inform policy and catalyze meaningful action.

Last year, HEDF proudly presented “Climate Change Effects in Pakistan,” a comprehensive survey-based study that shed light on various climatic impacts affecting communities across Pakistan. Building on that work, this year we are delving deeper into the intersection between gender and climate change, focusing on the heightened vulnerabilities women face due to environmental degradation.

This report is critical as it highlights the unique and disproportionate challenges that women encounter during climate-related events. Our research reveals severe impacts such as water scarcity, health risks, economic hardships, disrupted education, increased workload, and heightened vulnerability to gender-based violence and harassment. These challenges are intensified by deeply rooted socio-economic inequalities and cultural barriers. Through this research, we aim to foster greater

understanding of the gendered dimensions of climate change and underscore the importance of incorporating gender-sensitive approaches into climate resilience strategies and policies. Last year’s presentation of our survey-based report laid the groundwork by highlighting the broader impacts of climate change in Pakistan. Now, we deepen this exploration by examining the intricate intersection between gender and climate issues. HEDF will continue its dedicated efforts to advocate for women’s empowerment, ensuring that their voices are integral to climate action and policy-making. By emphasizing gender-responsive strategies, we aim to build a more equitable and resilient future for all.

Thank you for your ongoing support in this crucial endeavor.

Warm regards,

Syed Muhammad Ashfaq
President
Huqooq-ul-Ebad Development Foundation (HEDF)

The report was reviewed by **Syed Muhammad Ashfaq**, President of Huqooq-ul-Ebad Development Foundation, who provided valuable guidance to ensure the accuracy and relevance of the research findings.

About Huqooq-ul-Ebad Development Foundation (HEDF)

Established in 2010 and registered in 2012, the Huqooq-ul-Ebad Development Foundation (HEDF) is an independent NGO based in District Gujrat, Punjab, Pakistan. It holds “Special Consultative Status” with the United Nations Economic and Social Council (ECOSOC) since 2014 and has been an accredited observer at the United Nations Environment Programme (UNEP-2018), IPBES & IPCC- 2025 etc.

HEDF focuses on community development through human rights, prioritizing women and girls who face poverty, limited education, and resource access due to gender inequality, worsened by climate change impacts like floods, drought and extreme weather. It promotes gender equality and empowerment through training, micro-finance, and advocacy to tackle climate change and support the SDGs.

www.hedf.pk.org



Ashfaque Ahmed: Lead Researcher

Disclaimer

Every effort has been made to verify the accuracy of the information contained in this report. All information was believed to be correct as of June 2025. Nevertheless, Huqooq-ul-Ebad Development Foundation cannot accept responsibility for the consequences of its use for other purposes or in other contexts.

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1. INTRODUCTION

Climate Change And Gender Realities

1.1 Climate Change: Global Challenges, Local Impacts

Climate change represents one of the most pressing global challenges of the 21st century, with profound local impacts that ripple across ecosystems, economies, and societies. Globally, the rise in greenhouse gas concentrations has led to an increase in the Earth's average surface temperature, a phenomenon well-documented by the Intergovernmental Panel on Climate Change (IPCC).

According to IPCC (2021), global temperatures have already risen by approximately 1.1°C since pre-industrial levels, driven largely by human activities such as fossil fuel combustion and deforestation. This warming triggers a cascade of effects, including melting glaciers and ice sheets, which, combined with thermal expansion of seawater, contribute to rising sea levels. NASA (2023) reports that global sea levels have increased by about 9.1 centimeters since 1993, threatening coastal communities worldwide.

The intensification of extreme weather events is another hallmark of climate change. Heatwaves, droughts, floods, and storms have become more frequent and severe, causing widespread damage and displacement. In the Atlas of Mortality and Economic Losses from Weather, Climate and Water Extremes (1970-2019), WMO states that the number of disasters linked to weather, climate or

water hazards has increased five times over that 50-year period. Ocean acidification, resulting from the absorption of excess atmospheric carbon dioxide is damaging marine ecosystems, with implications for fisheries and biodiversity (Doney et al., 2020). On land, shifting climate patterns disrupt habitats, driving biodiversity loss—a concern echoed by the Convention on Biological Diversity (CBD) (2022), which estimates that 1 million species face extinction risks due to climate change and related pressures.

The disastrous impacts of climate change are being felt across the world, disrupting livelihoods, displacing populations, and deepening existing inequalities. While these effects touch all segments of society, their consequences are not experienced equally. Women, in particular, bear a disproportionate burden of climate change impacts due to entrenched gender roles and socioeconomic inequalities. In rural areas of Pakistan, women are often responsible for fetching water and securing food, tasks made harder by water scarcity and declining agricultural yields. In sub-Saharan Africa, for example, women and girls spend 40 billion hours a year collecting water, equivalent to a year's worth of labour by the entire workforce in France (UN Women, 2014). During floods or heatwaves, women's care-giving responsibilities increase, yet their access to resources and decision-making power remains limited (Ahmed & Mustafa, 2021). Health risks, such as heatstroke and disease exposure,

disproportionately affect women due to their outdoor labor and inadequate healthcare access. Economically, women in agriculture-dependent regions face greater livelihood losses, as they are less likely to own land or access credit to recover from climate shocks (FAO, 2021). This gendered dimension underscores the need for targeted interventions to address women's unique challenges in climate-affected communities.

Collectively, these global challenges and local impacts highlight the urgent need for adaptive strategies that address both the universal drivers of climate change and their region-specific consequences.

1.2 Women Leadership in Climate Action

Women, often primary resource managers in households and communities, bring practical insights that improve adaptation and mitigation strategies, yet their potential remains underutilized. Empowering women in climate efforts leads to more resilient ecosystems, stronger economies, and sustainable outcomes, making their participation a critical component of resolving the climate crisis.

The presence of women in political decision-making translates into more ambitious climate goals and policies (Mavisakalyan and Tarverdi, 2019). For example, a study of European Parliament legislators over two legislative cycles found that while male and female legislators expressed similar concern for the environment, women were significantly more likely to support environmental legislation, even after controlling for political ideology and nationality (Ramstetter and Habersack, 2020). Women's environmental leadership can not only bring about improvements in representational justice and increased focus on gender-specific environmental impacts It can also lead to stronger and more effective environmental action (OECD, 2021). Evidence from the business sector shows that when women occupy at least 30% of board seats they start making a difference to climate governance within companies (The Sasawaka Peace Foundation and BloombergNEF, 2020).

A review of 1.2 million interventions in the UK House of Commons and 500,000 interventions in the US House of Representatives found that women of all political parties spent more time than their male counterparts addressing environment-related topics (OECD, 2021) (D'souza, 2018). A higher share of women in parliament has been linked to improvements on the SDG agenda (Mirziyoyeva and Salahodjaev, 2021) and in environmental quality (DiRienzo and Das, 2019). It has been estimated that countries with a critical mass of female legislators above 38% will experience increases in per capita forest cover

(Salahodjaev and Jarilkapova, 2020).

Women's involvement in resource management directly contributes to environmental sustainability. In Kenya, the Green Belt Movement, led by Wangari Maathai, has planted over 51 million trees since 1977, combating deforestation and soil erosion while sequestering carbon (Maathai, 2004). The United Nations Development Programme (UNDP) (2021) reports that women-led projects in sub-Saharan Africa increase community forest cover by 15% more than male-led efforts, due to women's focus on long-term ecological benefits. By integrating women into climate action, such practical expertise scales up efforts to restore ecosystems and reduce greenhouse gas emissions.

Economically, women's inclusion strengthens climate resilience and productivity. In Bangladesh, women trained in climate-smart agriculture by the FAO increased rice yields by 25% during floods, using techniques like floating gardens (FAO, 2021). This adaptation not only secured food supplies but also reduced economic losses in a flood-prone region. UN Women (2022) estimates that closing gender gaps in agricultural decision-making could boost global food production by 20-30%, enough to feed 150 million people annually, directly addressing climate-induced food insecurity. These examples illustrate how women's economic contributions enhance community capacity to withstand climate shocks.

Table 1 below, sourced from UN Women (2022), highlights women's impact when included in climate initiatives:

Table No. 1: Women Impact in Climate Initiatives

Region	Initiative	Outcome	Women's Contribution
South Asia	Solar Energy Adoption	40% reduction in emissions	Women trained as technicians
West Africa	Water conservation	30% less water waste	Women-led irrigation systems
Latin America	Reforestation Projects	12 million trees planted	Women organized cooperatives

Research on forestry conservation programmes in India showed that greater representation of women led to more equitable benefit sharing and improved conservation outcomes, with an 11% forest cover increase in the study areas (Agarwal, 2009). Similar evidence from Nepal and India shows that including women in forest and fishery management groups can result in better resource governance and conservation outcomes (Leisher et al., 2016). Evidence from 44 water projects across Asia and

Africa shows that when women engage in shaping water policies and institutions, communities use water services more and sustain them for longer (UNDP, 2006).

Women farmers, producers and cooperatives have increasingly adopted sustainable agricultural approaches, such as agroecology, organic and regenerative agriculture, based on synergies with natural ecosystems. This supports climate-resilient livelihoods and food security and nutrition rooted in ancestral knowledge, practices and techniques for sustaining the diversity and quality of farming systems, crops, seeds, water and soil, ecological pest and weed management, and food and nutrition provision for diversified and balanced diets (Altieri & Nicholls, 2004; FAO, n.d.; Gliessman, 2015). In many countries, rural women play important roles in the conservation of natural resources and biodiversity, growing a variety of species, including plants that enhance soil nutrients, adapt to local climatic conditions, and are resistant to pest and diseases. As seed managers, they have also preserved highly adaptive local seeds based on the ancestral knowledge of seed selection, processing and preservation that is passed down from mother to daughter, generation after generation (Resurrección et al., 2019).

The UN Joint Programme on Accelerating Progress towards the Economic Empowerment of Rural Women (JP RWEE), launched in 2014, represents a landmark global initiative aimed at addressing the structural barriers that limit rural women's access to resources, decision-making, and climate-resilient livelihoods (FAO, IFAD, UN Women, & WFP, 2022). Jointly implemented by four UN agencies the Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women), and the World Food Programme (WFP)—the programme seeks to promote gender equality, improve food and nutrition security, and strengthen resilience against climate change (IFAD, 2021). During its first phase (2014–2021), the JP RWEE operated in seven countries Ethiopia, Guatemala, Kyrgyzstan, Liberia, Nepal, Niger, and Rwanda focusing on climate-resilient agriculture and women's economic empowerment as mutually reinforcing goals (Buchy et al., 2021).

Findings from this phase highlight that community groups are crucial for enhancing collective power and social cohesion, particularly in rural settings where access to markets, finance, and information is limited (FAO et al., 2022). Women-led farmers' groups, cooperatives, associations, and Village Savings and Loans Associations (VSLAs) emerged as effective platforms for mobilizing women, facilitating knowledge exchange, and implementing adaptive agricultural practices (Buchy et al., 2021). These groups helped women plan and deliver climate-resilience

initiatives such as sustainable farming methods, water conservation, and improved seed management—while also engaging men to foster shared responsibility and community support (IFAD, 2021). Through these social networks, women disseminated vital information on climate risks, food security challenges, and adaptive strategies, strengthening community-wide resilience. Recognizing their impact, the JP RWEE emphasized formalizing and legally registering these organizations to ensure women's sustained participation, leadership, and influence in local governance and climate action processes (FAO et al., 2022).

1.3 What We Aim to Uncover: Research objectives and key questions

The primary objective of this research is to investigate in detail how climate change is impacting and affecting women in Pakistan, examining the social, economic, health, and psychological challenges they face as a result of environmental changes. This study seeks to comprehensively understand these challenges to develop actionable guidelines and suggestions for policymakers and stakeholders, enabling them to prioritize their efforts and streamline processes to more effectively address the specific needs of women in the context of climate change. Additionally, it aims to provide insights that allow non-governmental organizations (NGOs) to better shape their advocacy strategies to support women's resilience and well-being. The following specific objectives guide this research:

1. To identify and analyze the social, economic, health, psychological, and safety-related challenges faced by women in Pakistan due to climate change, focusing on how environmental shifts impact their societal roles, livelihoods, physical and mental well-being, and overall security.
2. To develop evidence-based guidelines and actionable recommendations for policymakers, stakeholders, and NGOs to design targeted interventions, improve climate response processes, and enhance advocacy efforts to address the specific needs and vulnerabilities of women in Pakistan.

These objectives collectively focus on generating a detailed understanding of the multifaceted impacts of climate change on Pakistani women, with the ultimate goal of equipping decision-makers and advocates with the knowledge and tools needed to mitigate these challenges effectively.

1.4 Research Questions

This research initiates with a qualitative phase, engaging participants through semi-structured interviews and focus group discussions (FGDs) to explore the impacts of climate change on women in Pakistan. We begin by asking two open-ended questions,

Q1: “What challenges women in Pakistan have observed or experienced due to climate change?”

Q2: “How has climate change affected women in your community?”

These broad inquiries are posed primarily to women, who form the core of our participant base, but also include men who have witnessed these effects, ensuring a comprehensive initial perspective. This approach captures a wide range of experiences—spanning social, economic, health, and psychological dimensions—without imposing predefined categories, allowing participants’ narratives to shape the inquiry (Creswell & Poth, 2018). Following this, we transition to detailed qualitative questions, probing deeper into specific areas like resource access, livelihood shifts, health concerns, and emotional toll, refining our understanding of the gendered impacts.

After analyzing these qualitative findings, we designed 10 targeted quantitative questions, administered to 800 participants across Pakistan, with a majority being female, to quantify the prevalence and severity of identified challenges.

1.5 Why It Matters: Significance of the Study

The significance and urgency of studying the impact of climate change on women in Pakistan stem from the country’s acute vulnerability to environmental shifts and the disproportionate burden these changes place on women, necessitating immediate attention to inform policy and advocacy. Globally, the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (2021) projects a temperature increase exceeding the global average of 1.1°C above pre-industrial levels, with South Asia, including Pakistan, facing intensified heatwaves, erratic monsoons, and rising sea levels. Pakistan ranks 8th on the Global Climate Risk Index (2021), reflecting its exposure to extreme weather, despite contributing less than 1% to global greenhouse gas emissions. Nationally, the 2022 floods—a climate-amplified disaster—affected 33 million people, killed over 1,700, and caused \$30 billion in damages, underscoring the escalating frequency and severity of such events. These global and national trends highlight the critical need to understand how climate

change uniquely affects women, who often bear the brunt of resource scarcity and disaster aftermaths.

Women in Pakistan, particularly in rural areas where 60% of the population resides, face heightened social, economic, health, and psychological challenges due to climate change. The Pakistan Meteorological Department (2022) recorded temperatures exceeding 50°C in recent heatwaves, accelerating glacial melt in the Hindu Kush-Himalayas, which feeds the Indus River system—vital for 90% of agricultural irrigation. This disrupts water availability and food security, tasks traditionally managed by women, amplifying their workloads and health risks. The World Health Organization (2023) notes increased vector-borne diseases like dengue post-floods, disproportionately impacting women as primary caregivers with limited healthcare access. Economically, the World Bank (2021) estimates climate change costs Pakistan \$38 billion annually, eroding livelihoods where women, often informal workers, lack recovery resources. Psychologically, studies like those in Malakand Division (2022) link environmental stressors to rising anxiety and depression among rural women.

This importance of this study is driven by the accelerating pace of these impacts—projected to worsen with a potential 18-20% GDP loss by 2050 if unaddressed—and the current policy gap in gender-specific climate responses. By detailing these challenges, the research aims to equip policymakers and NGOs with evidence-based guidelines, ensuring women’s needs are prioritized in Pakistan’s climate resilience efforts before irreversible losses mount.

2. HOW WE DID IT

Research Approach

2.1 Research Design: A Sequential Exploratory Mixed-Methods Approach

This study, *Gender and Climate Change: How Environmental Degradation Amplifies Women's Vulnerability*, employed a sequential exploratory mixed-methods research design. This approach was selected to leverage the complementary strengths of both qualitative and quantitative data, providing a comprehensive understanding of the multifaceted impacts of climate change on women across Pakistan (Creswell & Plano Clark, 2018). The design involved an initial qualitative phase (expert interviews, focus group discussions) to explore the nuances of lived experiences and identify key themes, followed by a quantitative phase (cross-sectional survey) to measure the prevalence and distribution of these themes across a larger population. This sequence allows the qualitative findings to inform the development and interpretation of the quantitative instruments and results, enriching the study's depth, credibility, and relevance.

The research spanned Pakistan's four provinces—Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Balochistan—with focused engagement in significantly climate-affected communities, notably Taunsa (DG Khan), Dadu and Swat. By integrating in-depth narratives, field visits with broad statistical trends, this methodology captures the intricate impacts of climate change on women's social, economic, health, and psychological well-being in a nation highly

vulnerable to climate risks (ranked 8th on the 2021 Global Climate Risk Index; Eckstein et al., 2021). The significance of this design lies in its capacity for data triangulation, blending rich contextual insights with measurable patterns to provide a robust evidence base for developing targeted, gender-responsive policy guidelines and advocacy strategies tailored to Pakistan's diverse climate challenges (Tashakkori & Teddlie, 2010).

2.2 Data Collection Methods

Data collection occurred in two distinct phases, aligning with the sequential exploratory design. Qualitative data was collected first, followed by quantitative survey administration.

2.2.1 Qualitative Data Collection: Interviews, Focus Group Discussions and Webinars transcripts

The qualitative phase aimed to explore the lived experiences and perspectives of individuals affected by climate change. The interviews and FGDs were conducted from September to October 2024.

- **Semi-Structured Key Informant Interviews:** In-depth, semi-structured interviews were conducted with experts (climate specialists, policymakers, gender advocates) and community members across 13 locations: Jhang, Chaniot, Jaranwala, Pasrur, Layyah, Vehari, Gujrat, and Taunsa in Punjab; Mardan and Swat in Khyber

Pakhtunkhwa (KP); Kalat in Balochistan; and Karachi and Dadu in Sindh. Interviews began broadly (e.g., “What challenges do women face due to climate change?”) before narrowing focus based on participant responses to explore specific areas like resource access, health impacts, workload, and safety risks (Patton, 2015). A total of 33 participants were interviewed among 18 were the key informant and 15 individuals were those having direct experience with climate change impacts. Among them, 20 interviewees were females.

- **Field visits:** Field visits to specific sites in KP (Swat and Mardan), Punjab (Jaranwala, Pasrur, Gujrat, Layyah and Taunsa), and Sindh (Karachi and Dadu) allowed for direct observation of environmental impacts (e.g., flood damage, drought conditions) and enriched contextual understanding. Due to security constraints and logistical challenges in Balochistan, the interview in Kalat was conducted securely online. Expert interviews provided critical insights into systemic issues, policy gaps, and institutional responses (Creswell & Plano Clark, 2018).
- **Focus Group Discussions (FGDs):** Two FGDs were conducted – one in Swat, KP (11 participants) and one in Chiniot, Punjab (07 participants) – involving community members, predominantly women. FGDs facilitated group interaction, allowing participants to share collective experiences, discuss social dynamics related to climate impacts, and validate emerging themes from the interviews (Patton, 2015).

2.2.2 Quantitative Data Collection: Cross-Sectional Survey

Following the analysis of qualitative data, a quantitative cross-sectional survey was designed and administered to assess the prevalence, distribution, and statistical relationships of the identified climate change impacts on women.

- **Survey Instrument:** A structured questionnaire (10 questions) was developed, incorporating themes and specific issues identified during the qualitative phase. The instrument primarily used closed-ended questions (multiple-choice) to quantify aspects such as economic losses, health symptoms, changes in daily routines, access to resources, psychological stress, and awareness of climate adaptation strategies.
- **Administration:** The survey was administered across selected districts within the four provinces: Sindh (Karachi, Dadu), Punjab (Sialkot, Pasrur, Gujrat, Chiniot, Jhang, Taunsa, Vehari), KP (Mardan, Swat), and Balochistan (Kalat). These locations were chosen to represent Pakistan’s diverse ecological zones, including flood-prone riverine areas, arid regions, and

mountainous terrains affected by flash floods (Pakistan Meteorological Department, 2022).

2.3 Study Participants and Sampling Strategy

Qualitative Sampling: Participants for the semi-structured interviews and for two FGDs were selected using purposive sampling. This involved intentionally selecting individuals who had direct experience with climate change impacts (e.g., lived through floods or droughts) or possessed relevant expertise (policymakers, NGO workers, climate scientists). Snowball sampling was occasionally used within communities to reach further participants recommended by initial interviewees. The focus was on capturing a diversity of experiences related to gender, age, socio-economic status, and geographic location within the chosen sites.

- **Quantitative Sampling:**

1. *Sampling Frame:* The target population for the survey comprised adults (predominantly women, but including men for comparative insights where relevant) residing in the selected climate-affected districts across the four provinces
2. *Sampling Design:* A multi-stage stratified sampling approach was employed. First, provinces were treated as primary strata. Within each province, districts known for significant climate vulnerability were purposively selected. Within these districts, locations (e.g., towns, villages) were chosen based on accessibility and representation of diverse socio-ecological conditions. Finally, respondents within these locations were approached. While aiming for proportional representation based on provincial population distribution where feasible, elements of quota sampling (ensuring sufficient numbers of women) and convenience sampling (recruiting accessible participants meeting the criteria) were utilized due to practical constraints of fieldwork in diverse and sometimes challenging environments.
3. *Sampling Size:* The total sample of 800 participants was distributed across Pakistan’s four provinces, guided by population data from the Pakistan Bureau of Statistics (disaggregated by sex, area, and province). This resulted in sample sizes of 432 for Punjab, 186 for Sindh, 134 for Khyber Pakhtunkhwa, and 48 for Balochistan.

Table No. 2: Geographical and Gender Ratio of Sampling

Provinces		Ratio		Male		Female		Total
Punjab	Rural	34.06%	272	136	17%	136	17.06%	
	Urban	19.99%	160	81	10.16%	79	9.83%	432
Sindh	Rural	11.39%	91	48	5.95%	44	5.44%	
	Urban	11.81%	94	50	6.20%	45	5.61%	186
KP	Rural	14.11%	113	57	7.10%	56	7.01%	
	Urban	2.68%	21	11	1.39%	10	1.29%	134
Balochistan	Rural	4.32%	35	18	2.31%	16	2.01%	
	Urban	1.64%	13	7	0.91%	6	0.73%	48
Total				408		392		800

2.4 Data Analysis Strategy

Data analysis followed the mixed-methods design, involving separate analysis of qualitative and quantitative data, followed by integration of findings during the interpretation phase.

2.4.1 Qualitative Data Analysis: Thematic Analysis using NVivo

Qualitative data from interview transcripts and FGD notes were analyzed using Thematic Analysis (Braun & Clarke, 2006), facilitated by NVivo (Version 12) qualitative data analysis software.

- **Coding Strategy:** The analysis involved an iterative process:
 1. *Translation of the original transcript into English.*
 2. *Familiarization: Reading and re-reading transcripts to gain immersion in the data.*
 3. *Initial Coding (Open Coding): Segmenting the data and assigning initial codes (Child nodes in NVivo) to capture salient concepts related to climate impacts, challenges, coping mechanisms, and gender dynamics (e.g., 'water scarcity', 'health issues', 'increased workload', 'loss of income', 'safety concerns').*
 4. *Theme Development (Parent Nodes in NVivo): Grouping related codes into potential themes and sub-themes that represented broader patterns of meaning relevant to the research questions (e.g., 'Economic Vulnerability' or 'Increased Migration'). Relationships*

between codes and themes were explored.

5. *Reviewing and Refining Themes: Checking themes against the coded data and the entire dataset to ensure they accurately represented participants' narratives and experiences. Thrice we conducted this process. Themes were refined, merged, or split as needed.*
6. *Defining and Naming Themes: Clearly defining the scope and content of each final theme and assigning concise, informative names.*

- **NVivo Visualizations:** To aid analysis and presentation, NVivo-generated visualizations were utilized. Word clouds provided quick visual summaries of frequently occurring terms. Concept maps helped visualize the relationships and connections between different codes and themes (e.g., linking displacement to psychological stress and loss of social networks). Thematic charts and diagrams were used to explore patterns and compare the prominence of themes across different participant groups or regions, enhancing the rigor and transparency of the qualitative findings (Bazeley & Jackson, 2013).

2.4.2 Quantitative Data Analysis using SPSS

Quantitative data from the 800 completed surveys were cleaned, coded, and analyzed using IBM SPSS Statistics (Version 25).

- **Descriptive Statistics:** Frequencies, percentages, means, and standard deviations were calculated to summarize the demographic characteristics of the sample and describe the prevalence and intensity of reported climate change impacts (e.g., percentage

of respondents experiencing income loss, average reported level of psychological stress). Results were tabulated and visualized using bar graphs, and histograms to illustrate key patterns and distributions, including regional variations across Punjab, Sindh, KP, and Balochistan.

- **Inferential Statistics:** Appropriate inferential statistical tests were employed to explore relationships between variables and differences between groups, considering the nature of the data generated primarily from multiple-choice questions.

1. *Chi-square tests (χ^2) were used extensively to examine associations between two categorical variables, directly leveraging the categorical data from MCQ responses (e.g., testing for significant associations between province and reported primary climate impact, or between educational level and awareness of adaptation measures).*

2.5 Data Integration: Triangulating Findings for Enhanced Credibility

The final and critical stage of this sequential exploratory mixed-methods study involved the systematic integration of findings derived from both the qualitative and quantitative phases. This process, fundamentally rooted in data triangulation, was essential for enhancing the validity, reliability, and overall comprehensiveness of the study's conclusions regarding the amplification of women's vulnerability due to climate change in Pakistan. As visually represented in Figure 1 (referencing the "Data Triangulation" image), this study employed a multi-faceted approach to triangulation, drawing connections across various data sources and methodologies.

Integration was primarily achieved during the interpretation and discussion phases. Qualitative narratives provided rich contextual depth and explanatory power to the statistical trends identified in the quantitative survey data. Conversely, quantitative findings contextualized qualitative accounts by indicating the prevalence and generalizability of experiences across a larger population. This synergistic approach fostered a more holistic understanding of the complex interplay between gender and climate change impacts.

Specifically, the data triangulation process encompassed the following key integrations:

1. **Methodological Triangulation:** This dimension involved the convergence of multiple data collection methods to investigate the gendered impacts of climate change

in Pakistan. A cross-sectional survey was conducted across nine districts, capturing quantitative data on how climate change affects women and gender relations. Complementing this, qualitative data were gathered from 13 locations through key informant interviews and focus group discussions (FGDs), offering deeper insights into lived experiences. Additionally, qualitative findings were enriched by analyzing the transcript of an expert webinar that focused on the intersection of climate change and gender. Implicit document reviews—including climate indices and meteorological reports—were also utilized to contextualize and validate the primary data sources, ensuring a robust and triangulated understanding of the issue.

2. **Data Source Triangulation:** This involved gathering data from diverse perspectives. Insights from "Key informants" (experts, gender advocates) through interviews were cross-referenced with information from relevant "Documents" (e.g., policy papers, existing research). The data was also taken from on-line webinar where experts discussed the climate issues and its impact on gender. We also reviewed some documents, policies and research reports to assess the gender aspect of climate change in Pakistan.

3. **Instrument Triangulation:** This focused on the strategic use of multiple data collection tools. The "Interview Guide/Protocol" from the qualitative phase directly informed the development of the structured "Survey" instrument. This ensured the quantitative tool was grounded in the lived realities and salient themes identified during initial qualitative exploration, enhancing its relevance and validity.

By systematically integrating these diverse data points, the study significantly enhanced the robustness and credibility of its findings, providing a comprehensive evidence base for developing targeted, gender-responsive policy guidelines and advocacy strategies tailored to Pakistan's diverse climate challenges.

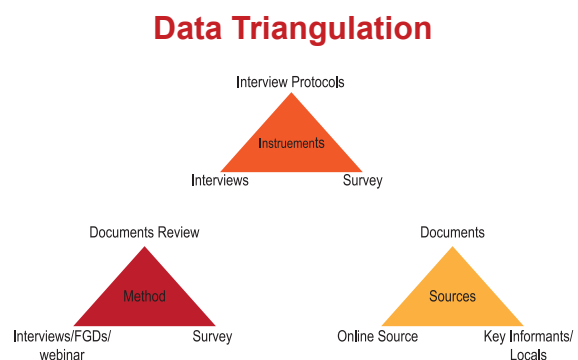


Figure 1: Components of Data Triangulation

3. DATA ANALYSIS

Qualitative and Quantitative

This study employed a mixed-methods approach, integrating qualitative and quantitative data to elucidate the multifaceted impacts of climate change on women within the Pakistani context. Qualitative data, derived from semi-structured interviews, focus group discussions, were subjected to thematic analysis using NVivo, a computer-assisted qualitative data analysis software (CAQDAS), to identify and interpret emergent patterns and narratives. Concurrently, quantitative data, sourced from a national survey, were analyzed using SPSS to statistically assess relationships and quantify the magnitude of observed effects. This chapter will proceed by first presenting the nuanced insights gleaned from the qualitative analysis, followed by the statistically significant findings arising from the quantitative component.



Figure No. 2: People displaced after a flood in District Dadu, Sindh

3.1 Qualitative Data Analysis using NVivo

- 1- Government Failure in Climate Response and Women's Vulnerability
- 2- Systemic Public Health Failures in Climate Response & Women Vulnerability
- 3- Gender Economic Vulnerability Amplified by Climate Change
- 4- Gender Based Violence and Systemic Vulnerability
- 5- Climate-Exacerbated Educational Barriers for Women and Girls
- 6- Environmental Degradation and Its Effects on Women
- 7- Social and Cultural Vulnerabilities
- 8- Increased Migration
- 9- Increased Workload and Responsibilities
- 10- Lack of Gendered Sensitive Planning and preparedness
- 11- Psychological Issues Challenges Due to Climate Disasters

The qualitative analysis identified eleven primary themes (Parent Nodes), each representing a key dimension of women's climate vulnerability in Pakistan. These themes were elaborated through sub-themes (Child Nodes), providing detailed insights. The thematic structure progresses from systemic factors to specific vulnerabilities and their outcomes, offering a holistic view of climate change's disproportionate impact on women. For clarity, these eleven themes are grouped into three sections: Specific Vulnerabilities, Systemic Factors, and Outcomes. This organization facilitates a synthesized understanding of the findings, bridging qualitative depth and quantitative rigor.

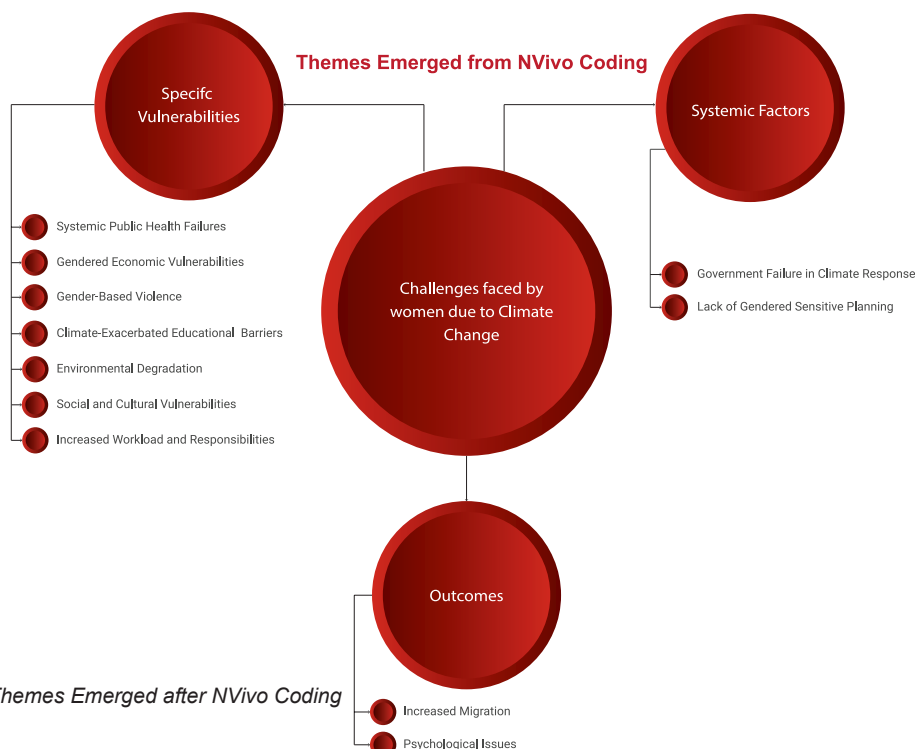
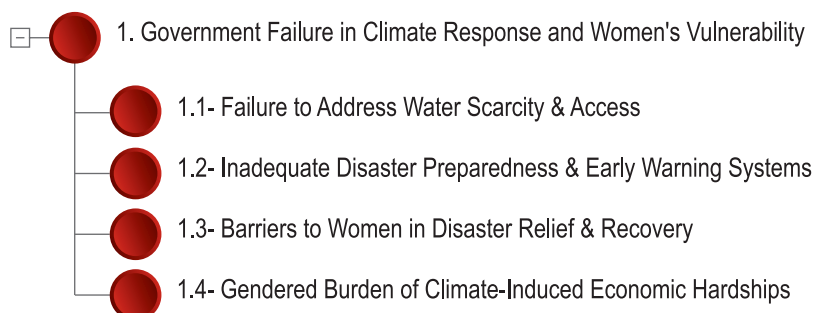


Figure No.3: Themes Emerged after NVivo Coding

Theme 1: Government Failure in Climate Response and Women's Vulnerability

The first theme (parent node) highlights the systemic shortcomings of government policies and actions in addressing climate change impacts, which disproportionately affect women in Pakistan. It has five child nodes which reveal how inadequate water management, poor disaster preparedness, barriers to relief access, economic burdens, and heightened gender-based risks exacerbate women's vulnerabilities, reflecting a lack of gender-sensitive climate strategies.



Child Node 1: Failure to Address Water Scarcity & Access:

According to this theme, women face physical, economic, and health burdens due to inadequate water infrastructure and the lack of effective interventions to address water scarcity. In rural areas, women are compelled to walk several miles daily to fetch water, a task that becomes even more arduous during droughts when groundwater levels drop and traditional water sources dry up (Files\FGDs\FGD - 1\Chaniot\, Reference 1: "In the villages surrounding Chaniot, women face immense hardships due to water scarcity during droughts. With dwindling water sources, they are often compelled to walk several miles each day to fetch water for their households."). This physical strain is compounded by the emotional toll of returning empty-handed when water sources are exhausted (Files\FGDs\FGD - 1\Chaniot, Reference 3: "Sometimes, we return empty-handed if the source dries up."). The lack of clean water not only affects household needs but also exacerbates health risks, as women struggle to maintain hygiene, increasing the likelihood of infections and other health complications (Files\FGDs\FGD - 1\Chaniot, Reference 6: "The lack of clean water also makes it harder for women to maintain proper hygiene, further increasing the risk of infections and other health complications.").

The data also highlights the cyclical nature of water scarcity, where the absence of clean water perpetuates physical strain, illness, and limited opportunities for personal or economic development (Files\FGDs\FGD - 1\Chaniot, Reference 2: "The lack of access to clean water



thus creates a vicious cycle of physical strain, illness, and reduced opportunities for personal or economic development.”). Women’s efforts to address water scarcity through community-driven solutions, such as digging makeshift wells or repairing hand pumps, are often temporary due to the lack of government support (Files\FGDs\FGD - 1, Chaniot\Reference 4: “I’ve reported stories where women formed groups to dig makeshift wells or repair old hand pumps. However, without government support, these solutions are temporary.”). This lack of institutional support leaves women further entrenches their marginalization.

The impact of water scarcity affects agricultural productivity and food security. Women, who often contribute to farming and household food production, face reduced yields during droughts, jeopardizing both household income and food security (Files\FGDs\FGD - 2\Swat\, Reference 1: “In many rural communities, water scarcity directly impacts agricultural productivity. Women, who often contribute to farming and household food production, face reduced yields, which in turn can jeopardize food security and household income.”). The reliance on expensive solutions like RO plants or bottled water further exacerbates economic strain on the family (Files\Interviews\Respondent 1 (A), Reference 1: “While 70% of the population struggles to afford these products, women—often primary caregivers and water collectors—bear the brunt of this crisis.”).

The gendered nature of water collection is a recurring theme, with fetching water being seen as a woman’s responsibility, regardless of the physical and safety risks involved (Files\Interviews\Vehari\Saima, Reference 2: “Fetching water and ensuring its availability for the household is always seen as a woman’s responsibility.”). This burden is further intensified by climate change, which has led to declining groundwater levels and increased water scarcity (Files\Interviews\Vehari\Saima, Reference 2: “As temperatures continue to rise, groundwater levels are decreasing, and in many regions, water scarcity has become a severe problem.”). Women in drought-affected regions face the additional challenge of traveling longer distances for unsafe water, exposing them to health hazards and violence (Files\Interviews\Chaniot\Respondent 1 (A), Reference 1: “In regions affected by droughts or floods, women also bear the physical and safety risks of traveling long distances for water.”).

The lack of safe and accessible water sources forces women to walk long distances, often under harsh conditions, to meet their households’ basic needs (Files\Reports\National\Expert Interview 1- (RS), Reference 1: “They have to walk very—you know—two to three kilometers just to get water. And imagine walking alone, um—not having the right shoes, not being safe if it’s

hot, if it’s too cold—to all these places just to get um water, and carrying all that load of water every day for sustaining, whether it’s your work or your home.”). This systemic neglect underscores the urgent need for gender-sensitive water management policies and infrastructure improvements to alleviate the disproportionate burden on women.

Child Node 2: Inadequate Disaster Preparedness & Early Warning Systems:

The data reveals that the absence of prior warnings or information about impending disasters, such as floods, leaves women unable to take precautionary measures, exacerbating their vulnerability (Files\Interviews\Kalat\Respondent 3 (Z), Reference 1: “The government does not provide prior warnings or information about impending floods, leaving us (women) unable to take precautionary measures.”). Disruptions to communication networks further compound the issue, as women often have limited mobility, lack awareness of safe areas, and face cultural restrictions that prevent them from seeking safety (Files\Interviews\Respondent 3 (Z), Reference 1: “Moreover, disruptions to telephone and mobile networks hinder communication among individuals. In such situations, women and other vulnerable groups suffer significantly, as they often have limited mobility, lack awareness of safe areas, and face cultural restrictions that prevent them from seeking safety.”). This lack of preparedness not only endangers lives but also deepens the marginalization of women in disaster contexts.

The data also points to the intersection of inadequate disaster preparedness and low levels of education among women, which further limits their ability to respond effectively to disasters. Many women are unaware of how to access aid, lack knowledge of the processes involved, and often do not possess the necessary identification documents, which are critical for receiving assistance (Files\Interviews\Kalat\Respondent 3\ (Z), Reference 3: “Women are unaware of how to access aid, they don’t know the process, and they don’t have identification documents.”). This lack of awareness and resources underscores the need for targeted education and outreach programs to empower women and enhance their capacity to respond to disasters.

Child Node 3: Barriers to Women in Disaster Relief & Recovery

The NVivo coding for the child node “Barriers to Women in Disaster Relief and Recovery” highlights the multifaceted challenges women face in accessing relief and recovery resources during disasters. These barriers are rooted in systemic neglect, gender inequality, and the lack of organized and inclusive disaster response mechanisms.

Women, particularly those in vulnerable situations, bear the brunt of these failures, which increase their physical, emotional, and economic hardships.

One of the most pressing issues is the lack of basic facilities in makeshift shelters or overcrowded relief camps. The absence of clean water, proper nutrition, and prenatal care in such settings endangers both mothers and children, leading to higher maternal and infant mortality rates (Files\FGDs\FGD - 1, \Chaniot\Reference 1: "In makeshift shelters or overcrowded relief camps, the absence of clean

specific needs of women and children.

The aid distribution is very disorganized with elements of alleged corruption. To navigate in such situation is often difficult. The data also reveals that women who are widowed, single, or have male family members abroad are particularly disadvantaged, as they often lack the social support needed to navigate chaotic and disorganized aid distribution systems (Files\Interviews\Kalat\Respondent 3 (Z), Reference 2: "Women who have men in their households don't face as many difficulties, but women who

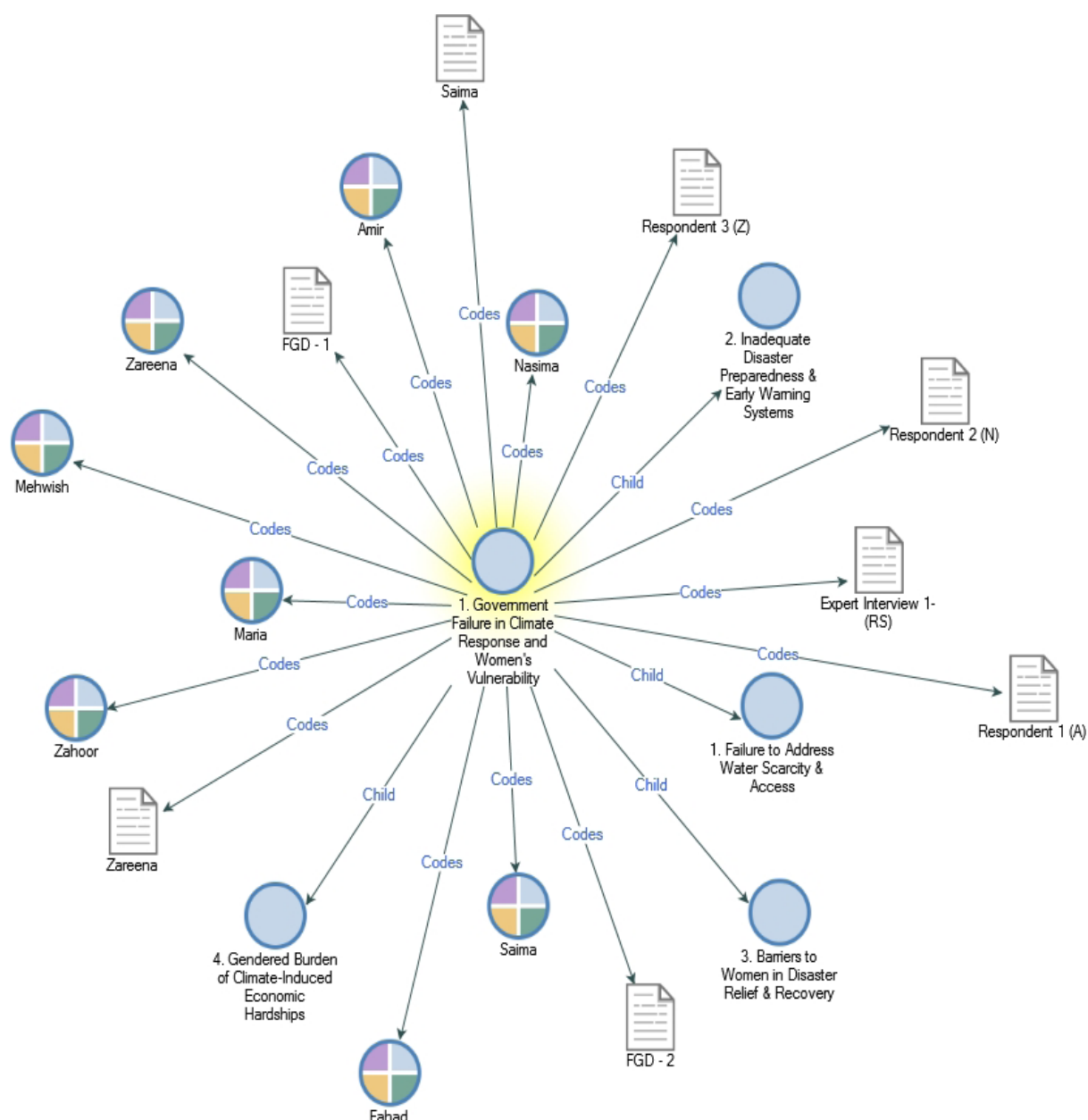


Figure 4: Govt. failure in climate response, its sub-themes and interviewers

water, proper nutrition, and prenatal care further endangers both mother and child, leading to higher maternal and infant mortality rates.”). This lack of essential amenities underscores the failure of relief efforts to address the

don't have male family members, who are either abroad or have passed away, face significant challenges in accessing aid.”). The process of accessing aid forces women to endure long waits in lines with young children, adding to

their physical and emotional strain (Files\Interviews\Kalat\Respondent 3 (Z), Reference 3: “Many of these women have small children, and the way aid is distributed in our country often leads to chaos. People struggle to get aid properly, and it is not distributed in an organized manner.”).

Displaced individuals are often forced to seek refuge in overcrowded spaces like government schools, which are ill-equipped to accommodate large numbers of people (Files\Interviews\Kalat\Respondent 3 (Z), Reference 4: “People try to move to safe places on their own. There are some government schools where they may take shelter, but since the number of people is so large, it becomes very difficult for people to stay in such places.”). These camps lack basic facilities such as housing, food, and sanitation (Files\Interviews\Jhang\Zareena, Reference 1: “Women or individuals who somehow managed to reach safer places, centers or campuses also faced a severe shortage of basic facilities there.”).

The neglect of women’s specific needs, such as menstrual hygiene products and accessibility aids like wheelchairs, further highlights the gender-insensitive nature of relief efforts. While resources like animal fodder are provided, the basic needs of women are often ignored, undermining their dignity and security (Files\Interviews\Jhang\Zareena, Reference 2: **“Among them were some disabled women who were deprived of basic needs during menstruation because they did not have sanitary pads available. Surprisingly, fodder for animals was provided by the government and other organisations, but the basic needs of women were ignored.”**). This systemic neglect is compounded by the mismanagement and unfair distribution of relief materials, which often fail to reach the most vulnerable populations (Files\Interviews\Zareena, Reference 4: “Unfair distribution of relief materials is a serious problem, where most of the aid does not reach the beneficiaries properly.”).

Overall, the data paints a picture of systemic failure in disaster relief and recovery efforts, which disproportionately burdens women and exacerbates their vulnerability.

Child Node 4: Gendered Burden of Climate-Induced Economic Hardships

To mitigate the economic hardships imposed by climate change, women require robust and enduring structural support. The “Gendered Burden of Climate-Induced Economic Hardships” highlights a critical deficiency in governmental assistance, specifically the absence of adequate financial aid, skill development initiatives, and sustainable agricultural resources. This lack of support perpetuates a cycle of economic vulnerability for women (Files\FGDs\Chanio\FGD - 1, Reference 1: “Without external support or alternative income sources, these

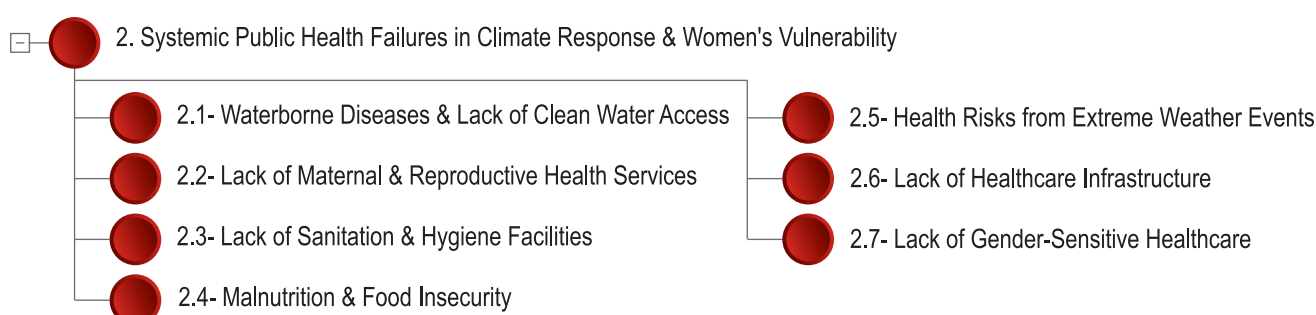
women remain trapped in a cycle of poverty and food.”). While some provincial governments have introduced skill development programs, their reach and scale remain insufficient to address the widespread need.

Despite these challenges, women demonstrate resilience by forming informal networks to share resources such as seeds, tools, and food supplies. These networks provide a crucial support system during crises, fostering solidarity and enabling women to exchange farming techniques, pool labor, and negotiate better terms with local buyers (Files\FGDs\Chanio\FGD - 1, Reference 2: “Some women form informal networks to share resources like seeds, tools, and food supplies, creating a support system that helps them survive during crises.”). However, these grassroots efforts are often fragile and unsustainable in the long term due to limited resources and financial constraints. Without external intervention from governments or NGOs, women struggle to expand these networks or access better opportunities, leaving them vulnerable to ongoing economic instability (Files\FGDs\Chanio\FGD - 1, Reference 3: “In the absence of government or NGO intervention, women struggle to expand these networks or access better opportunities, leaving them vulnerable to economic instability.”).

The data also emphasizes the need for structural support to address the gendered economic burdens of climate change. Real change requires comprehensive interventions, including financial aid, skill development programs, and access to sustainable agricultural resources, which are currently lacking (Files\FGDs\FGD - 1, Reference 4: “Real change requires structural support, including financial aid, skill development programs, and access to sustainable agricultural resources which are not much available.”). These interventions are essential to empower women economically, reduce their vulnerability to climate-induced hardships, and enable them to build resilient livelihoods.

Theme 2: Systemic Health Failures in Climate Response & Women's Vulnerability

The theme Systemic Public Health Failures in Climate Response & Women's Vulnerability (52 references) emerges as a dominant concern in the qualitative data from interviews and focus group discussions (FGDs) across Pakistan, reflecting widespread health challenges faced by women due to climate change. It highlights systemic inadequacies in healthcare infrastructure and services—such as limited access to clean water, inadequate maternal and reproductive health services, and insufficient mental health support—all exacerbated by environmental degradation like floods, heatwaves, and water scarcity. As a frequently cited issue, this theme underscores how these failures disproportionately burden women, often primary caregivers, intersecting with economic and social pressures to amplify their vulnerability. The analysis of its eight Child Nodes, derived from NVivo coding, provides a nuanced understanding of these challenges, supported by direct participant insights, making it a critical lens for examining the intersection of gender, public health, and climate impacts in Pakistan.



1: Waterborne Diseases & Lack of Clean Water Access

The child node “Waterborne Diseases & Lack of Clean Water Access” under the theme “Climate-Exacerbated Health and Well-being Challenges for Women and Girls” highlights how climate-related disasters, such as floods, contaminate water sources and increase the risk of waterborne diseases, disproportionately affecting women and children. Qualitative data reveals that floodwaters often carry pollutants like agricultural runoff, industrial chemicals, and human waste, contaminating drinking water and creating a breeding ground for diseases such as cholera, diarrhea, hepatitis, and typhoid (Files\FGDs\FGD - 1, Reference 2: “Floodwaters contaminate drinking water by carrying pollutants such as agricultural runoff, industrial chemicals, and human and animal waste.”). Women, as primary caregivers and water managers, face heightened exposure to these risks while sourcing water, preparing food, and caring for sick family members, increasing their vulnerability to infections (Files\FGDs\FGD - 1, Reference 2: “Women, as primary caregivers, face heightened exposure while sourcing water, preparing food, and tending to sick family members.”).

The lack of clean water also makes it harder for women to maintain proper hygiene, further increasing the risk of infections and other health complications (Files\FGDs\FGD - 1, Reference 5: “The lack of clean water also makes it harder for women to maintain proper hygiene, further increasing the risk of infections.”). In rural areas, where women are primarily responsible for fetching water, contaminated sources place them at greater risk of waterborne diseases, while also burdening them with the additional labor of finding safe water (Files\FGDs\FGD - 2, Reference 2: “Rural women, who are typically responsible for fetching and managing household water, are more exposed to these risks.”). Industrial pollution further exacerbates the problem, as improper sewage systems and excessive use of pesticides contaminate groundwater, leading to kidney diseases, stomach infections, and viral outbreaks (Files\Interviews\Respondent 1 (A), Reference 1: “Sewage water has mixed with groundwater... This has led to an increase in kidney and stomach diseases, as well as bacterial infections.”).

Women and children are disproportionately affected, with 65% of those impacted by recent climatic changes being women and young children (Files\Interviews\Respondent

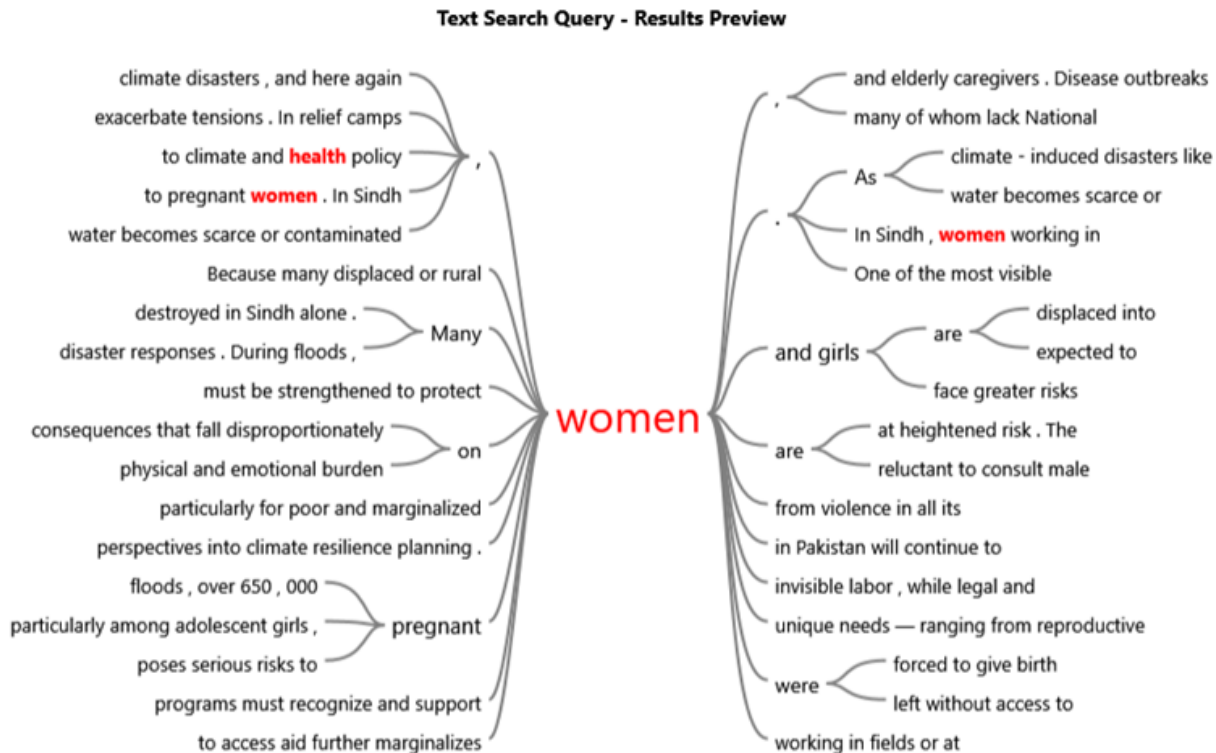


Figure 5: Tree Diagram Women and Health

Explanation of Text Search Tree Diagram on Women and Public Health in Climate Response

The tree diagram visually represents the thematic associations and keyword relationships found in a text corpus focused on women's vulnerability in the context of climate-related public health failures. The central node of the diagram is the word "women," highlighting its frequency and centrality in the discourse. Radiating outward are various branches that illustrate the contextual phrases and concepts most commonly linked with women in climate-health narratives.

Several dominant themes emerge from this visualization:

Disproportionate Impact: Phrases like "consequences that fall disproportionately on women" and "particularly for poor and marginalized" reflect a recurring acknowledgment that women bear the brunt of climate-induced health crises.

Maternal Health Concerns: Terms such as "pregnant women," "over 650,000," and "forced to give birth" underscore how maternal health is severely compromised during floods and heatwaves, due to both disrupted health infrastructure and lack of emergency services.

Displacement and Risk Exposure: The diagram highlights phrases like "women and girls are displaced," and "at heightened risk," indicating that during disasters, women are not only more likely to be uprooted from their homes but also exposed to greater risks of violence, disease, and poverty.

Inadequate Sanitation and Relief Access: Words such as "lack National [ID]," and "to access aid further marginalizes" point to administrative and logistical barriers that prevent women from accessing relief, especially in patriarchal and resource-constrained settings.

Gender Roles and Labor Burden: The phrase "invisible labor" reflects the overwhelming caregiving and household responsibilities women shoulder—exacerbated during climate crises—which often go unrecognized and unsupported in policy and aid programs.

Systemic Health Gaps: The diagram mentions "health policy," "must be strengthened," and "climate and health," suggesting that public health systems are not only underprepared for climate impacts but also fail to integrate gender-sensitive responses.



Figure 6: Women standing in flood water

1 (A), Reference 2: “It is estimated that 65% of the women and children affected by the recent climatic changes, rains, and floods include young children as well.”). The burden of illness not only affects their health but also limits their ability to work, care for their families, and maintain household hygiene (Files\Interviews\Respondent 2 (N), Reference 1: “Women, who are primarily responsible for maintaining household hygiene, bear the brunt of this.”). Addressing these challenges requires urgent action to ensure access to clean water, improve sanitation infrastructure, and provide health education to reduce the impact of waterborne diseases on women and girls.

2: Lack of Maternal & Reproductive Health Services

The “Lack of Maternal & Reproductive Health Services”

represents a critical failure within the systemic public health response to climate disasters, profoundly impacting women's vulnerability. The data consistently reveals a severe deficiency in access to essential maternal and reproductive healthcare during and after climate-induced events like floods. This lack of access results in heightened risks for pregnant women, newborns, and mothers, underscoring the systemic neglect of women's specific health needs in disaster management.

A significant issue is the inaccessibility of healthcare facilities and professionals during floods. Women struggle to relocate safely, and even when relocated, essential services like medical care, menstrual hygiene products, and maternal health services are overlooked (Files\FGDs\FGD - 1, Reference 1). Pregnant women face immense hardships as access to doctors and necessary healthcare

becomes virtually nonexistent, both during and after floods (Files\FGDs\FGD - 1, Reference 2; Files\Interviews\Respondent 3 (Z), Reference 1; Files\Interviews\Saima, Reference 1). Health facilities are often overwhelmed or destroyed, and doctors may flee due to safety concerns, leaving women without crucial medical support (Files\FGDs\FGD - 2, Reference 1; Files\Interviews\Respondent 2 (N), Reference 1).

The consequences of this lack of access are severe. Displacement, poor sanitation, and the absence of medical care significantly increase complications during pregnancy and childbirth (Files\FGDs\FGD - 1, Reference 3). Women are forced to deliver in unsafe conditions, leading to increased risks of infections, hemorrhages, and birth-related complications (Files\FGDs\FGD - 1, Reference 4; Files\Interviews\Respondent 2 (N), Reference 1; Files\Interviews\Respondent 3 (Z), Reference 2, Reference 3, Reference 4; Files\FGDs\FGD - 2, Reference 3; Files\Interviews\Zareena, Reference 2). The data also highlights the tragic reality of infant mortality and long-term health problems for newborns due to stress and malnutrition during pregnancy, exacerbated by displacement and food insecurity (Files\FGDs\FGD - 1, Reference 5; Files\FGDs\FGD - 2, Reference 2; Files\Reports\National\Expert Interview 4- (WB), Reference 1). Furthermore, the inability to perform necessary surgeries in local facilities forces women to undertake perilous journeys to distant cities, often without adequate resources, resulting in increased mortality rates (Files\Interviews\Kalat\Respondent 3 (Z), Reference 2).

The collective evidence underscores a systemic failure to prioritize maternal and reproductive health in climate

disaster responses. The lack of adequate facilities, medical professionals, and essential supplies creates a crisis that disproportionately affects women, leading to preventable deaths and long-term health complications. The data strongly suggests an urgent need for improved infrastructure, access to healthcare, and targeted interventions to address the specific vulnerabilities of pregnant women and mothers in climate-affected regions.

3: Lack of Sanitation & Hygiene Facilities

Another critical aspect of systemic public health failures in climate response, contributing significantly to women's vulnerability, is the lack of adequate sanitation and hygiene facilities. The data reveals that this deficiency has profound impacts on women's health, dignity, and safety, particularly during and after climate-related disasters.

Several sources within the data highlight this issue. For instance, from an FGD, we learn: "(Files\FGDs\FGD\Chaniot - 1, Reference 1: "The lack of proper sanitation facilities further worsens the crisis, making it difficult to maintain hygiene and forcing women to travel long distances in search of clean water, often under unsafe conditions that expose them to harassment or accidents.")." This quote directly links the lack of sanitation to increased risks of both health issues and safety concerns for women.

Furthermore, an interview with Respondent 2 (N) poignantly illustrates the impact on women's dignity: "(Files\Interviews\Bahawalnagar\Respondent 2 (N), Reference 1: "Without proper toilets or menstrual hygiene products, their dignity suffers immensely.")." This highlights a fundamental failure in addressing the specific needs of women, particularly concerning menstrual hygiene management, which is often



Figure 7: Word cloud showing frequency of words in Theme 2

overlooked in disaster relief efforts.

The experiences shared by Saima, a social activist, during the 2010 floods further underscore this systemic neglect. She recounted an incident where displaced women in a government shelter specifically requested sanitary pads, a basic necessity that had not been considered by aid providers. This experience led Saima to realize how “women’s specific needs are often ignored because they are never given the space to discuss them openly.” The coded text from her interview provides a detailed account: “(Files\Interviews\Vehari\Saima, Reference 1: “This happened in 2010, when some areas in our country were hit by floods. The flood-affected people were relocated to government buildings in nearby districts. One such school was turned into a shelter for the displaced, where I went as a social activist to provide assistance. Some male colleagues were also present with me to visit the

camps and assess the needs of the affected people. I was the only woman in the group, and we were carrying clothes, water, biscuits, and other essential supplies for the affected families. When I arrived, a woman called me aside and said: Daughter, please come aside and listen to me. Then she said: We have some young girls here who have reached puberty, and they need sanitary pads. Hearing this, I felt ashamed that this issue had not even crossed my mind. She further explained: So many men come here and ask about our problems, but how can we tell them about this need?” We have never been trained to talk about these things. We associate this matter with shame and modesty, rather than considering it a basic necessity. Listening to this made me deeply realize how women’s specific needs are often ignored because they are never given the space to discuss them openly.”).

Interviews with Zareena also shed light on this failure:

Unhygienic Conditions and the Issue of UTIs (urinary tract infections)

“.....then I spoke with some doctors in Sindh—in Sindh, which is very highly impacted by climate migration—and they said that apart from depression rates being very high in women, UTIs (urinary tract infections) were very high in women in this part of the country. And the reason for this is that women will wait till nightfall to find some privacy—and then, while they’re waiting, they’ll develop infections.

Reference 1 - 0.74% Coverage

<Files\Reports\National\Expert Interview 4- (WB)> - § 1 reference coded [0.74% Coverage]



Figure 8: A women with her children waiting for help

“(Files\Interviews\Zareena, Reference 1: “During the floods, women were not provided basic health facilities, due to which they suffered a lot. Among them were some disabled women who were deprived of basic needs during menstruation because they did not have sanitary pads available. Surprisingly, fodder for animals was provided by the government and other organisations, but the basic needs of women were ignored.”)” and “(Files\Interviews\Zareena, Reference 2: “nor were they provided with sanitation or washroom facilities.”).” These references starkly illustrate the prioritization of certain needs over the fundamental health and hygiene requirements of women, revealing a significant systemic bias.

Finally, an interview with an expert highlighted the health consequences of inadequate sanitation: “(Files\Reports\National\Expert Interview 4- (WB), Reference 1: “UTIs (urinary tract infections) were very high in women in this part of the country. And the reason for this is that women will wait till nightfall to find some privacy—and then, while they’re waiting, they’ll develop infections”).” This reference directly links the lack of safe and private sanitation facilities to specific health problems prevalent among women in the region.

4. Malnutrition & Food Insecurity

Another significant consequence of systemic public health failures in the context of climate change is the issue of malnutrition and food insecurity among women. This is particularly exacerbated during and after climate-related events.

An FGD participant highlighted the direct impact of malnutrition on women’s well-being: “(Files\FGDs\Chaniot\FGD - 1, Reference 1: “Malnutrition and weakness become common, affecting women ability to work and care for their children.”).” This indicates that food insecurity not only affects women’s health but also their capacity to fulfill their roles as caregivers and contributors to the household.

Furthermore, another FGD revealed the link between extreme heat, financial constraints, and inadequate nutrition: “(Files\FGDs\FGD - 2\Swat, Reference 1: “Similarly, in case of excessive heat, women who have workload at home, do not get proper food and water due to financial conditions of many, as a result their health suffers.”).” This suggests that climate stressors like heatwaves can worsen existing vulnerabilities related to poverty and access to sufficient food and water.

Finally, an expert interview directly links malnutrition in women to adverse pregnancy outcomes: “(Files\Reports\National\Expert Interview 4- (WB), Reference 1: “—malnourished women, of course, have trouble with pregnancy and trouble with delivery.”).” This underscores

the critical impact of food insecurity on maternal health, further highlighting a failure in providing adequate nutritional support within the public health system, especially for pregnant women who are already more vulnerable.

5: Health Risks from Extreme Weather Events

Extreme weather events, increasingly common due to climate change, pose significant health risks to women, often exacerbated by a lack of adequate public health preparedness and response.

One FGD participant noted the lasting impact of heatwaves, stating: “(Files\FGDs\FGD - 2\Swat, Reference 1: “due to the heat wave... (00:22:12) : ...still, after stillbirth, what happens is that whatever remains, their”).” This suggests that extreme heat can have severe reproductive health consequences for women.

Furthermore, an interview with Respondent 1 (A) highlighted the vulnerability of older women: “(Files\Interviews\Chaniot\Respondent 1 (A), Reference 1: “Women over the age of 40 are particularly affected by these climatic changes. They find it difficult to tolerate the heat. Most women, especially those around 50 years of age, suffer from diabetes.”).” This indicates that pre-existing health conditions can be aggravated by extreme heat, making older women particularly vulnerable.

Finally, an excerpt from a webinar discussion between experts highlighted the devastating impact of heatwaves and a lack of preparedness: “(Files\Reports\National\Expert Interview 4- (WB - Webinar), Reference 1: “there was a heat wave in Karachi in 2015. Just to recap: Extreme heat wave—it comes almost every year now—but this one was, I think, the country was grossly unprepared for it. Um, we lost somewhere between 1,200 to 1,500 people in Karachi. Most of the deaths were women”).” This stark statistic underscores a systemic failure in protecting women from the deadly consequences of extreme heat events.

6: Lack of Healthcare Infrastructure

A fundamental aspect of systemic public health failures is the lack of adequate healthcare infrastructure, which significantly increases women’s vulnerability, especially during and after climate-related disasters.

An FGD participant highlighted the immediate impact of disasters on healthcare access: “(Files\FGDs\FGD - 2, Reference 1: “After the disaster, when we... (00:21:57) Speaker 2: ...again, it’s the same thing... (00:22:00) : ...that there will be no access to hospitals.”).” This underscores how climate events can render already limited healthcare infrastructure inaccessible.

Respondent 1 (A) in an interview further elaborated on this,

stating: “(Files\Interviews\Respondent 1 (A), Reference 1: “When healthcare facilities are unavailable in rural areas, the mortality rate among women increases after they are affected by disasters.”).” They also pointed out the issues with the quality of available care: “(Files\Interviews\Respondent 1 (A), Reference 2: “These untrained doctors often prescribe antibiotics without properly diagnosing the patients. On one hand, there is a lack of healthcare facilities, and on the other, basic facilities like screening and laboratory testing are also unavailable. The doctors are untrained, and there are no laboratories, so there is no arrangement for testing.”).” This reveals a dual problem of both insufficient facilities and inadequate resources within the existing infrastructure.

Respondent 2 (N) highlighted the pre-existing inequalities that are exacerbated by the lack of healthcare infrastructure: “(Files\Interviews\Respondent 2 (N), Reference 1: “Women in these areas already face systemic inequalities—limited access to education, healthcare, and economic opportunities.”).” This suggests that the lack of infrastructure is part of a larger pattern of systemic neglect.

The challenges in accessing healthcare post-disaster are further emphasized by Respondent 3 (Z): “(Files\Interviews\Respondent 3 (Z), Reference 1: “After the flood, most women either complain of diarrhea or develop a fever. The problem here is that hospitals already have a shortage of medications, and after the flood, roads are blocked, and transportation becomes an issue. Due to the lack of medicines, the situation becomes even more complicated. These issues are particularly severe in the rural areas around Kalat. Even if people manage to reach Kalat city, our hospitals don’t have enough capacity for doctors to treat them properly.”).” This highlights issues with medication shortages, transportation barriers, and the limited capacity of existing facilities to handle increased demand after disasters.

Finally, Saima provided insights into the structural vulnerabilities of healthcare infrastructure itself: “(Files\Interviews\Saima, Reference 1: “Moreover, our hospitals are not built to withstand floods, so when disasters strike, medical services completely collapse.”).” “(Files\Interviews\Saima, Reference 2: “This issue arises repeatedly, highlighting that our infrastructure is not designed with natural disasters in mind.”).” and offered a recommendation for improvement: “(Files\Interviews\Saima, Reference 3: “It is crucial to collect grassroots-level data so that hospitals and primary healthcare centers can be built to withstand floods and other disasters, ensuring better medical services for affected communities.”).” These references point to a systemic failure in designing and building resilient healthcare infrastructure that can withstand climate-related events.

7: Lack of Gender-Sensitive Healthcare

A significant systemic public health failure in climate response is the lack of gender-sensitive healthcare, meaning that the specific needs and vulnerabilities of women are often overlooked in healthcare provision, particularly during and after disasters.

An interview with Saima provides multiple insights into this issue. She first highlighted the general lack of consideration for women’s unique needs during displacement: “(Files\Interviews\Saima, Reference 1: “Similarly, women have specific needs, but when they are forced to move to a safer location, it becomes difficult to fulfill these needs. These issues are far more serious for women than for men.”).”

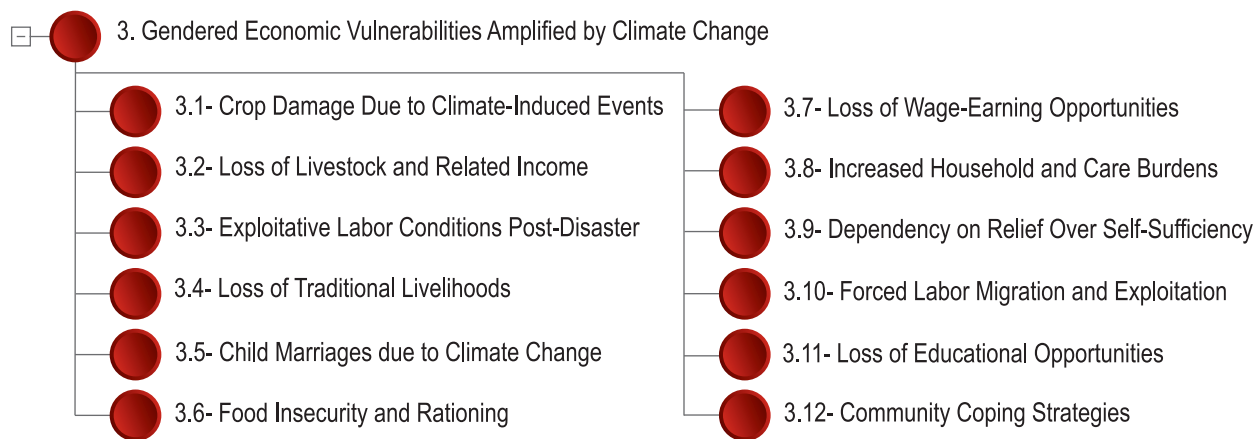
Another interviewee from district Dadu, Sindh, Musarat, who is a social worker, further elaborated on this by pointing out the common focus on basic supplies while neglecting crucial gender-specific needs: “(Files\Interviews\Musarat, Reference 2: “Most organizations only focus on distributing food, clothes, and basic supplies, but they do not consider discussing or addressing women’s specific needs. Real issues like hygiene, women’s unique necessities, and their active participation in relief efforts are completely ignored. Instead, most relief work is done for publicity and media attention rather than genuinely solving these problems.”).”

A critical point she raised is the lack of specific medicines for women in healthcare facilities post-disaster: “(Files\Interviews\Musarat, Reference 4: “After floods, hospitals provide medicines for infectious diseases, and there are sufficient stocks for such illnesses. However, there are no medicines available specifically for women.”).” This clearly demonstrates a failure to consider and address the distinct healthcare needs of women beyond general illness.

Finally, a social worker Rabia highlighted the lack of data as a key reason for the absence of gender-sensitive healthcare planning, specifically mentioning the needs of pregnant women: “(Files\Interviews\Saima, Reference 5: “When we prepare first-aid medicine boxes for flood-affected areas, they do not contain any medicines that pregnant women may need. The main reason for this is the lack of data. We do not know who lives in these areas and what their specific needs are, making it difficult to provide the right kind of aid.”).” This underscores a systemic failure in data collection and analysis that prevents the provision of appropriate and gender-sensitive healthcare.

Theme 3: Gendered Economic Vulnerabilities Amplified by Climate Change

The theme “Gendered Economic Vulnerabilities Amplified by Climate Change” explores the disproportionate economic hardships faced by women in Pakistan due to climate-induced disasters such as floods, droughts, and extreme weather events. These environmental challenges compound existing gender inequalities by disrupting traditional livelihoods like agriculture and livestock rearing, which many women rely on for income and family sustenance. Crop failures and livestock losses, coupled with the loss of wage-earning opportunities, push women into deeper poverty, forcing them to resort to desperate measures such as rationing food, engaging in exploitative labor, or marrying off young daughters to alleviate financial burdens—a phenomenon termed “monsoon brides.” Additionally, the destruction of resources and infrastructure increases household and care responsibilities for women, limits access to education for girls, and drives dependency on inadequate relief systems rather than fostering self-sufficiency. Through personal accounts and expert insights, the document highlights how climate change intensifies economic insecurity, entrapping women in cycles of exploitation, poverty, and diminished agency, underscoring the unequal impact of the climate crisis on vulnerable populations.



Child Node 3.1: Crop Damage Due to Climate-Induced Events

The NVivo coding for the child node “Crop Damage Due to Climate-Induced Events” reveals how climate change intensifies the economic struggles of women, especially those dependent on agriculture. According to a 2024 study, women in Punjab actively participate in farm activities but receive a disproportionately low income share (Ahmad et al., 2024). The International Water Management Institute (IWMI) notes that approximately 68% of Pakistan’s agricultural workforce consists of women, yet they face significant barriers (IWMI, 2024). A 2018 report by UN Women highlights that 67% of rural Pakistani women are engaged in agricultural work, with 60% of their labor unpaid (UN Women, 2018).

Women are actively engaged in agricultural activities, including crop cultivation and livestock care, which are critical to household food security and income. However, crop failures caused by floods, droughts, or other climate-related events force women to sell remaining produce at low

prices or borrow money at high interest rates, pushing them deeper into debt (Files\FGDs\Swat\FGD - 1, Reference 1: “When crops fail, women sell whatever little produce remains at low prices or borrow money from landlords at high interest rates, pushing them further into debt.”). With

In regions like Swat, where women are involved in agriculture and livestock care, crop destruction or livestock losses due to climate change directly impact their livelihoods (Files\FGDs\Swat\FGD - 2, Reference 1: “Due to climate change, if their crops are destroyed... if their crops are not good, then obviously there’s a loss. If their livestock dies, they suffer losses.”). Extreme weather events, such as floods or droughts, further destabilize agricultural productivity, leaving women with limited resources to cope (Files\Interviews\Respondent 2 (N), Reference 1: “When there’s too much water during floods or not enough during droughts, crops fail.”).

Crops like wheat, maize, and rice are particularly vulnerable to heat stress, with yields drastically declining when temperatures rise above certain thresholds. The heatwave

Women Losing their Livelihood due to Climate Change:

In villages, women often play a central role in traditional agricultural practices, including beekeeping, which provides a small but crucial source of income. Climate change forces farmers to adapt to unpredictable conditions—such as crop failures or pest surges—by increasing pesticide use. This response, while aimed at protecting yields, has devastating side effects. The pesticides decimate honey bee populations, a critical pollinator that rural women depend on for honey production. For many women, beekeeping is not just a job; it is a lifeline that supports their families, often funding essentials like food or their daughters' education. When bees disappear, so does the honey, and with it, a vital income stream that women in villages rely on to maintain

economic stability.

Loss of Beekeeping Livelihood:

“Earlier, these fruits used to be available in the summer, but people didn't spray pesticides. So there used to be honey bees in the houses, and women were mostly involved in the honey bee business. But with the arrival of potatoes and onions, and the frequent spraying of pesticides... all the honey bees are gone. So a livelihood source for women has also been lost” (FGD - 2, Reference 1).

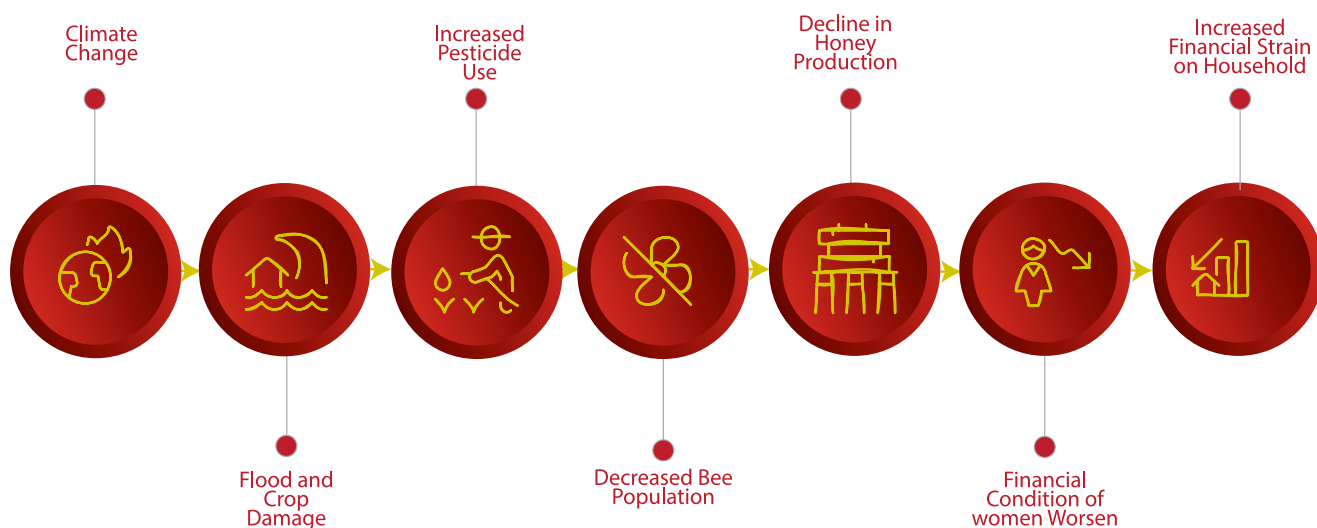


Figure9: Climate Change Impact on Women Livelihood

of 2015, for instance, caused significant damage to wheat and cotton crops, leading to economic losses. This directly impacts women farmers, who constitute a significant portion of the agricultural workforce in Pakistan, and rely on these crops for sustenance and income.

These challenges highlight how climate-induced crop damage disproportionately affects women, deepening their economic hardships and limiting their ability to recover.

3.2: Loss of Livestock and Related Income

Livestock is not only a source of income but also a critical asset for meeting significant family expenses, such as weddings and education. However, our research identified that climate-related events like floods, which bring venomous snakes, scorpions, and contaminated fodder, often result in the loss of livestock, leaving families, particularly women, in dire financial straits.

In many rural areas, families raise buffaloes or cows with the intention of selling them after a few years to cover expenses like weddings or dowries. However, floods frequently destroy these assets before they mature, leaving families unable to afford such important events (Files\Interviews\Respondent 1 (A), Reference 1: "Floods often come within three to four years and wash away everything, giving a lot of grief to the family, particularly women. These families are left with nothing and cannot afford their

low prices, causing significant financial losses for women. Additionally, the shortage of appropriate animal fodder further exacerbates their struggles, as women are primarily responsible for fodder collection (Files\Interviews\Saima, Reference 1: "Since fodder collection is mostly handled by women, they suffer more from this shortage.").

The emotional and financial toll of losing livestock is profound, as illustrated by the tragic story of a family that lost 15 to 16 buffaloes in a flood. The loss not only destroyed their financial stability but also led to the death of the household head due to the stress of being unable to meet his daughter's wedding expenses (Files\Interviews\Jhang\Zareena, Reference 1: "The man was relying on these buffaloes to meet the expenses of his daughter's marriage... He suffered a heart attack due to severe stress, and he lost his life."). This underscores the interconnectedness of economic, social, and emotional vulnerabilities faced by women and their families due to climate-induced livestock losses.

3.3: Exploitative Labor Conditions Post-Disaster"

The NVivo coding for the child node "Exploitative Labor Conditions Post-Disaster" sheds light on the harsh realities women face in the aftermath of disasters, particularly in terms of labor exploitation and economic vulnerability. Post-disaster, many women are forced into manual labor, such as brick-making, cleaning debris, or fieldwork, under grueling conditions. These jobs are not only physically demanding but also offer low wages, no job security, and exposure to extreme weather, leading to long-term health issues and exhaustion (Files\FGDs\Chaniot\FGD - 1, Reference 1: "After floods, many women engage in manual labor... These jobs pay poorly, offer no job security, and expose them to extreme weather, leading to physical strain, exhaustion, and long-term health issues."). With limited alternative employment opportunities, women have no choice but to accept these exploitative conditions to feed their families, further trapping them in cycles of poverty (Files\FGDs\Chaniot\FGD - 1, Reference 2: "With limited alternative employment opportunities, they have no choice but to endure exploitative wages and unsafe working conditions just to feed their families.").

The gendered nature of labor exploitation is starkly evident, as women are paid significantly less than men for the same work. In many cases, women are organized into labor groups overseen by male contractors who exploit them further by deducting a portion of their already meager wages (Files\Interviews\Zareena, Reference 1: "If a woman goes for labour, she is paid half as much as a man's salary... The contractor collects women labourers... but their wages are already lower than men's, and Rs. 100 to Rs. 200 is deducted from that too."). This double exploitation—low wages and forced

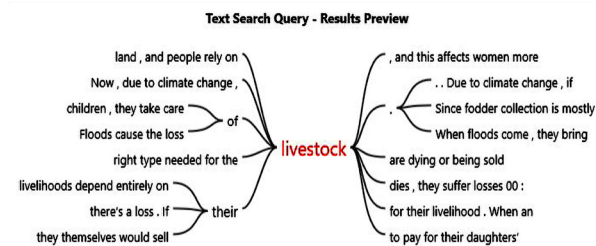


Figure 10: Tree Diagram -Livestock Losses.png

daughter's wedding."). The loss of livestock is compounded by the lack of veterinary care and medications in rural areas, making it nearly impossible to save animals that fall ill during disasters (Files\Interviews\Respondent 3 (Z), Reference 1: "We don't have any medications for animals, nor do we have veterinary hospitals in the villages. During floods and heavy rains, these difficulties are multiplied many times.").

Women, who are often responsible for managing livestock and selling milk, eggs, or animals to support their households, are disproportionately affected by these losses. They use income from livestock to pay for their children's education, particularly for daughters, as girls' education is often not prioritized (Files\Interviews\Dadu\Rukhsana, Reference 4: "Women would often convince their husbands to educate their sons, while they themselves would sell their livestock to pay for their daughters' school fees."). However, climate change has led to livestock dying or being sold at

deductions—leaves women with minimal earnings, making it nearly impossible to recover economically or improve their living conditions.

The burden of exploitative labor is compounded by women's household responsibilities, making post-disaster recovery even more challenging. These conditions highlight the systemic gender inequalities that persist in labor markets, particularly in disaster-affected areas, and underscore the urgent need for policies that ensure fair wages, safe working conditions, and equitable opportunities for women.

3.4: Loss of Traditional Livelihoods

The NVivo coding for the child node “Loss of Traditional Livelihoods” highlights how climate change, agricultural shifts, and environmental degradation have eroded women's traditional sources of income, further aggravating their economic vulnerabilities. Women, who were once actively involved in activities like beekeeping, cotton picking, and home-based vegetable cultivation, are now losing these livelihoods due to factors such as pesticide use, declining crop yields, and repeated floods.

In the past, women in certain regions were engaged in beekeeping, a sustainable and profitable activity. However, the widespread use of pesticides in modern farming practices has decimated honeybee populations, eliminating this income source for women (Files\FGDs\Swat\FGD - 2, Reference 1: “With the arrival of potatoes and onions, and the frequent spraying of pesticides... all the honey bees are gone. So a livelihood source for women has also been lost.”). This shift not only impacts women's economic independence but also disrupts local ecosystems.

Similarly, women who relied on cotton picking for income are facing challenges due to the decline in cotton production. While the reasons for this decline are unclear, the shift to crops like maize, which offer unfair prices, has further marginalized women's economic contributions (Files\Interviews\Sanghar\Mariyam, Reference 1: “Most of the cotton picking was done by women, but in the past few years, we have seen a significant decline in cotton production... These economic issues directly impact women, because a large portion of our economy depends on their labor.”). Additionally, repeated floods have discouraged women from growing vegetables at home, as the effort often results in loss and disappointment (Files\Interviews\Dadu\Shumaila, Reference 2: “Previously, women used to grow vegetables at home, but now, due to repeated floods, they have stopped this practice.”).

3.5: Child Marriages Driven by Economic Insecurity Due to Climate Change

The NVivo coding for the child node “Child Marriages

Driven by Economic Insecurity Due to Climate Change” reveals a distressing link between climate-induced economic hardships and the rise in child marriages in Pakistan. Climate change, particularly through intensified floods and prolonged monsoons, has devastated agricultural livelihoods, displacing millions and pushing families into extreme poverty. In desperate attempts to cope with financial instability, families are increasingly resorting to marrying off their young daughters in exchange for money, a phenomenon now referred to as “monsoon brides” (Files\Reports\National\Expert Interview 3- (NR), Reference 1: “Families are marrying off their daughters in exchange for money as a desperate measure to cope with the impending floods in the country.”). This practice has surged in flood-affected regions like Dadu district, where 45 underage girls were married off following the 2022 floods, highlighting the devastating intersection of climate change and gender inequality.

The economic burden of climate disasters, such as the need to evacuate quickly or recover from crop losses, often falls disproportionately on women and girls. In some cases, families take loans to manage immediate needs, and the repayment of these loans sometimes involves marrying off young daughters to older men (Files\Interviews\

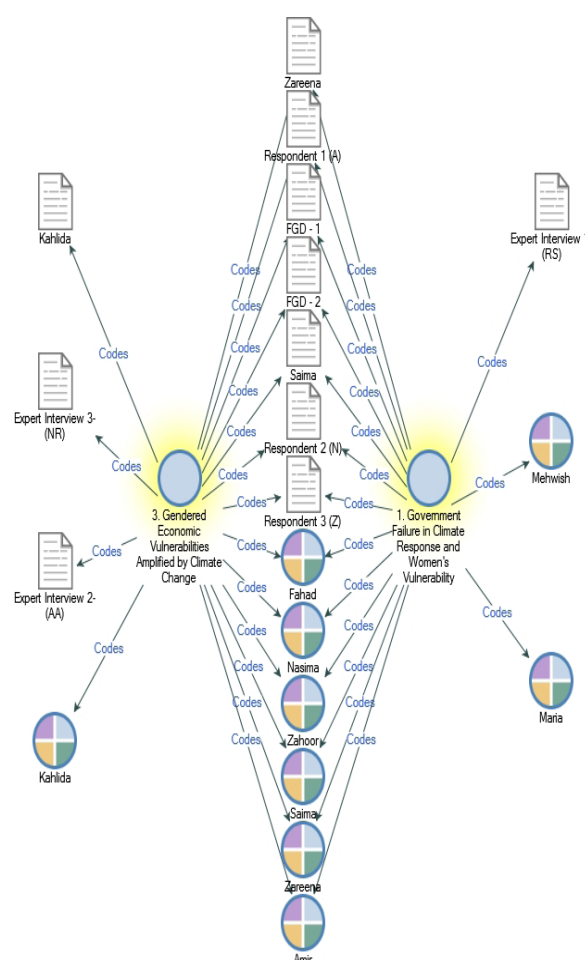


Figure 11: Relationship between two Parent Nodes

Respondent 1 (A), Reference 1: “This increases the burden on the family, particularly on women, who sometimes have to pay this burden by marrying someone who is a lot older than her.”). These marriages, often for sums as low as 200,000 Pakistani rupees (\$720), are seen as a way to alleviate financial strain, but they come at a high cost to the girls’ futures. Married off at a young age, these girls are deprived of education, forced into early pregnancies, and trapped in cycles of poverty and food insecurity (Files\Reports\National\Expert Interview 3- (NR), Reference 1: “Young girls who should actually be attending school are being deprived of their basic right to education.”).

While child marriages have long been a cultural issue in Pakistan, climate change has increased the problem. The legal age for marriage, which varies between 16 and 18, is rarely enforced, and extreme weather events have further increased the vulnerability of young girls (Files\Reports\National\Expert Interview 3- (NR), Reference 1: “Extreme weather events are putting more girls at risk.”).

3.6: Food Insecurity and Rationing

The child node highlights the severe food insecurity faced by women in climate-affected regions, where poverty and limited resources force them into difficult choices. Without external support or alternative income sources, women remain trapped in cycles of poverty and food scarcity, struggling to meet their families’ basic needs (Files\FGDs\FGD - 1, Reference 1: “Without external support or alternative income sources, these women remain trapped in a cycle of poverty and food scarcity.”). In many cases, women resort to rationing food, prioritizing their husbands and children while going hungry themselves (Files\Interviews\Respondent 2 (N), Reference 1: “Many resort to rationing whatever food is left, ensuring their husbands and children eat first while they go hungry.”). This self-sacrifice emphasizes the gendered burden of food insecurity, as women often bear the brunt of scarcity to protect their families.

To cope with these challenges, some women form informal support networks within their communities, sharing resources like seeds, tools, or childcare responsibilities. These networks provide a lifeline, helping to ensure that no one is left entirely without support (Files\Interviews\Respondent 2 (N), Reference 1: “Some women form informal support networks within their villages. They share resources like seeds, tools, or even childcare duties so no one falls completely through the cracks.”). However, these efforts are often insufficient to address the broader issue of food insecurity.

T3.7: Loss of Wage-Earning Opportunities

Another issue identified during our analysis is the ‘Loss

of Wage-Earning Opportunities’. It highlights how climate-induced disasters, such as floods, locust attacks, and heavy rainfall, unevenly impact women’s ability to earn wages and support their families. These events destroy livelihoods, worsen financial instability, and place additional burdens on women, who are often responsible for managing households and supplementing family income.

For instance, floods have destroyed businesses like hotels in Swat, which provided employment to many people. When such establishments are washed away, families lose their primary source of income, and women, who are already responsible for managing households, face increased burdens (Files\FGDs\Swat\FGD - 2, Reference 1: “A flood came and washed away the hotel... Those people lost their jobs, and women at home would have to take more burden as she is responsible to manage home.”). Similarly, women involved in agriculture suffer significant financial losses when crops are destroyed by floods, locust attacks, or other climate-related disasters. These events not only devastate livelihoods but also deepen the economic hardships faced by women who rely on farming for income (Files\FGDs\FGD - 2, Reference 2: “The entire crop is destroyed, and this also leads to financial losses. Women who are mostly taking care of crops have to suffer.”).

Daily wage-earning women, such as those selling goods on carts or working in informal sectors, are also severely affected. Heavy rainfall or other extreme weather events disrupt their ability to work, leading to immediate income losses and further financial strain (Files\FGDs\FGD - 2, Reference 3: “When there’s heavy rainfall, daily wage-earning women... suffer losses during those days.”). For women who are the sole breadwinners or whose husbands have limited earning capacity, these disruptions can be devastating, pushing families deeper into poverty.

3.8: Increased Household and Care Burdens

Another child node supporting this theme is “Increase in Household and Care Burden” highlights. When climate-related events such as floods, droughts, or crop failures disrupt livelihoods, the financial strain often falls on women, who are primarily responsible for managing households and caring for family members. This increased burden is both direct and indirect, as women must navigate the challenges of reduced income while ensuring the well-being of their families.

For example, when the primary breadwinner in a family loses their income due to climate-induced disasters, the responsibility of supporting the household—financially, emotionally, and physically—shifts to women. This includes managing the health, education, and daily needs of children and other dependents, often without adequate resources (Files\FGDs\Swat\FGD - 2, Reference 1: “The person



Figure 12: Women waiting outside a relief office

who was financially supporting them... can't support them anymore. It directly becomes a burden on women, right?). This added pressure is compounded by the fact that women are already culturally assigned the role of caregivers, making them disproportionately affected by the economic fallout of climate change.

Climate change also indirectly increases women's household burdens by deteriorating economic conditions, forcing them to take on additional responsibilities while managing limited resources (Files\Interviews\Jhang\Kahlida, Reference 1: "Climate change is also one of the reasons for the deterioration of economic conditions of women... as it increases the burden of house, as they are responsible for it.").

3.9: Dependency on Relief Over Self-Sufficiency

Another critical issue highlighted in the data is the growing dependency on relief aid over self-sufficiency, particularly among women in climate-affected regions. Without access to skills training or financial support, women remain vulnerable to economic instability and exploitation, unable to rebuild their livelihoods independently (Files\FGDs\FGD - 1, Reference 1: "Without access to skills training or financial support, these women remain vulnerable to economic instability and exploitation."). This reliance on external aid undermines their ability to achieve long-term resilience and self-reliance.

Disaster relief, while necessary in emergencies, often fails to empower women. It creates a cycle of dependency

(Files\Interviews\Layyah\Khalida, Reference 2: "Women who once had financial independence are now forced to wait for disaster relief, hoping that they will receive some financial assistance when a flood occurs."). This shift from self-sufficiency to dependency not only diminishes women's agency but also exacerbates their vulnerability, leaving them at the mercy of unpredictable relief systems.

Furthermore, this dependency has become a significant social issue, as it perpetuates cycles of poverty and disempowerment. Rather than equipping women with the tools and resources to rebuild their lives, reliance on relief aid traps them in a state of vulnerability, making it difficult to break free from economic hardship (Files\Interviews\Saima, Reference 3: "Thus, instead of empowering women, we are pushing them into dependency and vulnerability, which has become another major social issue."). Addressing this challenge requires a shift from short-term relief to long-term empowerment strategies, such as skills training, access to credit, and sustainable livelihood programs, to help women regain their independence and resilience.

Theme 4: Gender Based Violence and Systemic Vulnerabilities (due to Climate Change)

The fourth theme of our qualitative research explores Gender-Based Violence (GBV) and Systemic Vulnerabilities, linking environmental crises to violence against women and girls. In Pakistan, 28% of women aged 15-49 have experienced physical violence, 6% sexual violence, and 34% of ever-married women have faced spousal physical, sexual, or emotional violence (Pakistan Demographic and Health Survey 2017-18). Climate-driven disasters, such as floods and droughts, displace communities, escalate economic pressures, and create unsafe conditions that unfairly impact women. From domestic violence driven by financial strain to sexual exploitation during displacement, women face heightened risks. Cultural norms silence survivors, while gender-insensitive training among responders intensifies vulnerability. This theme highlights systemic failures in protecting women, which will be examined through detailed child nodes.



4.1: Domestic Violence Triggered by Economic Stress

According to our NVivo analysis, one of the important issues arising from climate-induced economic stress is the alarming rise in domestic violence against women. Climate change, through its devastating impact on livelihoods, has pushed many families into poverty, creating financial instability that often escalates into household conflicts. When men, who are traditionally seen as the primary earners, lose their livelihoods due to floods, droughts, or other disasters, their frustration and anger frequently manifest as violence against their wives (Files\Interviews\Respondent 3 (Z), Reference 1: "We often hear of incidents where men take out their frustrations on their wives due to these challenges."). This pattern is particularly evident in communities where livestock deaths or crop failures exacerbate economic hardships, leaving families struggling to meet basic needs (Files\FGDs\FGD - 2, Reference 1: "If their livestock dies, they suffer losses. It impacts women, because they have to face the frustrations of the males of their families.").

The economic distress caused by climate change has led to a significant increase in domestic violence cases, as financial instability fuels tension and conflict within households. When families cannot afford essentials like food, shelter, or healthcare, the resulting stress often leads to violent outbursts, with women and children bearing the brunt of this aggression (Files\Interviews\Kahlida, Reference 1: "Domestic violence cases have increased significantly as a result of economic distress and unemployment."). This violence is not only physical but also psychological, as women endure immense social pressure and mental stress while navigating these crises (Files\Interviews\Saima, Reference 1: "Women endure not only economic hardships but also social pressure, mental stress, and domestic abuse.").

Moreover, the loss of women's traditional income sources, such as selling milk, eggs, or homegrown vegetables, has further diminished their independence, making them more reliant on their husbands. This dependency, combined with the husbands' own financial struggles, creates a volatile

environment where conflicts and violence become more frequent (Files\Interviews\Saima, Reference 2: "When keeping livestock becomes difficult, and sources of household income like milk and farm produce diminish, women are forced to rely on their husbands... This leads to increased household conflicts and disputes."). In extreme cases, women are forced to seek refuge in shelters like Dar-ul-Aman or pursue legal action, highlighting the severe consequences of this cycle of economic hardship and violence.

4.2. Lack of Female Representation in Relief Efforts

Another significant issue in disaster relief efforts is the lack of female representation, which creates additional challenges for women seeking assistance. The absence of female rescue workers often makes it difficult for women to access help without facing harassment or discomfort, particularly in culturally sensitive situations (Files\FGDs\FGD - 1, Reference 1: "The absence of female rescue workers adds another layer of difficulty, making it harder for women to receive appropriate assistance without facing harassment or discomfort."). This gap in representation is evident at both governmental and organizational levels, where women are rarely included in rescue and relief teams, leaving female survivors without the support they need (Files\Interviews\Saima, Reference 1: "During floods, the majority of rescue and relief workers are men, while women are not included at the governmental level. Even charitable organizations do not prioritize sending female aid workers.").

The need for female rescue workers becomes even more critical in situations involving vulnerable groups, such as disabled women. For instance, during the rescue of a disabled woman, male workers had

to physically assist her, highlighting the lack of sensitivity and the urgent need for female personnel in such roles (Files\Interviews\Jhang\Zareena, Reference 1: "During the rescue of a disabled woman, two men picked her up and took her to the camp... Men should not be allowed to touch affected women, and more sensitivity and responsibility should be shown in such cases."). This not only compromises the dignity and safety of affected women but also underscores the systemic neglect of their specific needs in disaster response efforts.

4.3. Inadequate Sanitation and Water Access

Another critical issue exacerbated by climate change is the lack of adequate sanitation and water access, which disproportionately affects women and girls. In disaster-affected areas, the absence of proper sanitation facilities creates significant challenges for maintaining hygiene, forcing women to travel long distances in search of clean water. These journeys are often unsafe, exposing women to risks such as harassment, violence, and accidents (Files\FGDs\FGD - 1, Reference 1: "The lack of proper sanitation facilities further worsens the crisis... forcing women to travel long distances in search of clean water, often under unsafe conditions that expose them to harassment or accidents."). In regions hit by droughts or floods, these risks are amplified, as women must trek even farther for unsafe water, increasing their vulnerability to health hazards and violence (Files\Interviews\Respondent 1 (A), Reference 1: "In regions hit by droughts or floods, they face longer treks for unsafe water, risking health hazards and violence.").

The lack of gender-specific facilities, such as separate washrooms for women, further compounds their

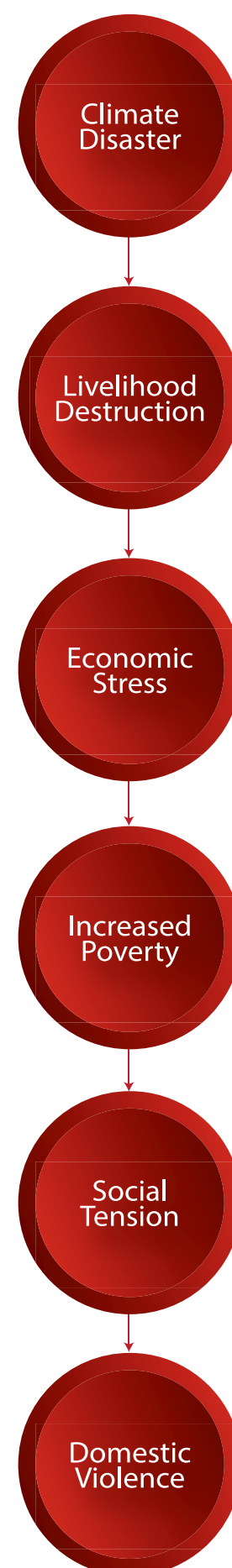


Figure 13: Relationship between Climate disaster and Domestic Violence

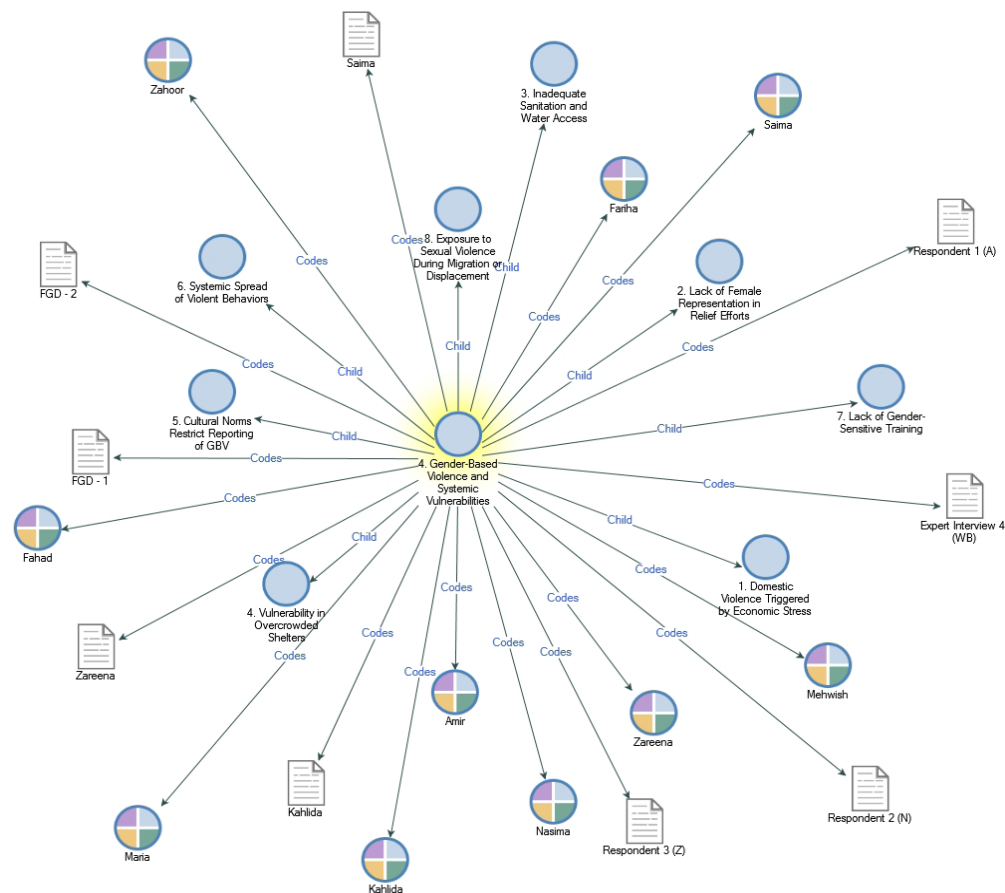
difficulties. Women face additional challenges related to modesty and privacy, particularly when interacting with non-male individuals in relief settings. These issues, combined with the absence of essential medical supplies and the difficulty of moving between locations, create a deeply painful and challenging situation for women (Files\Interviews\Respondent 3 (Z), Reference 1: "There are no specific washrooms for women, and they face many other issues as well... All of these challenges make the situation very painful and difficult for women.").

Studies from other regions highlight the dangers women face when traveling long distances for water, including

faced by women and enhance their overall well-being.

4.4. Vulnerability in Overcrowded Shelters

Another pressing issue in disaster-affected areas is the vulnerability of women in overcrowded shelters, where the lack of privacy and security exposes them to significant risks. Displacement caused by floods or other disasters often forces families into overcrowded shelters or makeshift camps, where living conditions are dire. In these settings, privacy is virtually nonexistent, leaving women and girls exposed to harassment, abuse, and other safety concerns (Files\FGDs\FGD - 1, Reference 1: "Displacement often forces women into overcrowded shelters where privacy is



exposure to sexual harassment, violence, and attacks by wild animals. These risks are equally applicable to Pakistan, where women in disaster-affected areas endure similar hardships (Files\Reports\National\Expert Interview 4- (WB), Reference 1: "Women who are traveling long distances to collect water are more exposed to sexual harassment; they are more exposed to sexual violence; more exposed to attacks by wild animals."). Addressing these challenges requires urgent action to improve access to clean water and sanitation facilities, particularly in disaster-prone areas. Ensuring the availability of gender-sensitive infrastructure and safe water sources can significantly reduce the risks

virtually nonexistent, creating an environment where safety and security are compromised."). This lack of privacy not only compromises their dignity but also increases their vulnerability to exploitation and violence (Files\Interviews\Respondent 2 (N), Reference 1: "Privacy is nonexistent, making women more vulnerable to harassment and abuse.").

The emotional toll of living in such conditions is immense. Women interviewed in these settings have shared their discomfort and fear, particularly when forced to sleep in open fields or crowded spaces alongside unrelated men. This invasion of privacy leaves them feeling unsafe and

unable to rest, further exacerbating their physical and mental stress (Files\Reports\National\Expert Interview 4- (WB), Reference 1: “Our privacy is so invaded—we don’t feel comfortable sleeping in the open with so many other men around who we’re not related to.”). These challenges highlight the urgent need for gender-sensitive shelter arrangements that prioritize the safety, privacy, and dignity of women and girls.

4.5. Cultural Norms Restricting Reporting

Another critical issue is the role of cultural norms in restricting women from reporting abuse or seeking help during and after disasters. The fear of stigma, retribution, and societal judgment often silences victims, leaving them trapped in cycles of violence and suffering (Files\FGDs\FGD - 1, Reference 1: “The fear of stigma and retribution often prevents victims from reporting these incidents.”). This pervasive culture of silence not only perpetuates abuse but also highlights the urgent need for stronger mechanisms to protect women and encourage them to seek help without fear of backlash (Files\FGDs\FGD - 1, Reference 2: “This pervasive cycle of silence and suffering highlights the urgent need for better shelter conditions and strong mechanisms to protect displaced women.”).

During crises, domestic violence often increases as financial strain, stress, and uncertainty take a toll on families. Men, feeling powerless or frustrated, may direct their anger toward women, who are already burdened with managing households, caregiving, and often working outside the home. This violence exacerbates the emotional and physical strain on women, leaving them isolated and unsupported (Files\FGDs\FGD - 1, Reference 3: “During times of crisis, domestic violence often spikes... This violence exacerbates the emotional and physical strain on women, leaving them trapped in a cycle of abuse.”). Societal norms further discourage women from speaking out, as they fear shame, blame, or retaliation for reporting abuse (Files\FGDs\FGD - 1, Reference 4: “Women often avoid seeking help due to the fear of backlash, shame, or being blamed for the abuse they endure.”). This social stigma prevents many from reaching out for support, leaving them trapped in harmful situations (Files\FGDs\FGD - 1, Reference 5: “This social stigma prevents many from reaching out for support, leaving them trapped in harmful situations.”).

4.6. Systemic Spread of Violent Behaviors

Another concerning issue is the systemic spread of violent behaviors within communities, particularly domestic violence, which often normalizes and perpetuates abuse against women. Whether the initial trigger of domestic violence is climate change, in areas where domestic violence is prevalent, these behaviors tend to spread to other households as social relationships and attitudes

influence one another (Files\Interviews\Kahlida, Reference 1: “In an area, if there is a trend of domestic violence in a few houses, it is gradually transferred to other homes as well.”). This normalization of violence creates a harmful cycle where abusive behaviors are not only tolerated but also encouraged, further entrenching gender inequality and restricting women’s autonomy.

A key driver of this trend is the way men who perpetrate violence often advise their peers to adopt similar attitudes, framing such behavior as beneficial or justified (Files\Interviews\Kahlida, Reference 1: “When a man tortures his wife, puts her under pressure, or hinders her progress and freedom, he advises his acquaintances to adopt the same attitude.”). This reinforcement of abusive practices within social networks leads to a broader cultural acceptance of violence, where women are systematically deprived of their basic rights and freedoms. Over time, this cycle of misbehavior becomes ingrained in the social structure, making it increasingly difficult for women to escape abusive environments or challenge these norms.

4.7. Lack of Gender-Sensitive Training

Another significant issue in disaster response is the lack of gender-sensitive training among government officials and local aid workers, which often leads to harmful consequences for women. Without proper training, responders may fail to understand or address the unique needs and vulnerabilities of women during emergencies. This gap in awareness can result in situations where cultural norms and biases exacerbate the challenges women face, rather than alleviating them (Files\Interviews\Saima, Reference 1: “Neither government officials nor local aid workers receive gender-sensitization training.”).

For instance, during rescue operations, physical contact between rescuers and survivors is often unavoidable. However, in some cases, such interactions have led to severe social repercussions for women, including divorce or ostracization, simply because they were touched by a male rescuer during an emergency (Files\Interviews\Saima, Reference 1: “Many cases exist where men have divorced their wives just because they touched another man’s hand without considering the situation.”). This highlights the critical need for gender-sensitive training to ensure that rescue efforts are conducted in a way that respects cultural norms while prioritizing the safety and dignity of women.

4.8. Exposure to Harassment During Migration or Displacement

Our analysis also finds a relationship between climate change induced migration or displacement and women’s exposure to sexual violence and exploitation. In the chaos of disasters, some individuals exploit vulnerable women by

deceiving them with false promises of aid in exchange for money or other favors (Files\Interviews\Respondent 3 (Z), Reference 1: "Some people take advantage of this situation and deceive them, taking money in exchange for promising aid."). This exploitation not only deepens their financial and emotional distress but also increases their vulnerability to abuse.

Women who migrate or are displaced are also at greater risk of sexual harassment, violence, and attacks, particularly when they travel long distances in search of safety or resources (Files\Reports\National\ Expert Interview 4- (WB), Reference 1: "Become more exposed again to sexual harassment, sexual violence, and attacks by wild animals."). For those who remain behind, the absence of male family members leaves them exposed to natural disasters, financial insecurity, and the constant fear of sexual violence (Files\ Reports\National\Expert Interview 4- (WB), Reference 2: "If women don't accompany men on this seasonal migration, they are left behind, exposed again to the elements... scared of sexual violence and attacks."). These challenges highlight the urgent need for gender-sensitive protection measures and support systems to ensure the safety and dignity of women during migration and displacement.

Harassment During Relief Efforts

One day, when I reached an affected area by boat, I saw that some people were already there in the name of providing aid. The victims had refused to leave their homes, their animals were tied there, cots were also kept there, and they were waiting for help.

When I reached there, a woman came running towards me, hugging me and crying. She was in helplessness and misery. I asked her, "What happened? So she said, "Baji, it's good that you have come, the people who have come here sometimes say bring milk, sometimes they ask for something else." They are not giving us anything, they are sometimes saying this work, sometimes that work."

I asked these so-called aid workers, "Where did you come from? So they said, "We are here to help." I asked, "What aid? He replied, "We've come to give the tent." When I looked around, there was no tent. I said to them, "Where are the tents? He said, "They're coming back."

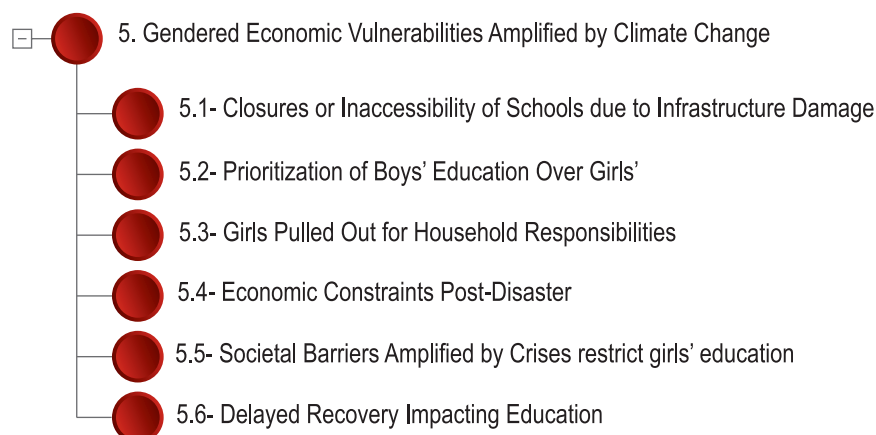
"Come when you really bring help," I said sternly. Get out of here now."

All this shows the exploitation and mismanagement that flood-affected women face during relief operations. Not only do they not have access to basic necessities, they also have to struggle for dignity and security.

Respondent from District Jhang , Punjab

Theme 5: Climate-Exacerbated Educational Barriers for Women and Girls

The theme “Climate-Exacerbated Educational Barriers for Women and Girls,” detailing how climate-induced disasters like floods and earthquakes disrupt education through school closures, damaged infrastructure, and inaccessible roads. It highlights gender-specific challenges, such as prioritizing boys’ education, pulling girls for household duties, and transportation issues, amplified by economic constraints and societal norms. These barriers, rooted in climate change, delay recovery and shift family priorities toward survival, disproportionately affecting girls’ access to education. As climate change intensifies natural disasters, it deepens systemic inequalities, undermining girls’ empowerment and resilience, setting the stage for a broader examination of its cascading impacts on gender and education. The theme has 6 child nodes discussed in the later section.



5.1: Closures or Inaccessibility of Schools due to Infrastructure Damage

The child node “Closures or Inaccessibility of Schools due to Infrastructure Damage” under the theme “Climate-Exacerbated Educational Barriers for Women and Girls” highlights how climate-induced disasters, such as floods and heavy rains, disproportionately disrupt girls’ education. Qualitative data reveals that schools often close during floods and remain shut for months due to damaged infrastructure, such as roads and buildings, making it difficult for students and teachers to access them (Files\FGDs\Chaniot\FGD - 1, Reference 1: “Schools close during floods and often remain shut for months due to damaged infrastructure and roads for repairs.”). This disruption is particularly severe for girls, as cultural norms and safety concerns often prevent them from traveling long distances to school, especially when transportation options are limited or unsafe (Files\FGDs\Chaniot\FGD - 1, Reference 2: “Lack of transportation further compounds the



Figure 14: Students sitting in open air due to a damaged school building

issue, making it even harder for girls to access education.”). The absence of safe and affordable transportation leads to high dropout rates among girls, restricting their opportunities for learning and personal development (Files\FGDs\Chanio\FGD - 1, Reference 3: “The absence of safe and affordable transportation leads to high dropout rates among girls.”).

In rural and mountainous areas, the impact is even more pronounced. Damaged bridges, blocked roads, and destroyed schools create significant barriers to education, with girls being the most affected. For instance, after the 2005 earthquake, schools in villages like Matiltan, Kalam were completely destroyed, forcing children to study in tents for extended periods (Files\FGDs\Swat\FGD - 2, Reference 4: “The school was completely damaged. The children were studying outside in tents.”). Boys, who are often allowed to travel long distances by walking or cycling, can sometimes manage to attend school, but girls face greater restrictions due to safety concerns and societal norms (Files\FGDs\Swat\FGD - 2, Reference 5: “For boys, they can manage to reach school even if it’s far... But girls cannot do that.”). This disparity is further worsened by the prioritization of boys’ education over girls’ education in many communities, reflecting deep-rooted gender biases.

The prioritization of rebuilding homes over schools after disasters further delays the resumption of education, particularly for girls. Parents often focus on immediate survival needs, such as shelter, before considering their children’s education (Files\Interviews\Kahlida, Reference 2: “Parents say it is important to build a house first, and only then can children’s education be thought of.”). This delay disproportionately affects girls, as societal biases already limit their educational opportunities even under normal circumstances (Files\Interviews\Respondent 1 (A), Reference 2: “In our society, girls are often not allowed to pursue education even under normal circumstances.”). When schools are eventually rebuilt, girls may have already missed critical years of education, further widening the gender gap in literacy and opportunities.

5.2: Prioritization of Boys’ Education Over Girls

Gender biases and economic pressures during crises further marginalize girls’ access to education. Qualitative data reveals that parents often prioritize boys’ education over girls’, especially in the aftermath of disasters when financial

resources are scarce and survival takes precedence (Files\FGDs\Chanio\FGD - 1, Reference 1: “Parents prioritize boys’ education over girls’, especially during crises when financial resources are scarce and survival takes precedence.”). Families struggling to rebuild after disasters view educating sons as a more worthwhile investment, believing boys will have better job prospects and contribute financially in the future. In contrast, daughters are expected to stay home, assist with household chores, or take on caregiving responsibilities, reinforcing traditional gender roles and limiting their opportunities for empowerment, economic independence, and social mobility (Files\FGDs\Chanio\FGD - 1, Reference 1: “Without education, girls lose opportunities for empowerment, economic independence, and social mobility, making them more vulnerable to early marriage and exploitation.”).

Natural disasters, escalated by climate change, shift priorities toward immediate survival needs, pushing education to the background. When basic needs like shelter, food, and safety are unmet, families focus on daily living arrangements, leaving little room for investing in education, particularly for girls (Files\Interviews\Jhang\Kahlida, Reference 1: “In the fight for survival, an important issue like education is put on the back burner because when basic needs are not being met, people first focus on their life and daily living arrangements.”). This prioritization is compounded by systemic inequalities that already limit girls’ access to education, healthcare, and economic opportunities, making them even more vulnerable in the face of disasters (Files\Interviews\Respondent 2 (N), Reference 1: “Women in these areas already face systemic inequalities—limited access to education, healthcare, and economic opportunities.”).

The closure of schools during floods and their delayed reopening further exacerbate the disparity. Girls, who are already less likely to attend school compared to boys, are often pulled out entirely to help at home, while boys are more likely to continue their education despite the challenges (Files\Interviews\Mardan\Respondent 2 (N), Reference 2: “Girls, who are already less likely to attend school compared to boys, are pulled out entirely to help at home.”). This systemic neglect of girls’ education perpetuates cycles of poverty and inequality, leaving them more vulnerable to early marriage, exploitation, and limited future prospects.

5.3: Girls Pulled Out for Household Responsibilities

This child node sheds light on how climate-related disasters intensify the domestic workload for girls, often forcing them to leave school. Qualitative data shows that in the wake of disasters, girls are frequently taken out of school to help with household tasks, look after younger siblings, or even take on small jobs to support their families (Files\FGDs\FGD - 1, Reference 1: "In many cases, girls are pulled out to help with household chores, care for younger siblings, or even take on small jobs to support their families."). Once they stop attending school, returning becomes a significant challenge due to financial limitations, societal pressures, and the heavy load of household duties (Files\FGDs\FGD - 1, Reference 1: "Once they drop out, returning to school becomes nearly impossible due to financial constraints, social expectations, and the added burden of domestic responsibilities.").

In the aftermath of disasters like floods, families often prioritize survival over education. With homes destroyed and resources scarce, parents focus on rebuilding and meeting basic needs, leaving little time or energy for their children's schooling. Girls, in particular, are expected to contribute to household tasks or labor, further disrupting their education (Files\Interviews\Kahlida, Reference 1: "Families whose homes are destroyed are busy struggling for their survival, and parents engage their children in building houses and other necessary work."). This expectation places a heavier burden on girls, who are already less likely to attend school compared to boys, as they are often seen as primary caregivers and helpers at home (Files\Interviews\

Respondent 2 (N), Reference 1: "Girls, who are already less likely to attend school compared to boys, are pulled out entirely to help at home.").

5.4: Economic Constraints Post-Disaster

According to this sub-theme financial hardships following climate-related disasters disproportionately affect girls' education. In the aftermath of disasters, families struggling to meet basic needs often prioritize survival over schooling. Girls are frequently pulled out of school to assist with household chores, care for younger siblings, or take on small jobs to support their families (Files\FGDs\Chaniot\GD - 1, Reference 1: "In many cases, girls are pulled out to help with household chores, care for younger siblings, or even take on small jobs to support their families."). Once they leave school, returning becomes a significant challenge due to financial limitations, societal pressures, and the heavy load of domestic responsibilities (Files\FGDs\FGD - 1, Reference 1: "Once they drop out, returning to school becomes nearly impossible due to financial constraints, social expectations, and the added burden of domestic responsibilities.").

Natural disasters, intensified by climate change, force families to shift their priorities. When basic needs like food, shelter, and safety are unmet, education is often sidelined as families focus on immediate survival (Files\Interviews\Kahlida, Reference 1: "In the fight for survival, an important issue like education is put on the back burner because when basic needs are not being met, people first focus on their life and daily living arrangements."). This is especially



Figure 15: An old woman waiting for a rescue

true in impoverished communities, where families already struggle to afford education for their children, particularly daughters. The financial strain worsens during disasters, making it nearly impossible for families to invest in girls' schooling (Files\Interviews\Respondent 3 (Z), Reference 1: "The people here are already very poor, and they don't have enough money to educate their daughters. Even in normal circumstances, this is almost impossible, and you can imagine how dire the situation becomes during floods.").

These economic constraints create a vicious cycle, where girls are denied education, limiting their future opportunities and perpetuating poverty. Addressing this issue requires targeted interventions, such as financial assistance for families, scholarships for girls, and community programs that emphasize the value of girls' education. By alleviating economic pressures and challenging societal norms, it becomes possible to ensure that girls can continue their education even in the face of disasters.

5.5: Societal Barriers Amplified by Crises restrict girls' education

The child node highlights how pre-existing societal and cultural norms are intensified by climate-related disasters, further restricting girls' access to education. Qualitative data reveals that cultural norms, such as concerns over girls' safety and conservative attitudes, often discourage parents from allowing their daughters to travel to school, especially during crises like floods (Files\FGDs\FGD - 1, Reference 1: "Cultural norms also play a significant role, as parents fear for their daughters' safety and often discourage them from traveling alone, especially in conservative communities."). These barriers are compounded by the lack of government support, such as safe transportation options for girls, which makes attending school even more challenging during extreme weather conditions (Files\FGDs\FGD - 2, Reference 1: "Our culture doesn't allow for that, and there's no support from the government, like providing buses for girls to take them to school even at the time of extreme weather.").

Disasters like floods increase these challenges, as damaged roads and closed schools make it difficult for girls to continue their education. In many cases, schools remain

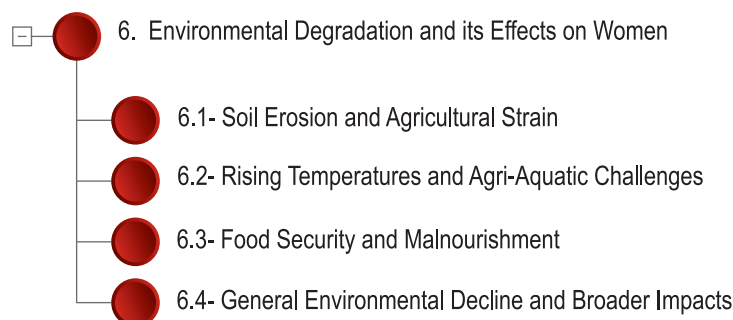
closed for weeks or even years, leaving girls with no access to learning (Files\Interviews\Respondent 3 (Z), Reference 1: "When the flood came, our schools remained closed for two to three weeks. Due to the flooding, it became very difficult for girls to travel to school."). The prolonged disruption often leads families to prioritize early marriage for their daughters, viewing it as a more practical option than education (Files\Interviews\Saima, Reference 1: "In such circumstances, families say, 'Our daughters have nothing to do, so it's better to get them married.'"). This mindset not only disrupts girls' education but also threatens their rights, health, and economic independence, perpetuating cycles of poverty and inequality.

5.6: Delayed Recovery Impacting Education

It highlights how the slow rebuilding of schools and infrastructure after climate-related disasters disproportionately affects girls' education. Schools in disaster-affected areas often remain damaged for years due to insufficient funds and resources (Files\FGDs\FGD - 2, Reference 1: "The school administration doesn't have enough funds, and by the time the schools are rebuilt, the children have already turned 10 or 12 years old."). This prolonged delay in recovery means that children, especially girls, miss critical years of schooling, severely disrupting their educational progress and future opportunities (Files\Interviews\Saima, Reference 1: "When floods destroy homes, schools, and infrastructure, it takes years to repair schools, and regular classes do not resume for a long time."). The closure of schools disproportionately impacts girls, who are already less likely to return to education once they drop out, deepening existing gender inequalities in access to learning. Addressing these delays requires urgent investment in rebuilding schools and ensuring that education remains a priority in disaster recovery efforts.

Theme 6: Environmental Degradation and its Effects on Women

Environmental degradation, including climate change, deforestation, and soil erosion, disproportionately affects women, exacerbating gender inequalities. In Pakistan, women face health risks from unsafe water and malnutrition, economic losses from declining agriculture and fisheries, and increased labor under harsh conditions. These challenges, coupled with food insecurity and migration, deepen poverty and limit education and security for women, highlighting the critical intersection of environmental crises and gender. The four child nodes of this theme are as under:



6.1: Soil Erosion and Agricultural Strain

Qualitative data reveals that soil erosion reduces land fertility, leading to lower crop yields and forcing women, who are often responsible for maintaining farms, to work longer hours in harsh conditions to sustain their households (Files\FGDs\FGD - 1, Reference 1: "Soil erosion makes farming increasingly difficult by degrading the land and reducing its fertility... For women, who are often responsible for maintaining the farm, this means they must work longer hours in harsh conditions."). This increased workload not only strains their physical health but also limits their ability to engage in other income-generating activities or care for their families.

Additionally, women involved in agricultural work face health risks from exposure to harmful chemicals in contaminated soil. Direct contact with these chemicals can lead to long-term health issues, including reproductive health problems, which are particularly concerning in communities with limited access to healthcare (Files\FGDs\FGD - 2, Reference 1: "Women involved in agricultural work might be exposed to harmful chemicals through direct contact with contaminated soil... This exposure can lead to long-term health issues, including reproductive health problems."). For instance, studies show that heavy metals in soil can cause reproductive health issues and hormonal disruptions in women (Vardhan et al., 2019). Additionally, long-term exposure to contaminated soil is linked to increased risks of cancer and neurological disorders, disproportionately affecting those who work closely with soil, such as female

farmers (Brevik & Burgess, 2013). These challenges underscore the need for sustainable agricultural practices, access to protective equipment, and improved healthcare services to mitigate the impact of soil erosion and chemical exposure on women's health and livelihoods.

6.2: Rising temperature and Agri-Aquatic Challenges

Increase in temperatures and shifting climate patterns are disrupting agriculture and fisheries, disproportionately affecting women in rural communities. There is a direct relation between the rise in air temperature and crops yield and water availability (Sivakumar, M. V., & Stefanski, R. (2010). In South Punjab, rising temperatures are causing significant damage to crops like wheat, with extreme heat making it difficult for farmers, including women, to work in the fields (Files\Interviews\Saima, Reference 2: "If I talk about District Vehari and its surrounding areas, it is currently February, and yet we are experiencing extreme heat, which is extremely damaging to wheat crops."). This trend is expected to worsen, potentially rendering farming unsustainable in the near future, leaving farmers, particularly women, uncertain about their livelihoods (Files\Interviews\Saima, Reference 3: "As the temperature in South Punjab continues to rise, there may come a time in the next few years when farmers will not be able to work in their fields.").

Similarly, in regions like Balochistan and Sindh, rising water temperatures are disrupting fisheries, a primary source of income for many communities. Fish are moving further into the sea, making it harder for coastal communities to

sustain their livelihoods. This loss of income directly impacts women, who are often responsible for managing households and have limited alternative income sources (Files\Reports\National\Expert Interview 4- (WB), Reference 2: “Climate change... causes fish to move inwards towards the sea... And this has an impact on women as she has to manage the household things.”). Rising water temperatures are disrupting fisheries globally, threatening a vital income source for countless communities, as detailed in the World Bank’s Hot Water Rising report from November 2023 and the U.S. EPA’s climate impact update from February 2025. In Indonesia, for instance, warming oceans could

damaging fruit crops, such as apricots, forcing many to migrate in search of better opportunities. This migration disrupts communities and places additional burdens on women, who must adapt to new challenges while managing household responsibilities (Files\Reports\National\Expert Interview 4- (WB), Reference 4: “Varying temperatures or erratic temperatures now don’t allow fruits to come through, or they affect agriculture, which is why a lot of people are migrating away from that region also.”). These challenges underscore the urgent need for climate-resilient agricultural practices, alternative livelihood opportunities, and skill development programs to support women in adapting to the



Figure 16: Word cloud of theme 6

impacts of rising temperatures and shifting climate patterns.

slash fishery returns by 15–26% by 2050, jeopardizing the livelihoods of 2.6 million fishers, while in the U.S., shifting stocks like cod and pollock are destabilizing coastal economies. This economic hit doesn’t land evenly—women, who often play critical roles in processing, selling, and managing household income from fisheries, face unique challenges. Additionally, extreme heat affects livestock, causing diseases and reducing fodder availability, further straining women who rely on these resources for their families’ survival (Files\Reports\National\Expert Interview 4- (WB), Reference 3: “Very hot temperatures cause diseases in livestock... And for women, because they don’t have diversified sources of income, their loss of income because of climate change affects their family very much.”).

In regions like Chitral and Hunza, erratic temperatures are

6.3. Food Security and Malnourishment

The child node “Food Security and Malnourishment” under the theme “Climate-Exacerbated Health and Well-being Challenges for Women and Girls” delves into the multifaceted ways climate change disrupts food systems, leading to malnutrition and long-term health complications, particularly for women and children. Qualitative data reveals that erratic rainfall, rising temperatures, and extreme weather conditions significantly reduce crop yields and degrade the nutritional quality of food, increasing food insecurity. For instance, delayed or irregular rainfall patterns directly impact crop production, leading to inconsistent yields and food shortages (Files\Reports\National\Expert Interview 2- (AA), Reference 2: “When the rainfall is late and

the availability of water is different, then obviously, the crop production will also become different, and the yield varies as well.”). A 2021 FAO report highlights that women are more likely to experience food insecurity than men in climate-vulnerable areas, with a gender gap of up to 10% in some regions (FAO, 2021). Similarly, a study by the World Health Organization (WHO) notes that malnourishment in women, worsened by climate stressors, increases risks of maternal and child health complications (WHO, 2022). These dynamics underscore the urgent need for gender-sensitive climate policies.

Moreover, climate change contributes to the deterioration of food quality. Increased carbon levels and greenhouse gases in the atmosphere reduce the nutritional value of crops, making food less nourishing (Files\Reports\National\Expert Interview 4- (WB), Reference 1: “More carbon in the air means less nutritious food... Food that is impacted by hot weather or by extreme weather conditions is less nutritious than food that is grown for its average—for its organic natural cycle.”). This decline in nutritional quality is compounded by the impact of climate change on livestock. Diseased or underfed animals, resulting from extreme weather and fodder shortages, provide less nutritious meat and dairy products, further exacerbating malnourishment (Files\Reports\National\Expert Interview 4- (WB), Reference 1: “Livestock... if it’s already weak—if it’s not gotten enough fodder—for the consumption of that livestock is not nutritious either.”).

Women, who are often responsible for managing household food security, bear the brunt of these challenges. Malnutrition and weakness become widespread, affecting their ability to work, care for their children, and maintain their families’ well-being (Files\FGDs\FGD - 1, Reference 1: “Malnutrition and weakness become common, affecting women’s ability to work and care for their children.”). Long-term food insecurity leads to serious health complications, including stunted growth in children, weakened immune systems, and increased susceptibility to diseases. The burden of malnutrition is particularly severe for pregnant and lactating women, whose nutritional needs are higher, yet often unmet due to food shortages and poor-quality diets.

The broader implications of food insecurity extend beyond health, contributing to social and economic instability. Climate-induced food shortages can trigger migrations, disrupt communities, and strain regional security (Files\Reports\National\Expert Interview 2- (AA), Reference 1: “This also means that there will be an increase in migrations, there will be food security issues, water security is already a problem, so this will cause a domino effect which would eventually affect our regional security.”). Women, who are already marginalized in many societies, face additional vulnerabilities during such crises, as they are often the

last to eat in households and the first to sacrifice their own nutritional needs for their families.

4. General Environmental Decline and Broader Impacts

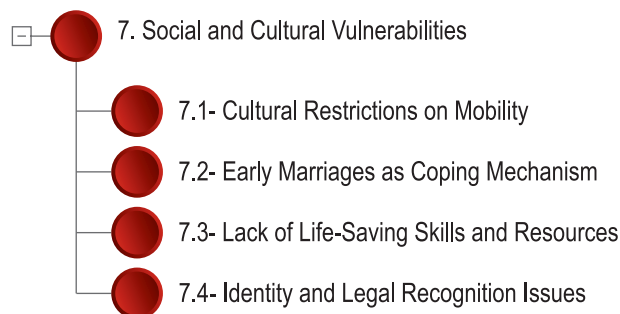
General environmental decline refers to the widespread deterioration of Earth’s natural systems due to human activities, such as deforestation, pollution, climate change, and resource depletion. The child node “General Environmental Decline and Broader Impacts” under the theme “Climate-Exacerbated Challenges for Women and Girls” explores how environmental degradation, such as deforestation and water contamination, exacerbates the vulnerabilities of women and girls, deepening existing gender inequalities. Qualitative data reveals that recurring health crises caused by unsafe water not only harm women’s physical well-being but also restrict their economic and educational opportunities, perpetuating cycles of poverty and vulnerability (Files\FGDs\FGD - 1, Reference 1: “The recurring health crises caused by unsafe water not only impact women’s physical well-being but also restrict their economic and educational opportunities.”). This dual burden of health and economic challenges leaves women trapped in a cycle of disadvantage, with limited avenues for empowerment or improvement.

Deforestation, particularly in regions like Swat, has significantly altered local weather patterns, increasing the severity of floods and their destructive impact on communities (Files\FGDs\FGD - 2, Reference 1: “Deforestation is happening in Swat, which is why the weather has changed... Nowadays, when floods come, they bring a lot of destruction with them.”). The loss of natural barriers, such as forests, has made communities more susceptible to climate-related disasters, further straining resources and livelihoods. This environmental decline disrupts ecosystems, leading to broader climate change issues that disproportionately affect women, who are often responsible for managing household resources and caring for their families (Files\FGDs\FGD - 2, Reference 2: “Nature is destroyed, and when we mess with nature, then these climate change problems arise.”).

The broader impacts of environmental decline include reduced agricultural productivity, loss of biodiversity, and increased vulnerability to natural disasters, all of which disproportionately affect women. For instance, deforestation and soil erosion reduce the availability of natural resources, such as firewood and clean water, increasing the time and effort women must spend on daily tasks. This added burden limits their ability to pursue education or income-generating activities, further entrenching gender disparities.

Theme 7: Societal and Cultural Vulnerabilities

This text examines how deeply ingrained social and cultural norms create significant vulnerabilities for women during crises like floods and extreme weather events. These vulnerabilities manifest in various forms, including restrictions on mobility, the use of early marriage as a coping mechanism, a lack of life-saving skills, and issues with identity and legal recognition. Consequently, women face disproportionate risks and challenges in accessing safety, relief, and essential resources during and after disasters.



7.1- Cultural Restrictions on Mobility

This sub-theme explains how deeply ingrained societal norms and cultural practices restrict women's mobility, particularly during crises, leaving them disproportionately vulnerable to harm.

in many communities, women are not permitted to leave their homes without the explicit consent of male family members, even when facing imminent danger like a flood. During relief efforts, cultural expectations around childcare often prevent women from freely accessing aid, while men are more readily able to do so. Furthermore, cultural sensitivities can prohibit women from interacting with male aid workers or even entering relief camps, limiting their access to essential support.

Qualitative data reveals that in many flood-affected areas, women face strict limitations on their movement due to traditional and conservative customs. Men control their decisions and movements (Files\Interviews\Kahlida, Reference 1: "In such societies, strict restrictions are imposed on the movement of women, even when the threat of flooding is looming, they are not allowed to leave their homes."). This lack of autonomy delays their ability to reach safe places, putting their lives at risk and making them more vulnerable to the impacts of disasters (Files\Interviews\Kahlida, Reference 2: "These people wait till the last moment, as a result of which women suffer the most as they are unable to reach safe places on time.").

During relief operations, these cultural restrictions further marginalize women. Men, who are free to move and access relief supplies, often push their way through crowds to secure resources, while women, burdened with childcare and restricted by societal norms, struggle to access aid (Files\FGDs\FGD - 2, Reference 1: "Men start their bikes and stand in line, they push and shove their way through... Women face issues, they have children, a one-year-old, a two-year-old, a six-month-old, they cannot go with them."). Additionally, cultural norms often prevent women from interacting with non-male aid workers or visiting relief camps, further isolating them from essential support (Files\Interviews\Kahlida, Reference 3: "They do not allow their women to come in front of any non-male aid worker. They are even prevented from going to relief camps, making women more vulnerable.").

Even in relief camps, women's mobility remains restricted. Men often sit outside and socialize, while women are confined indoors, unable to step out until the men leave. This confinement, combined with the need to adhere to cultural practices like wearing veils and hijabs, creates uncomfortable and suffocating conditions for women, increasing their physical and mental stress (Files\Interviews\Saima, Reference 2: "When people move into relief camps, men sit outside and talk, but women cannot step out until the men leave... In such conditions, women often suffer from heat and suffocation."). These restrictions also expose women to harassment, even within their own communities,

National\Expert Interview 3- (NR), Reference 1: “Families are marrying off their daughters in exchange for money as a desperate measure to cope with the impending floods in the country.”). The legal age for marriage in Pakistan, though set at 16 to 18, is rarely enforced, leaving girls vulnerable to exploitation.

Natural disasters exacerbate these challenges, as families lose dowries and possessions, making them more susceptible to offers of marriage without dowry demands. Parents, overwhelmed by immediate survival needs, often fail to recognize the long-term consequences of early marriages on their daughters’ health and well-being. Young brides face severe reproductive health issues, and their children often suffer from malnutrition and stunted growth, perpetuating intergenerational poverty (Files\Interviews\Saima, Reference 1: “Parents fail to realize that early marriages can destroy their daughters’ future... Marrying off young girls impacts their reproductive health, and when they become mothers at a young age, their health deteriorates severely.”).

7.3- Lack of Life-Saving Skills and Resources

The child node “Lack of Life-Saving Skills and Resources” highlights how restrictive cultural norms and limited access to resources leave women ill-equipped to respond to emergencies, increasing their vulnerability during disasters. Qualitative data reveals that in many rural areas, such as Balochistan, women are often denied access to basic communication tools like mobile phones, even when signals are available. This lack of access prevents them from seeking help or staying informed during crises, further isolating them from potential support systems (Files\Interviews\Respondent 3 (Z), Reference 1: “In most of the rural areas of Balochistan, women are not allowed to keep a mobile, so they cannot communicate even if mobile signals are present.”).

Additionally, cultural norms restrict women from learning essential life-saving skills, such as swimming or climbing, which are often taught to boys from a young age. These skills, which could prove critical during floods or other disasters, are systematically denied to women, leaving them more vulnerable in emergencies (Files\Reports\National\Expert Interview 4- (WB), Reference 1: “Women are never allowed to learn how to swim in an ocean, swim in the sea, or swim in a river or stream... Boys—or men—become equipped with these skills just organically by virtue of their gender.”). This disparity in skill development reflects broader gender inequalities that prioritize men’s autonomy and safety while marginalizing women.

The lack of life-saving skills and resources not only endangers women’s lives but also limits their ability to protect themselves and their families during disasters.

Addressing this issue requires simple yet effective policy measures, such as equipping women in disaster-prone areas with basic life-saving skills and ensuring their access to communication tools (Files\Reports\National\Expert Interview 4- (WB), Reference 2: “The policy need is so simple: Just equip women in areas that are prone to natural disasters with basic life-saving skills.”).

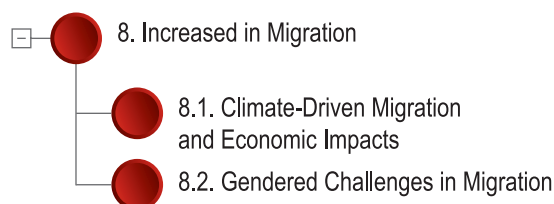
7.4- Identity and Legal Recognition Issues

Cultural norms and gender biases often prevent families from obtaining identity cards for their daughters. Although it is not common in cities, but in some remote villages this practice is persistent. Parents may delay or ignore the process due to fears that girls with identity cards could claim a share in family property, a concern that does not apply to boys, whose identity cards are made without hesitation (Files\Interviews\Kahlida, Reference 1: “Parents or families are afraid that if girls have identity cards, they will have to share in the property... Boys’ identity cards are easily made, but girls’ cards are delayed or ignored.”). Another issue for this delay is the process of obtaining an identity card, and the distance to the NADRA office. These discriminatory practice and difficulties leave women and girls without legal recognition, making it difficult for them to access relief aid, government services, and other essential resources during crises like floods.

The absence of identity cards creates significant barriers for women, as they are often excluded from disaster relief programs that require proof of identity. This exclusion not only deepens gender inequality but also violates women’s fundamental rights to access support and resources (Files\Interviews\Kahlida, Reference 1: “When relief is given to the affected people during floods or any other natural disaster, women and girls are deprived of it due to lack of identity cards.”). Additionally, many women face challenges in obtaining identity cards because they lack birth certificates, a prerequisite for legal documentation. This issue is particularly prevalent in rural areas, where awareness about the importance of identity documents is low (Files\Interviews\Zareena, Reference 1: “Many women do not have identity cards because their parents did not make birth certificates, due to which they have to face severe difficulties in getting identity cards.”).

Efforts to address this issue are underway, with public awareness campaigns encouraging rural women to obtain identity cards. However, systemic barriers, such as complex documentation processes and cultural resistance, continue to hinder progress (Files\Interviews\Respondent 3 (Z), Reference 1: “They don’t know the process, and they don’t have identification documents.”).

Theme 8: Increased Migration



8.1: Climate-Driven Migration and Economic Impacts

Floods and droughts, are driving rural populations to migrate to urban areas, creating significant economic and environmental challenges. As natural disasters destroy livelihoods in rural areas, families are forced to leave their homes and move to cities in search of better opportunities. However, this unplanned migration places immense pressure on urban infrastructure, which is already struggling to accommodate growing populations (Files\Interviews\Saima, Reference 1: “Due to natural disasters caused by climate change, the trend of migrating from villages to cities is increasing... This unplanned migration is putting immense pressure on urban areas.”).

In rural areas, many families rely on farming, livestock rearing, and agriculture for their livelihoods. However, these opportunities are scarce in cities, leaving migrants, particularly women, with limited employment options. Women who once worked in the fields are often forced to take low-paying jobs as domestic helpers or factory workers, further marginalizing them economically (Files\Interviews\Vehari\Saima, Reference 1: “Women, who previously worked in the fields in rural areas, are forced to work as domestic helpers for low wages or take up factory jobs in cities.”).

The influx of migrants into cities leads to rapid urban expansion, often resulting in the establishment of informal settlements on the outskirts. These settlements lack basic facilities and contribute to environmental degradation, as increased industrial activity and waste production worsen air and water pollution (Files\Interviews\Saima, Reference 2: “After migration, these people settle in the outskirts of cities, leading to rapid urban expansion... The smoke and waste released from these factories worsen pollution.”). This creates a vicious cycle, where climate-driven migration exacerbates environmental problems, which in turn contribute to further climate change.

8.2: Gendered Challenges in Migration

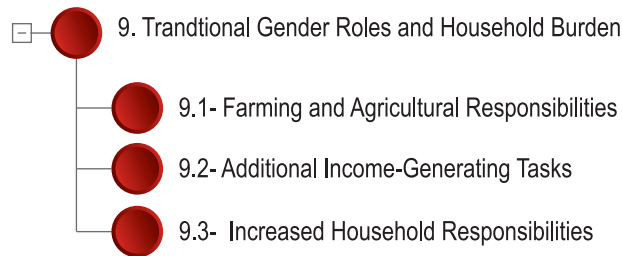
Climate-induced migration unequally affects women, intensifying their hardships due to cultural norms, safety

concerns, and imbalanced responsibilities. While men often take on decision-making roles, women face heightened risks and burdens, bearing the primary responsibility for protecting their families and adapting to new environments. (Files\Interviews\Saima, Reference 1: “In reality, women face more challenges and have greater responsibilities in every way.”). Cultural barriers, such as the practice of veiling (purdah), further complicate women’s ability to migrate safely, as they are often required to adhere to strict norms that limit their mobility and access to resources (Files\Interviews\Saima, Reference 2: “In some families, due to cultural and religious values, women are required to strictly observe veiling... If they are forced to migrate without proper arrangements, their risk of losing their lives becomes much higher compared to men.”).

During migration, women face a double burden: they lack security and basic facilities, such as safe shelter and healthcare, while also being responsible for caring for children and elderly family members. Men, on the other hand, can more easily relocate to government camps or relatives’ homes in safer areas, leaving women to navigate the dangers of displacement alone (Files\Interviews\Saima, Reference 3: “For men, this issue is not as severe, as they can go anywhere... But women face double the burden: lack of security and basic facilities during migration.”). This disparity is particularly evident in seasonal migration, where women left behind in disaster-affected areas are exposed to natural disasters, financial insecurity, and the threat of sexual violence (Files\Reports\National\Expert Interview 4-(WB), Reference 1: “If women don’t accompany men on this seasonal migration, they are left behind, exposed again to the elements... scared of sexual violence and attacks.”).

The disproportionate impact of migration on women is a recurring theme in climate-related crises. Women are more likely to suffer from the lack of resources, safety, and support during displacement, which deepens existing gender inequalities (Files\Reports\National\Expert Interview 2-(AA), Reference 1: “When there is migration due to climate change or other harsh events, women suffer the most, and there will be a disproportionate effect on them.”).

Theme 9: Transitional Gender Roles and Household Burden



9.1: Farming and Agricultural Responsibilities

Women are not merely helpers in agricultural activities but are full-fledged farmers who shoulder the majority of the workload. Despite their critical contributions, their labor is frequently undervalued and overlooked (Files\Interviews\Vehari\Saima, Reference 1: “Rural women do not just assist in farming; they are not merely helpers but full-fledged farmers... But in reality, many agricultural activities entirely depend on them.”). This lack of recognition perpetuates gender inequalities and undervalues women’s essential role in sustaining rural livelihoods.

In many rural households, women are responsible for a wide range of tasks, including farming, livestock care, and household chores. They wake up early to feed livestock, collect milk, prepare meals, and then work in the fields, often under harsh conditions. This dual burden of agricultural and domestic responsibilities leaves women with little time for rest or personal development (Files\Interviews\Respondent 1 (A), Reference 1: “Women manage household chores, take care of livestock, and fulfill the dietary needs of their families... In case of extreme weather or flood, this workload is increased.”). Climate-driven challenges, such as crop failures and extreme weather, further intensify their workload, as men often migrate for work, leaving women to manage both the farm and the household alone (Files\FGDs\FGD - 1, Reference 1: “Due to financial hardship and loss of crops induced by climate-driven changes, my husband migrated for work, then I was left to manage all the responsibilities at home.”).

In regions like Mardan, women are deeply involved in agriculture, tending to crops and livestock while their husbands work as laborers in the plains. Despite their critical role in ensuring food security and household income, women’s contributions are often dismissed as mere assistance, rather than recognized as the backbone of rural economies (Files\FGDs\FGD - 2, Reference 1: “In Mardan, women are mostly involved in agriculture... Their husbands work as laborers in the plains; they go outside to work.”). This lack of acknowledgment not only undermines their

efforts but also limits their access to resources, training, and support that could improve their productivity and well-being.

9.2: Traditional Gender Roles and Household Burden

This sub-theme highlights how women in rural and disaster-affected areas take on extra responsibilities to supplement household income, often at the expense of their physical and mental well-being. Qualitative data reveals that in addition to their regular duties of farming, household chores, and childcare, women frequently engage in income-generating activities such as selling vegetables in local markets or repairing damaged houses to make ends meet (Files\FGDs\FGD - 1, Reference 1: “In addition to their regular responsibilities, women often take on extra tasks such as selling vegetables in local markets or repairing damaged houses to make ends meet.”). These additional tasks significantly increase their workload, leaving them with little time to rest or recover, which can lead to burnout and long-term health issues (Files\FGDs\FGD - 1, Reference 1: “The constant juggling of multiple roles not only strains their physical health but also takes a toll on their mental well-being.”).

The burden of these responsibilities is particularly pronounced in the aftermath of disasters, such as floods, when families face financial instability. Women often step up to take on extra work to ensure their families’ survival, further stretching their already limited time and energy (Files\Interviews\Respondent 2 (N), Reference 1: “After floods, for instance, many women take on additional responsibilities to keep their families afloat.”). This increased workload not only affects their health but also limits their ability to pursue education, skill development, or other opportunities for personal growth.

9.3: Increased Household Responsibilities

The child node “Increased Household Responsibilities” under the theme “Traditional Gender Roles and Household Burden” highlights how women’s domestic workload intensifies during and after climate-related disasters,



Figure 18: Word cloud of theme 9

leaving them physically and mentally exhausted. Qualitative data reveals that women are often expected to manage a wide range of household tasks, from fetching water and preparing meals to caring for children and the sick, all while navigating the challenges posed by disasters like floods and droughts. These responsibilities are compounded by cultural expectations that prioritize women's roles as caregivers and homemakers, often at the expense of their own well-being (Files\FGDs\FGD - 1, Reference 4: "Cultural expectations often dictate that women quietly bear the weight of all household and familial responsibilities, from caregiving to managing finances, without complaint.").

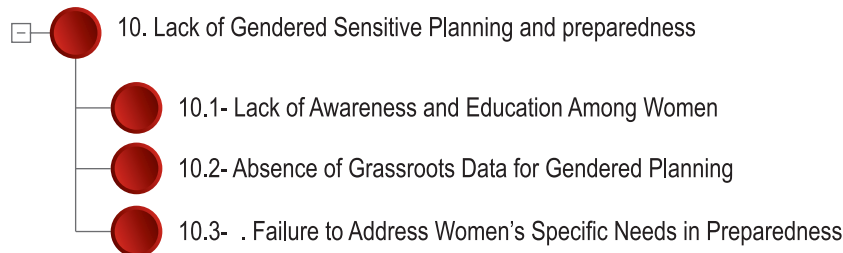
In rural areas, women are frequently responsible for fetching water, a task that becomes increasingly difficult during droughts as water sources dry up and distances increase. This physically demanding work consumes a significant portion of their day, leaving little time for other essential activities such as income generation or education (Files\FGDs\FGD - 1, Reference 1: "With dwindling water sources, they are often compelled to walk several miles each day to fetch water for their households... These long journeys not only leave them physically exhausted but also consume a significant portion of their day."). Similarly, during floods, women face additional challenges, such as cleaning and repairing damaged homes, disposing of garbage, and ensuring their families' safety and well-being (Files\Interviews\Respondent 3 (Z), Reference 1: "During floods, water often enters people's homes... There is a lot of work to

be done inside the homes, like collecting garbage, and that garbage needs to be disposed of in a specific location.").

The burden of household responsibilities is further increased when men migrate for work, leaving women to manage everything alone. This includes caring for children, arranging food and water, and handling financial difficulties, all of which contribute to significant mental and emotional stress (Files\FGDs\FGD - 2, Reference 1: "Their wives are alone at home, taking care of the children, and they have to manage everything... They face a lot of difficulties because of this."). In disaster-affected areas, women must also navigate the challenges of rebuilding their lives, such as arranging food, seeking financial aid, and meeting daily household needs, all while dealing with the emotional toll of losing their homes and livelihoods (Files\Interviews\Saima, Reference 4: "When families return to their homes after floods, they face new and complex challenges... The economic burden falls most heavily on women.").

Theme 10: Lack of Gendered Sensitive Planning and preparedness

The “Lack of Gender-Sensitive Planning and Preparedness” theme reveals critical barriers for women facing climate change. Limited education and awareness leave women, especially in rural areas, distressed and unprepared for climate impacts like extreme heat and floods, worsened by poor access to communication and community discussions. The absence of grassroots, gender-disaggregated data hampers effective policymaking, while disaster preparedness overlooks women’s unique needs, such as pregnancy and childcare, deepening their vulnerability.



10.1. Lack of Awareness and Education Among Women

During our interviews, another pressing concern emerged is the lack of awareness and education among women about climate change. According to the data gathered restricted access to education and information leaves women unprepared to comprehend and respond to climate change, heightening their vulnerability. Qualitative data reveals that many women, particularly in rural areas, lack awareness of climate change, its causes, and its impacts on their lives. Most of the rural women do not know the word ‘Climate Change’. This lack of knowledge leaves them in a constant state of distress, unable to take proactive measures to protect themselves and their families (Files\Interviews\Saima, Reference 1: “Their biggest and most fundamental problem is the complete lack of awareness... They simply find themselves in a constant state of distress.”). Without access to information, women struggle to understand phenomena like extreme heat or floods, which directly affect their livelihoods, such as wheat crops (Files\Interviews\Saima, Reference 2: “Now, take this extreme heat, which is highly damaging to wheat crops... These women have no idea.”).

The absence of awareness is compounded by limited access to communication tools, such as mobile phones or radios, and exclusion from social gatherings or community discussions where critical information is shared. This isolation further restricts their ability to learn about climate change, disaster preparedness, or available aid programs (Files\Interviews\Saima, Reference 3: “They do not attend social gatherings or community discussions where they might gain important information.”). As a result, women

are often unaware of how to access aid, navigate relief processes, or obtain identification documents, which are essential for receiving support during disasters (Files\Interviews\Respondent 3 (Z), Reference 1: “These women are unaware of how to access aid, they don’t know the process, and they don’t have identification documents.”).

Efforts to raise awareness about climate change among women are often met with limited understanding or engagement, as many women lack the foundational knowledge to grasp the complexities of the issue. For instance, when experts attempt to explain how weather patterns have changed or how rising sea levels affect their communities, women often struggle to connect this information to their daily lives or envision solutions (Files\Reports\National\Expert Interview 4- (WB), Reference 1: “I tried to sort of explain how weather in their districts has altered... for most Pakistanis, the response to ‘What would you do about it?’ or ‘What would you like us to do about it?’ is.”).

10.2. Absence of Grassroots Data for Gendered Planning

Our respondents also highlighted the critical gap in grassroots-level data, particularly regarding the gendered impacts of climate change, which hinders effective policymaking and disaster response. While some organizations have begun addressing climate change by including “family kits” and essential supplies in relief packages, the lack of comprehensive, gender-disaggregated data remains a significant barrier to targeted and effective interventions (Files\Interviews\Saima, Reference 1: “The real problem is that we do not have any comprehensive grassroots-level data related to women...”).

Ideally, this data should be available at the government level, but if that is not the case, then civil society, donors, and other institutions must work together.”). Without detailed information on which areas are most affected, how women are disproportionately impacted, and what their specific needs are, relief efforts and policies often fail to address the root causes of vulnerability.

The absence of data is a systemic issue in Pakistan, where grassroots-level information is scarce, and existing data collection efforts are often bypassed in favor of quick, tangible results. This approach undermines the effectiveness of government projects and limits the ability to develop evidence-based policies (Files\Reports\National\Expert Interview 4- (WB), Reference 6: “What happens is that when a project on climate change comes... you bypass the data stage... All our government projects collapsed pretty much because of this reason.”). Additionally, cultural and security challenges further complicate data collection, as men often prevent researchers from speaking to women, and unsafe conditions hinder access to certain regions (Files\Reports\National\Expert Interview 4- (WB), Reference 7: “When I was collecting data on climate migration or on the impacts on women, men wouldn’t let me talk to women.”).

The lack of data also weakens Pakistan’s ability to advocate for international support, as evidence-based arguments are crucial for making compelling cases for funding and resources (Files\Reports\National\Expert Interview 4- (WB), Reference 11: “For Pakistan, there is—a massive data problem... With better data, with better information, we can actually make our international pleas stronger.”). Addressing this issue requires a concerted effort to prioritize data collection at the grassroots level, ensuring that information is gender-disaggregated and reflects the specific challenges faced by women. Training local communities to collect and report data, improving provincial capacity, and fostering collaboration between government, civil society, and international organizations are essential steps toward building a robust data infrastructure.

10.3. Failure to Address Women’s Specific Needs in Preparedness

Qualitative data reveals that women, including those who are pregnant, are frequently forced to navigate unsafe conditions, such as traveling through floodwaters or on unstable paths, without prior experience or adequate support (Files\Interviews\Saima, Reference 1: “Many times, women are pregnant, but even in such conditions, they have to manage everything on their own... They lack prior experience of such situations, yet they are forced to face these challenges under any circumstances.”). This lack of consideration for women’s specific needs in emergency

planning exacerbates their vulnerability and limits their ability to protect themselves and their families.

The absence of gender-sensitive preparedness measures is a systemic issue, as emergency plans rarely account for the distinct challenges women face, such as childcare responsibilities, mobility restrictions, and health concerns (Files\Interviews\Saima, Reference 2: “Emergency planning has never included women’s specific needs.”). This oversight renders disaster preparedness efforts incomplete and ineffective, as they fail to address the root causes of women’s vulnerability. Without incorporating these fundamental issues into preparedness agendas, it becomes impossible to develop meaningful solutions that enhance women’s resilience and safety during disasters (Files\Interviews\Saima, Reference 3: “This means that our disaster preparedness remains incomplete... If we do not include these fundamental issues in our agenda, then no effective measures can be taken to solve them.”).

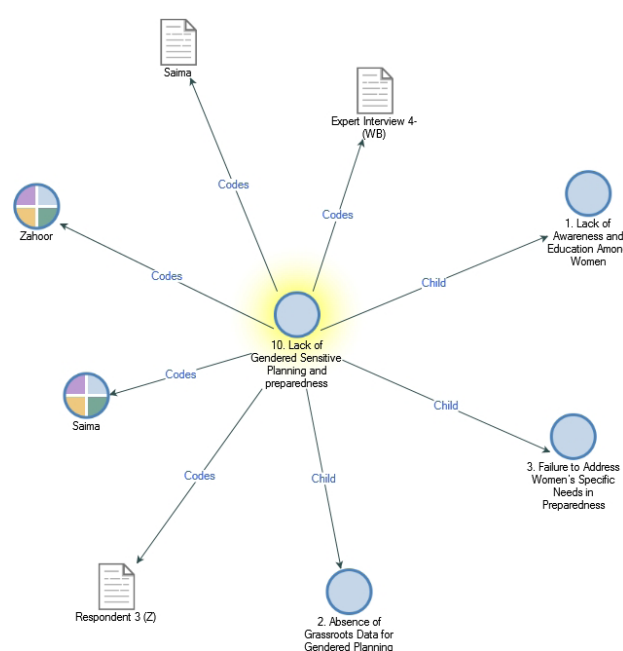
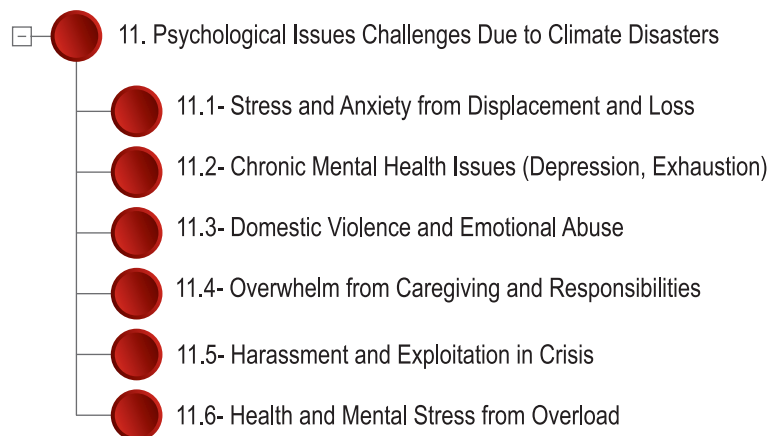


Figure 19: Theme 10 and its child nodes

Theme 11: Psychological Issues Challenges Due to Climate Disasters

Climate disasters exacerbate profound psychological challenges for women, who bear the brunt of increased responsibilities, displacement, and loss. Women face chronic stress, anxiety, and depression due to overwhelming caregiving duties, financial strain, and unsafe conditions. Displacement and resource shortages heighten their vulnerability to harassment, exploitation, and domestic violence, while societal expectations leave little room for self-care. Pregnant women and mothers endure additional hardships, with malnutrition and unsafe conditions jeopardizing their health and that of their children. These compounded stressors highlight the disproportionate mental and emotional toll climate disasters impose on women, underscoring the urgent need for targeted support and interventions.



11.1. Stress and Anxiety from Displacement and Loss

Another theme which was emerged is Stress and Anxiety from Displacement and Loss. It highlights the profound psychological toll that climate-induced disasters take on women, particularly those who are displaced or face significant losses. Qualitative data reveals that women experience immense stress and anxiety during and after disasters, as they are often responsible for managing the physical and emotional well-being of their families while coping with their own trauma. For pregnant women, this stress is compounded by malnutrition, food insecurity, and the fear of unsafe deliveries, leading to long-term health problems for both mothers and newborns (Files\FGDs\FGD - 1, Reference 1: "Stress and malnutrition during pregnancy due to displacement and food insecurity can result in low birth weight and long-term health problems for newborns... The psychological toll on expecting mothers is immense.").

The financial strain caused by disasters, such as floods, further exacerbates women's anxiety, as they worry about how to provide for their families and recover from losses. For instance, the destruction of livestock, which takes years to mature, leaves families, particularly women, in a state of grief and uncertainty (Files\Interviews\Respondent 1 (A), Reference 1: "It takes four to five years for a buffalo

to mature, but floods often come within three to four years and wash away everything, giving a lot of grief to the family, particularly women."). This financial instability adds to the emotional burden, as women struggle to rebuild their lives and secure basic necessities.

The aftermath of disasters places an overwhelming burden on women, who must care for sick children, repair damaged homes, and cope with the loss of livelihoods. This constant stress leads to psychological disorders, anxiety, and depression, which not only affect their mental health but also weaken their social standing and ability to function effectively (Files\Interviews\Saima, Reference 1: "This constant stress takes a toll on women's physical health, but more critically, it deeply affects their mental well-being... They suffer from psychological disorders, anxiety, and depression.").

11.2. Chronic Mental Health Issues (Depression, Exhaustion)

Climate change induced disasters are the reason of chronic mental health issues among women. Most of such cases highlights the severe and long-lasting psychological impacts of climate-induced disasters on women, who often bear the brunt of emotional and physical burdens. Qualitative data reveals that women experience chronic

mental health issues, such as depression, anxiety, and emotional exhaustion, as they navigate the loss of homes, livelihoods, and security. As primary caregivers, women frequently suppress their emotions to maintain stability for their families, which exacerbates their psychological distress and leads to long-term health problems, including headaches and high blood pressure (Files\FGDs\FGD - 1, Reference 1: "Mental health is another concern, as losing homes, livelihoods, and security leads to prolonged stress, anxiety, and emotional exhaustion... This emotional suppression takes a severe toll on their well-being, leading to long-term psychological distress, depression, and even

women face additional health challenges, such as urinary tract infections (UTIs), due to the lack of privacy and safe sanitation facilities. These physical health issues, combined with high rates of depression, further compound their suffering and highlight the interconnectedness of mental and physical well-being (Files\Reports\National\Expert Interview 4- (WB), Reference 1: "Apart from depression rates being very high in women, UTIs were very high in women in this part of the country... Women will wait till nightfall to find some privacy—and then, while they're waiting, they'll develop infections.").



Figure 20: Word cloud of Theme 10

physical health issues.”).

The constant pressure of managing household responsibilities, caring for children, and rebuilding lives after disasters leaves women mentally and physically exhausted. This overwhelming workload, coupled with the lack of time for rest or self-care, further contributes to their mental health challenges (Files\FGDs\FGD - 1, Reference 2: “Balancing these duties is not only physically demanding but mentally exhausting... The constant pressure of managing everything on my own often leaves me feeling overwhelmed.”). Women’s mental health is also severely affected by concerns over safety and security, particularly in displacement camps or temporary shelters, where they face heightened risks of harassment and violence. This constant fear and insecurity exacerbate their psychological stress, leading to depression and other mental health disorders (Files\Interviews\Saima, Reference 1: “Men can sleep anywhere... but for women, security is a significant concern... Their constant fear and sense of insecurity make things even more challenging, severely affecting their mental health.”).

In regions like Sindh, where climate migration is prevalent,

11.3. Domestic Violence and Emotional Abuse

The child node “Domestic Violence and Emotional Abuse” under the theme “Psychological Issues and Challenges Due to Climate Disasters” highlights how climate-induced financial strain and displacement exacerbate domestic violence and emotional abuse, disproportionately affecting women. Qualitative data reveals that during crises, such as floods or droughts, domestic violence often spikes as men, overwhelmed by stress and frustration, direct their anger toward women. Women, who already bear the burden of managing households, caregiving, and often working outside the home, face increased emotional and physical strain, trapping them in cycles of abuse (Files\FGDs\FGD - 1, Reference 1: “During times of crisis, domestic violence often spikes as stress, financial strain, and uncertainty take a toll on families... This violence exacerbates the emotional and physical strain on women, leaving them trapped in a cycle of abuse.”). Societal norms that discourage women from speaking out further isolate them, leaving them to endure their suffering in silence.

The loss of livelihoods, such as livestock or crops, intensifies family tensions, as men’s frustrations over

financial losses are often taken out on women. This dynamic places women at greater risk of domestic violence, as they become targets of their husbands' anger and helplessness (Files\FGDs\FGD - 2, Reference 1: "If their livestock dies, they suffer losses. It impacts women, because they have to face the frustrations of the males of their families."). The psychological toll of losing everything—homes, livelihoods, and security—further fuels this cycle of violence, as men's feelings of powerlessness manifest as aggression toward their wives (Files\Interviews\Respondent 2 (N), Reference 1: "Losing everything you own can lead to frustration and anger, which sometimes manifests as domestic violence.").

Financial struggles and unmet basic needs escalate family tensions, leading to increased domestic conflicts and violence. Women, already burdened by economic hardships, social pressure, and mental stress, endure physical abuse and emotional trauma. In extreme cases, they are forced to seek refuge in shelters like Dar-ul-Aman, file police reports, or engage in legal battles, further compounding their stress and vulnerability (Files\Interviews\Saima, Reference 1: "As financial struggles increase, so do domestic conflicts... Women endure not only economic hardships but also social pressure, mental stress, and domestic abuse."). This cycle of violence, rooted in financial hardship and displacement, underscores the urgent need for interventions that address both economic instability and gender-based violence.

11.4. Overwhelm from Caregiving and Responsibilities

The immense emotional and physical burden women face as they juggle multiple roles, particularly in the aftermath of climate-related disasters. In rural areas, women are often overwhelmed by the dual responsibilities of caregiving and managing household survival, which takes a heavy toll on their mental and physical health. The stress of financial instability, combined with the pressure of ensuring their families' well-being, leaves women emotionally drained and physically exhausted (Files\FGDs\FGD - 1, Reference 1: "The stress of financial instability, combined with the pressure of ensuring household survival, takes a heavy emotional toll."). This constant juggling of roles strains their health and limits their ability to care for themselves or their children effectively (Files\FGDs\FGD - 1, Reference 2: "The constant juggling of multiple roles not only strains their physical health but also takes a toll on their mental well-being.").

In rural communities, women are already burdened with undetected psychological issues from an early age, and the added stress of climate disasters exacerbates their mental health challenges. Floods and other climate-related

impacts increase their workload and emotional strain, making it difficult for them to cope (Files\FGDs\FGD - 2, Reference 1: "Village women always have undetected psychological issues from the beginning of their lives... Flood and other climate change impacts increase this burden of stress."). Despite their resilience and ability to adapt, the sheer volume of responsibilities leaves women with little time or energy to focus on their own health or

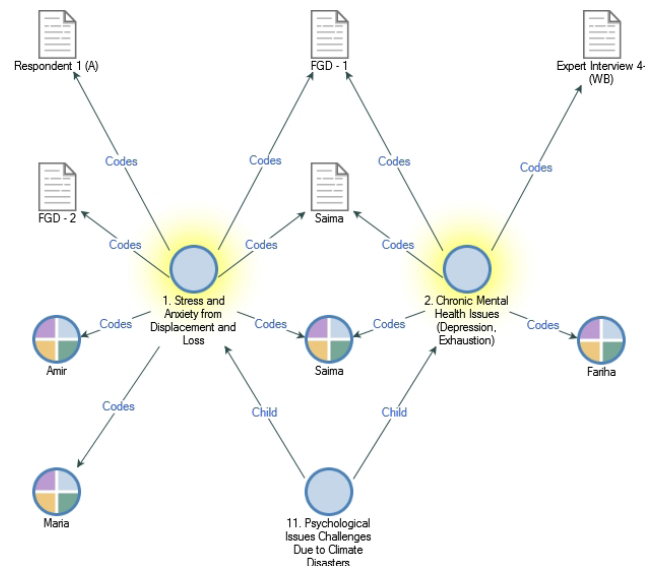


Figure 21: Relationship between two child nodes

the proper development of their children. This neglect often leads to malnutrition and other health issues for both mothers and children (Files\Interviews\Kahlida, Reference 1: "These women are very cooperative and capable of fighting situations, but the numerous responsibilities imposed on them do not give them a chance to take care of themselves... This is the reason why not only their own health is affected, but their children also suffer from malnutrition and other health problems.").

The burden of caregiving is further compounded by fear and insecurity, particularly in disaster-affected areas. Women, already overloaded with responsibilities, must also navigate the emotional stress of uncertainty and danger, which severely impacts their overall well-being (Files\Interviews\Saima, Reference 1: "When all the burden is placed on a woman, it has severe consequences on her health... Fear and insecurity are added to her stress.").

11.5. Harassment and Exploitation in Crisis

The child node "Harassment and Exploitation in Crisis" under the theme "Psychological Issues and Challenges Due to Climate Disasters" highlights the heightened vulnerability of women to harassment, exploitation, and violence during and after climate-related disasters. Qualitative data reveals that women face significant risks in disaster settings, from the lack of female rescue workers to unsafe conditions in relief camps and during

aid distribution. The absence of female rescuers makes it difficult for women to seek help without fear of harassment or discomfort, further isolating them from essential support (Files\FGDs\FGD - 1, Reference 1: “The absence of female rescue workers adds another layer of difficulty, making it harder for women to receive appropriate assistance without facing harassment or discomfort.”). Additionally, the lack of proper sanitation facilities forces women to travel long distances for clean water, exposing them to harassment and accidents (Files\FGDs\FGD - 1, Reference 2: “The lack of proper sanitation facilities further worsens the crisis... forcing women to travel long distances in search of clean water, often under unsafe conditions.”).

In relief camps and during rescue operations, women are particularly vulnerable to harassment and exploitation. Overcrowded shelters and makeshift camps offer little privacy, making women easy targets for abuse (Files\Interviews\Respondent 2 (N), Reference 1: “Displacement caused by floods forces families to live in overcrowded shelters or makeshift camps... Privacy is nonexistent, making women more vulnerable to harassment and abuse.”). Women in camps often face harassment even within their own communities, as cultural norms restrict their mobility and access to safe spaces (Files\Interviews\Saima, Reference 1: “When people move into relief camps, men sit outside and talk, but women cannot step out until the men leave... In such conditions, women often suffer from heat and suffocation, yet sometimes they face harassment even within their own community.”).

Exploitation during aid distribution is another critical issue, as some individuals posing as aid workers take advantage of vulnerable women, demanding favors or harassing them under the guise of providing help (Files\Interviews\Kahlida, Reference 2: “In the name of aid, some satanic people come together, who take advantage of the compulsion of the victims... They add to the suffering of the oppressed, rather than supporting them.”). These exploitative practices not only deprive women of essential resources but also inflict psychological trauma, leaving them feeling helpless and betrayed (Files\Interviews\Zareena, Reference 1: “Women not only faced a lack of basic necessities, but they also faced psychological and social pressure... They are not giving us anything, they are sometimes saying this work, sometimes that work.”).

The risks of harassment and exploitation extend beyond camps and aid distribution. Women traveling long distances for water or other necessities are exposed to sexual violence, attacks by wild animals, and other dangers (Files\Reports\National\Expert Interview 4- (WB), Reference 1: “Women who are traveling long distances to collect water are more exposed to sexual harassment; they’re more exposed to sexual violence; more exposed to attacks by

wild animals.”). The lack of privacy and safe sanitation facilities further exacerbates their vulnerability, leading to health issues like urinary tract infections (UTIs) and increasing their exposure to harassment (Files\Reports\National\Expert Interview 4- (WB), Reference 2: “Women will wait till nightfall to find some privacy—and then, while they’re waiting, they’ll develop infections and also become more exposed again to sexual harassment, sexual violence, and attacks by wild animals.”).

6. Health and Mental Stress from Overload

Climate disasters, such as floods, droughts, and extreme weather events, exacerbate psychological and mental health challenges, particularly for women, who often bear the brunt of increased responsibilities and stress. In the aftermath of such disasters, women frequently experience burnout due to the overwhelming demands placed on them, with little time for rest or recovery (Files\FGDs\FGD - 1, Reference 1: “many women face burnout, with little time for rest or recovery”). This is compounded by the fact that during extreme weather conditions, the workload on women increases significantly compared to men, as they are often tasked with managing households, caring for children, and ensuring the family’s survival (Files\Interviews\Respondent 1 (A), Reference 1: “during extreme weather conditions like floods or droughts, the workload on women increases compared to men. For example, women have to take on more responsibilities in managing their households”). The absence of male family members, who may migrate for work during crises, further intensifies this burden, leaving women to shoulder the entire responsibility of their families. As one respondent noted, “My husband left to find work in the city, so now it’s just me trying to keep my children alive. Every day feels like climbing a mountain” (Files\Interviews\Respondent 2 (N), Reference 1).

Pregnant women and those with young children face additional challenges, as they are often forced to navigate unsafe conditions, such as traveling through floodwaters or precarious paths, without prior experience or support (Files\Interviews\Saima, Reference 1: “Many times, women are pregnant, but even in such conditions, they have to manage everything on their own... they lack prior experience of such situations, yet they are forced to face these challenges under any circumstances”). The cumulative burden of these responsibilities, coupled with the fear and insecurity brought on by disasters, severely impacts women’s mental and physical health. As Saima explained, “When all the burden is placed on a woman, it has severe consequences on her health. She is already overloaded with responsibilities, and on top of that, fear and insecurity are added to her stress” (Files\Interviews\Saima, Reference 2). This disproportionate impact is further highlighted by the observation that “during natural

disasters, women suffer far greater difficulties and mental stress compared to men” (Files\Interviews\Saima, Reference 3).

The intersection of climate change, resource shortages, and societal expectations places an immense psychological toll on women, as they are often the primary caregivers and managers of household resources. As one expert noted, “natural disasters, climate change, and resource shortages affect women the most, as all responsibilities ultimately fall on their shoulders” (Files\Interviews\Saima, Reference 4). Additionally, women are frequently unable to prioritize their own health, even when they or their family members fall ill due to environmental factors like air pollution. One expert shared, “I meet so many women, and they complain about it... They talk about how the children are unwell because of air pollution, and they themselves are unwell also. But they can’t afford to take days off from work, and then they also have to juggle unwell family members—or a child who’s having trouble breathing, whose asthma is kicked in” (Files\Reports\National\Expert Interview 4- (WB), Reference 1). This relentless cycle of caregiving, work, and survival leaves women with little opportunity to address their own mental and physical well-being, perpetuating a cycle of stress and vulnerability in the face of climate disasters.

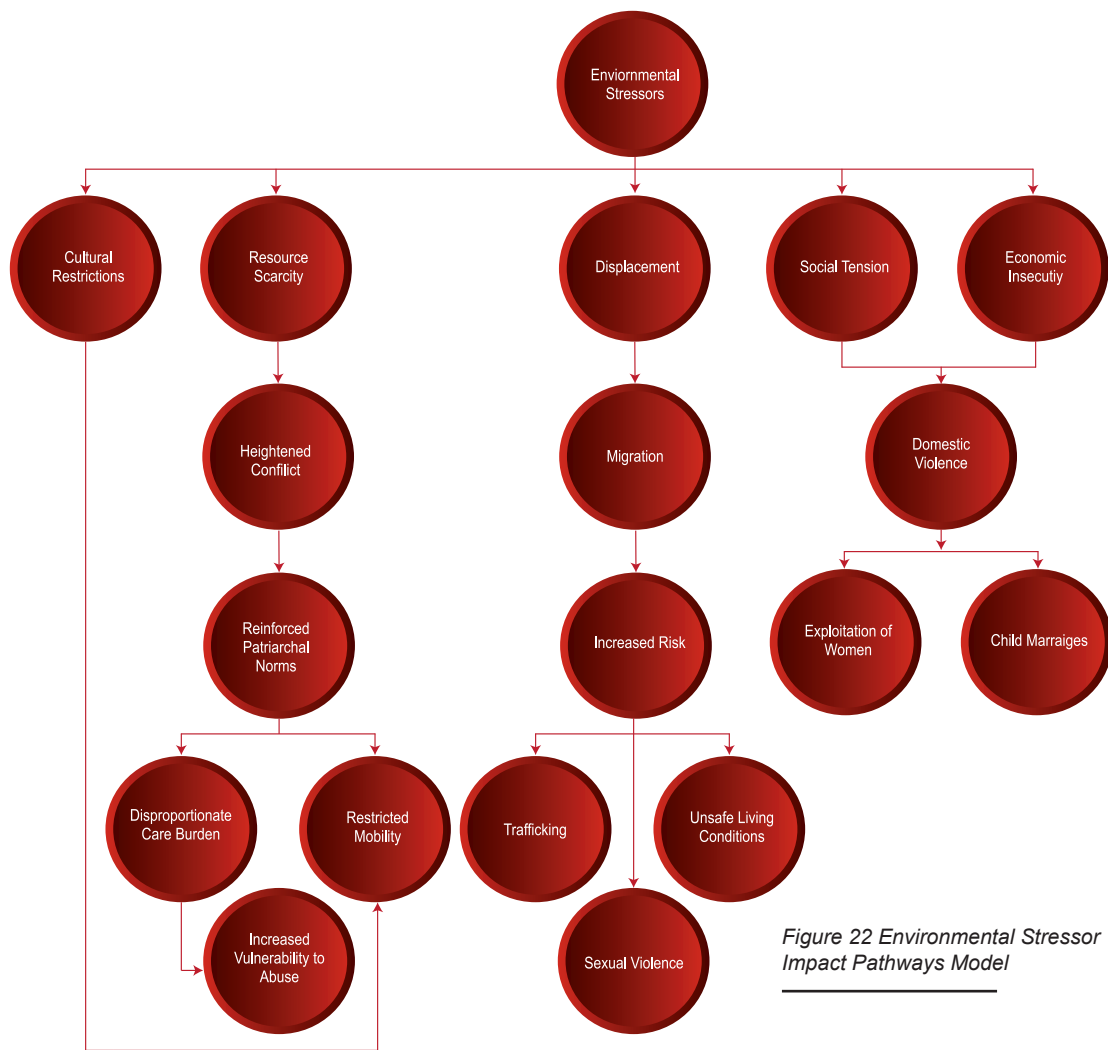


Figure 22 Environmental Stressor Impact Pathways Model

This figure presents a model developed directly from our qualitative research findings. The analysis indicates that Environmental Stressors act as a primary driver, setting off a chain reaction identified through participant accounts. Our research revealed that these stressors lead to critical intermediate factors such as Economic Insecurity, Social Tension, Displacement, Resource Scarcity, and interact with existing Cultural and Institutional Variables. Furthermore, the qualitative data showed how these factors contribute to subsequent issues like Migration, Heightened Conflict, Increased Domestic Violence, and Reinforced Patriarchal norms. Crucially, the research highlighted the pathways from these issues to severe consequences disproportionately impacting women, including Exploitation, Child Marriage, Unsafe Living Conditions, Sexual Violence, Trafficking, Restricted Mobility, a Disproportionate Care Burden, and ultimately, an increased vulnerability to abuse.

Quantitative Analysis using SPSS with Chi Square Tests

1. What is the biggest problem you and other women face due to climate change?

- A) Water Scarcity
- B) Not having enough food for the family
- C) Getting sick due to heat, floods, or water pollution
- D) Increased workload and Responsibilities
- E) Feeling unsafe or facing more violence during disasters
- F) Mental Health Issues

Chi-Square Test for Association Between Climate Issues for Women and Regions

To determine whether there is a significant association between the biggest climate issue faced by women and their region.

Hypotheses:

- Null Hypothesis (H_0): There is no association between the biggest climate issue for women and their region.
- Alternative Hypothesis (H_1): There is an association between the biggest climate issue for women and their region.

The Chi-Square statistic (χ^2) is calculated using the formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

After performing the chi-square test:

Chi-Square Value: 73.45

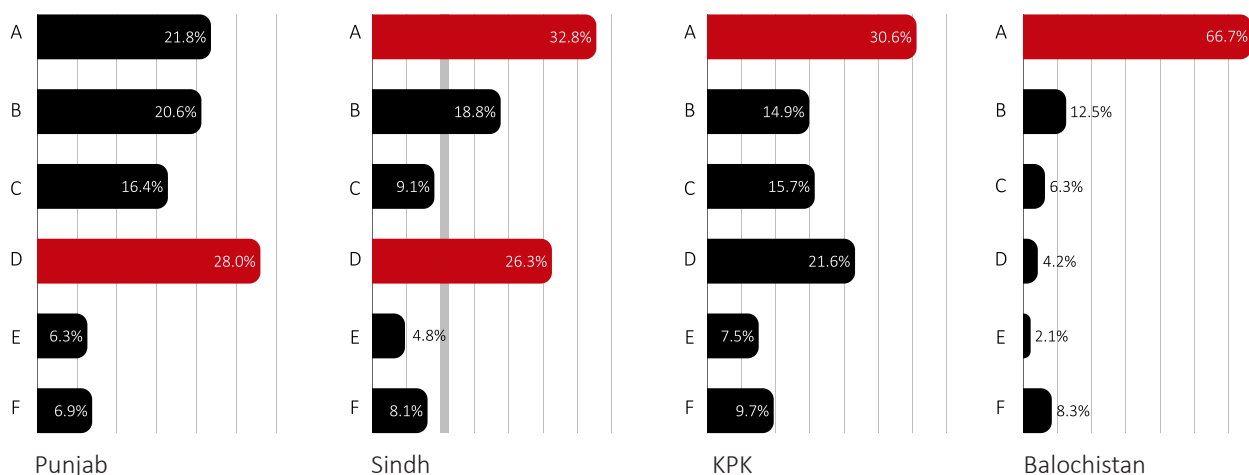
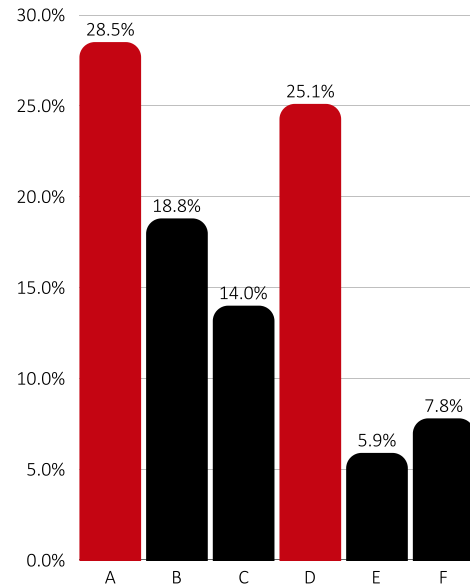
Degrees of Freedom (df): (Rows - 1) × (Columns - 1) = (6-1) × (4-1) = 5 × 3 = 15

p-value: < 0.001

Conclusion:

Since the p-value is less than 0.05, we reject the null hypothesis. This indicates a significant association between the biggest climate issue for women and their region.

This means that the climate-related issues faced by women vary significantly across different regions, with water scarcity being a major concern in Balochistan, while increased workload and food insecurity are more prominent in Punjab and Sindh. These regional disparities highlight the need for targeted interventions to address region-specific climate vulnerabilities affecting women.



2. How do you get drinking water when there is a shortage?

- A) Walk long distances to fetch water
- B) Store rainwater for later use
- C) Buy expensive bottled or RO water
- D) Rely on water tankers from the government or NGOs
- E) Reduce water use, even if it means less hygiene

Chi-Square Test for Association Between Water Shortage Coping Strategies and Regions

To determine whether there is a significant association between how people obtain drinking water during a shortage and their region.

Hypotheses:

- Null Hypothesis (H_0): There is no association between the method of obtaining drinking water during a shortage and the region.
- Alternative Hypothesis (H_1): There is an association between the method of obtaining drinking water during a shortage and the region.

The Chi-Square statistic (χ^2) is calculated using the formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Results:

Chi-Square Test Results:

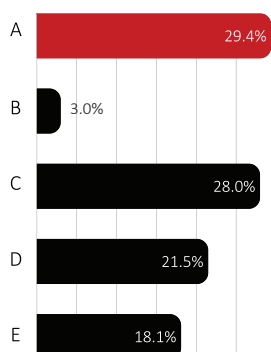
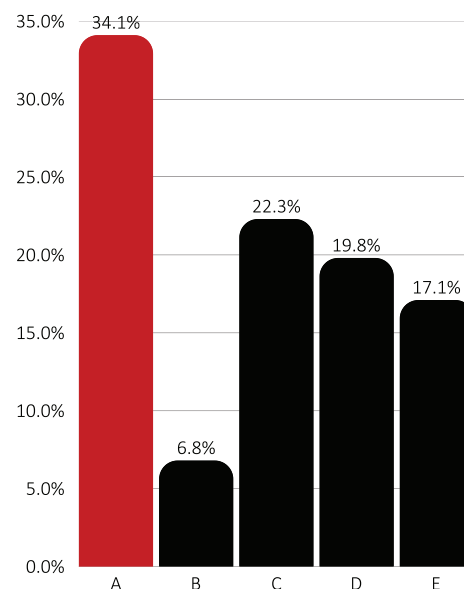
Chi-Square Value (χ^2): 105.43

Degrees of Freedom (df): 12

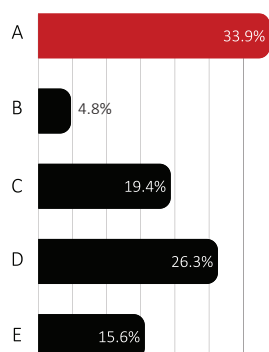
p-value: 4.78×10^{-17}

Conclusion:

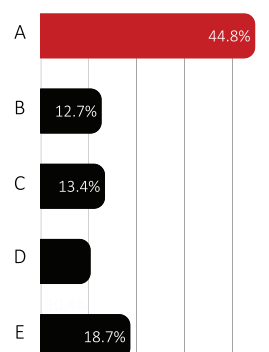
Since the p-value is significantly less than 0.05, we reject the null hypothesis (H_0). This indicates that there is a significant association between the method of obtaining drinking water during a shortage and the region. This suggests that water shortage coping strategies vary significantly across different regions.



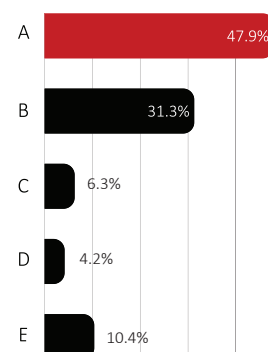
Punjab



Sindh



KPK



Balochistan

3. How has climate change affected your work and earnings?

- A) Reduced crop yields due to droughts or floods, leading to lower income.
 B) I have to do hard labor like brick-making or farm work for little pay
 C) I spend more time fetching water, collecting firewood, or caring for sick family members, leaving less time for paid work.
 D) I now depend more on my husband or male family members for money
 E) My small business or handicraft work has suffered due to climate-related disruptions like floods or heatwaves

Chi-Square Test for Association Between Climate Change Effects and Regions

To determine whether there is a significant association between the impact of climate change on work and earnings and the region, a Chi-Square Test of Independence was conducted. The test examines if the distribution of reported effects differs across Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Balochistan.

Hypotheses:

- Null Hypothesis (H_0): There is no association between the effect of climate change on work and earnings and the region.
- Alternative Hypothesis (H_1): There is an association between the effect of climate change on work and earnings and the region.

The Chi-Square statistic (χ^2) is calculated using the formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Using this formula, the Chi-Square statistic was computed as: $\chi^2 = 54.66$, and the p-value is 2.08×10^{-7}

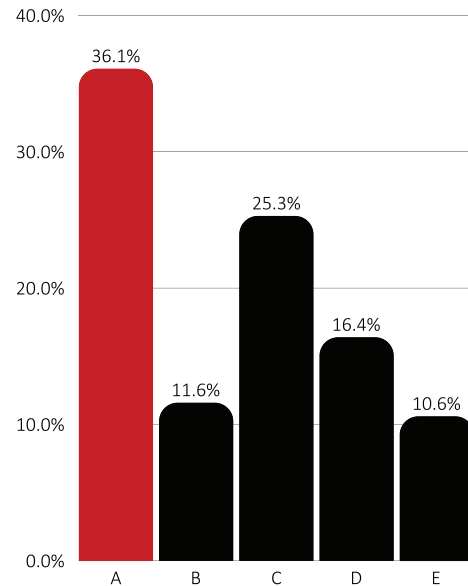
with degrees of freedom (df) = (Rows - 1) × (Columns - 1) = (5 - 1) × (4 - 1) = 12.

Results:

Chi-Square Statistic: $\chi^2 = 54.66$; p-value: 2.08×10^{-7} ; Degrees of Freedom: 12; Significance Level (α): 0.05. Since p-value is less than 0.05, we reject the null hypothesis.

Conclusion:

The findings suggest that there is a statistically significant association between how climate change affects work and earnings and the region of the respondents. This suggests that different regions experience the impacts of climate change on work and earnings in significantly different ways.



4. What makes it difficult for women to prepare for climate disasters?

- A) We don't have enough information on floods, droughts, or heatwaves
- B) We don't have money to prepare or leave in emergencies
- C) Women are not included in community decisions about climate issues
- D) Cultural rules make it hard for women to move freely or find work
- E) The government and NGOs do not help women enough

Chi-Square Test for Association Between Climate Disaster Preparedness Barriers and Regions

To determine whether there is a significant association between the difficulties women face in preparing for climate disasters and their region, a Chi-Square Test of Independence was conducted. The test examines if the distribution of responses differs across Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Balochistan.

Hypotheses:

- Null Hypothesis (H_0): There is no association between difficulties in climate disaster preparedness and the respondent's region.
- Alternative Hypothesis (H_1): There is an association between difficulties in climate disaster preparedness and the respondent's region.

The Chi-Square statistic (χ^2) is calculated using the formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Using this formula, the Chi-Square statistic was computed as: $\chi^2 = 38.02$, and the p-value is 0.00015

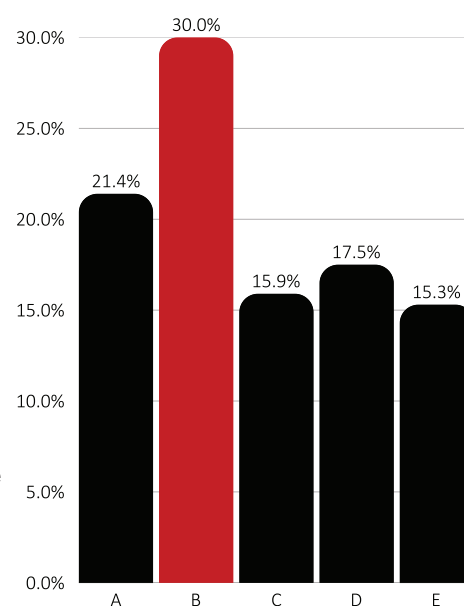
with degrees of freedom (df) = (Rows - 1) × (Columns - 1) = (5 - 1) × (4 - 1) = 12.

Results:

Chi-Square Statistic: $\chi^2 = 38.02$; p-value: 0.00015; Degrees of Freedom: 12; Significance Level (α): 0.05.

Conclusion:

Since the p-value (0.00015) is much lower than the common significance level of 0.05, we reject the null hypothesis. This indicates that there is a statistically significant association between the challenges women face in preparing for climate disasters and their region. The differences in responses across regions suggest that local factors such as economic conditions, cultural norms, and government support influence how women experience climate-related difficulties.



5. What health problems have increased for women in your area due to climate change?

- A) More stomach diseases like diarrhea due to dirty water
 B) Pregnant women facing more complications during floods and droughts
 C) More cases of fever, breathing problems, and skin diseases
 D) More mental stress and depression due to financial and social problems
 E) Malnutrition because food is not available or too expensive

Chi-Square Test for Association Between Health Problems and Region

To determine whether there is a significant association between health problems caused by climate change and the region, a Chi-Square Test of Independence was conducted. The test examines if the distribution of health-related issues differs across Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Balochistan.

Hypotheses:

- Null Hypothesis (H_0): There is no association between health problems and the region.
- Alternative Hypothesis (H_1): There is an association between the health problems and the region.

The Chi-Square statistic (χ^2) is calculated using the formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Using this formula, the Chi-Square statistic was computed as: $\chi^2 = 14.20$, and the p-value is 0.288

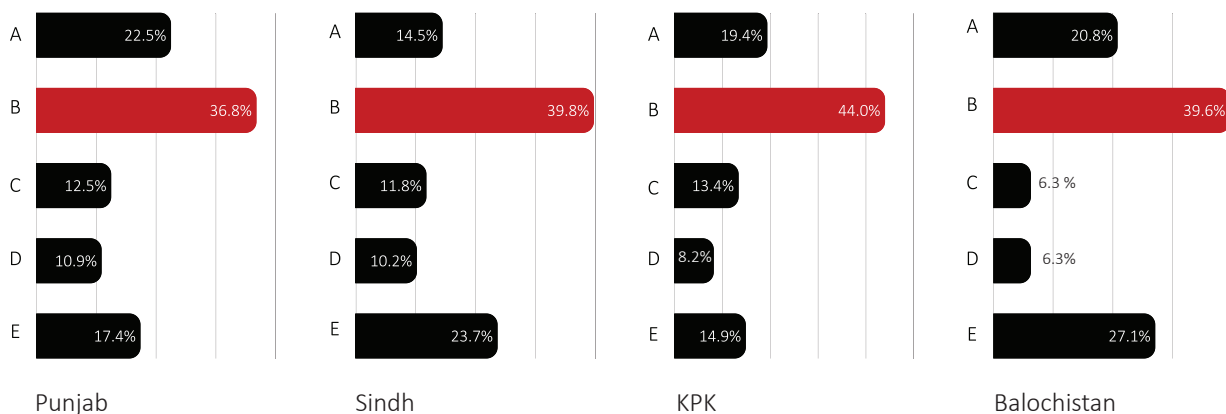
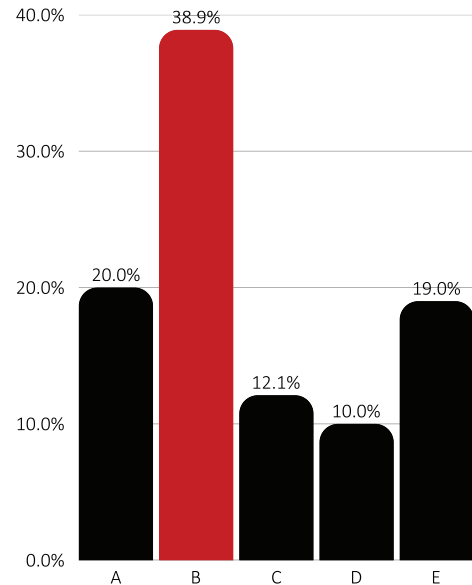
with degrees of freedom (df) = (Rows - 1) × (Columns - 1) = (5 - 1) × (4 - 1) = 12.

Results:

Chi-Square Statistic: $\chi^2 = 14.20$; p-value: 0.288; Degrees of Freedom: 12; Significance Level (α): 0.05. Since the calculated Chi-Square value is less than the critical Chi-Square value at a 5% significance level, we fail to reject the null hypothesis.

Conclusion:

The findings suggest that there is no significant association between health problems caused by climate change and the region. Notably, the most frequently reported health issue nationwide is pregnant women facing more complications during floods and droughts (38.9%), followed by stomach diseases (20%) and malnutrition (19%).



6. What help do women need most to deal with climate change?

- A) More access to clean water and proper sanitation
- B) Health centers that can support women, especially during disasters
- C) Programs that provide jobs and financial support for women
- D) Early warning systems and safe places for women during disasters
- E) Basic Awareness and Skills

Chi-Square Test for Association Between Help Needed and Regions

To determine whether there is a significant association between the type of help women need and their region, a Chi-Square Test of Independence was conducted. The test examines if the distribution of required assistance differs across Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Balochistan.

Hypotheses:

- Null Hypothesis (H_0): There is no association between the type of help needed and the region.
- Alternative Hypothesis (H_1): There is an association between the type of help needed and the region

The Chi-Square statistic (χ^2) is calculated using the formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Using this formula, the Chi-Square statistic was computed as: $\chi^2 = 130.46$, and the p-value is 4.99×10^{-22}

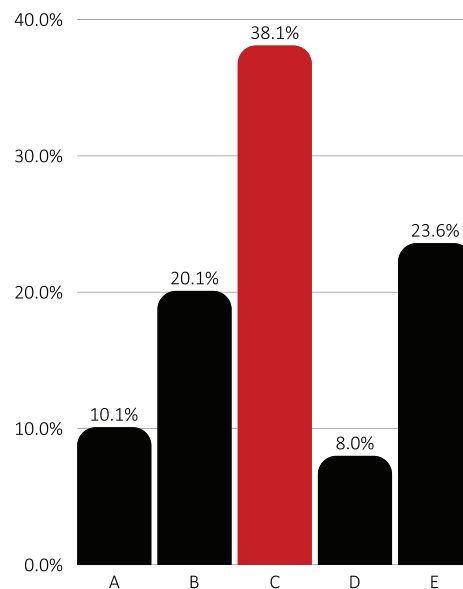
with degrees of freedom (df) = (Rows - 1) \times (Columns - 1) = (5 - 1) \times (4 - 1) = 12.

Results:

Chi-Square Statistic: $\chi^2 = 130.46$; p-value: 4.99×10^{-22} ; Degrees of Freedom: 12; Significance Level (α): 0.05. Since the p-value is less than 0.05, we reject the null hypothesis.

Conclusion:

Since the p-value is much smaller than the standard significance level (0.05), we reject the null hypothesis. This indicates that there is a statistically significant association between the type of help women need and their region. The distribution of required assistance varies across Punjab, Sindh, KP, and Balochistan.



7. If you lost your source of income due to floods or droughts, how did you cope?

- A) Tried to find work as a daily laborer or cleaner
- B) Took loans from family or landlords to survive
- C) Migrated to another area to find work
- D) Relied on government or NGO aid
- E) Reduced food intake and other expenses

Chi-Square Test for Association Between Coping Strategies and Regions

To determine whether there is a significant association between coping strategies and regions, a Chi-Square Test of Independence was conducted. The test examines if the distribution of coping mechanisms differs across Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Balochistan.

Hypotheses:

- Null Hypothesis (H_0): There is no association between the coping strategy and the region.
- Alternative Hypothesis (H_1): There is an association between the coping strategy and the region.

The Chi-Square statistic (χ^2) is calculated using the formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Using this formula, the Chi-Square statistic was computed as: $\chi^2 = 49.88$

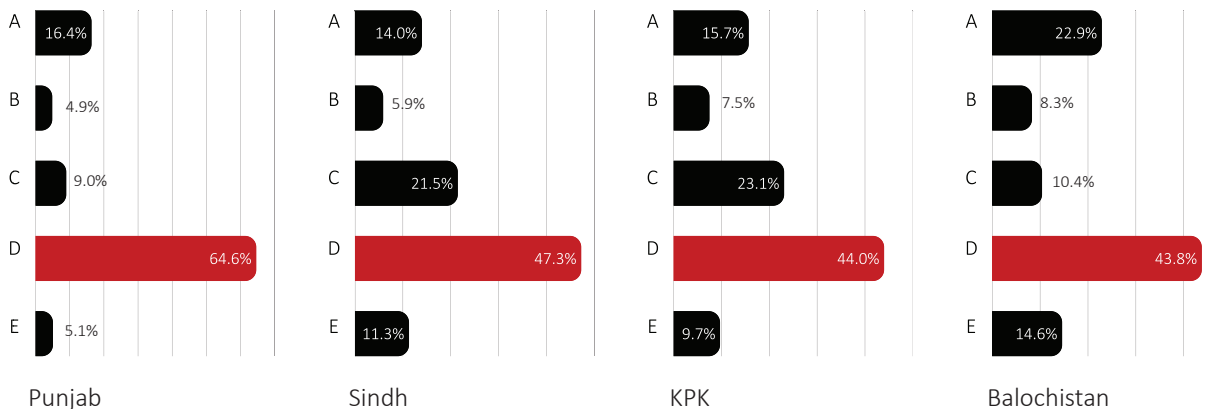
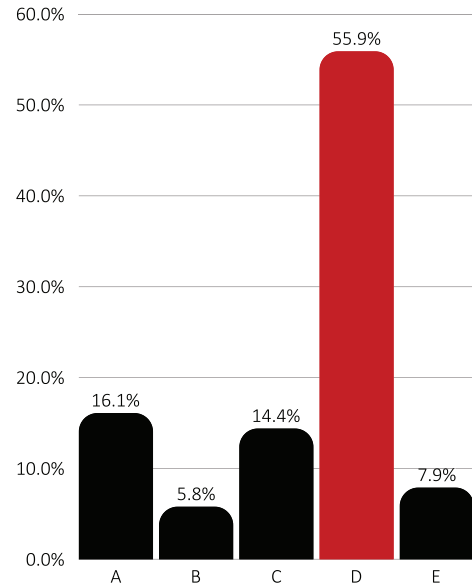
with degrees of freedom (df) = (Rows - 1) × (Columns - 1) = (5 - 1) × (4 - 1) = 12.

Results:

Chi-Square Statistic: $\chi^2 = 49.88$; p-value: 0.0000239; Degrees of Freedom: 12; Significance Level (α): 0.05. Since the p-value (0.0000239) is much smaller than 0.05, we reject the null hypothesis. This indicates that there is a statistically significant association between coping strategies and regions. In other words, the way people cope with income loss due to floods or droughts significantly differs across different regions.

Conclusion:

The findings suggest that reliance on government or NGO aid is the most common coping mechanism across all regions. However, migration and taking loans appear to be more common in some regions compared to others. Further post-hoc analysis may be required to identify which specific regions differ significantly in their coping strategies.



8. What makes it difficult for women to get help from the government or NGOs?

- A) We don't know where or how to ask for help
- B) We don't have the required documents (ID cards, etc.) to apply for aid
- C) Only men in the community are involved in discussions about aid
- D) Corruption and favoritism mean only some people get help
- E) There is no difficulty—I can get help when needed

Chi-Square Test for Association Between Barriers to Women's Access to Help and Regions

To determine whether there is a significant association between barriers to women getting help from the government or NGOs and regions, a Chi-Square Test of Independence was conducted. The test examines if the distribution of responses differs across Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Balochistan.

Hypotheses:

- Null Hypothesis (H_0): There is no association between the difficulty in getting help and the region.
- Alternative Hypothesis (H_1): There is an association between the difficulty in getting help and the region.

The Chi-Square statistic (χ^2) is calculated using the formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Using this formula, the Chi-Square statistic was computed as: $\chi^2 = 28.23$ with degrees of freedom $df = (Rows - 1) \times (Columns - 1) = (5 - 1) \times (4 - 1) = 12$

Results:

Chi-Square Statistic (χ^2): 28.23

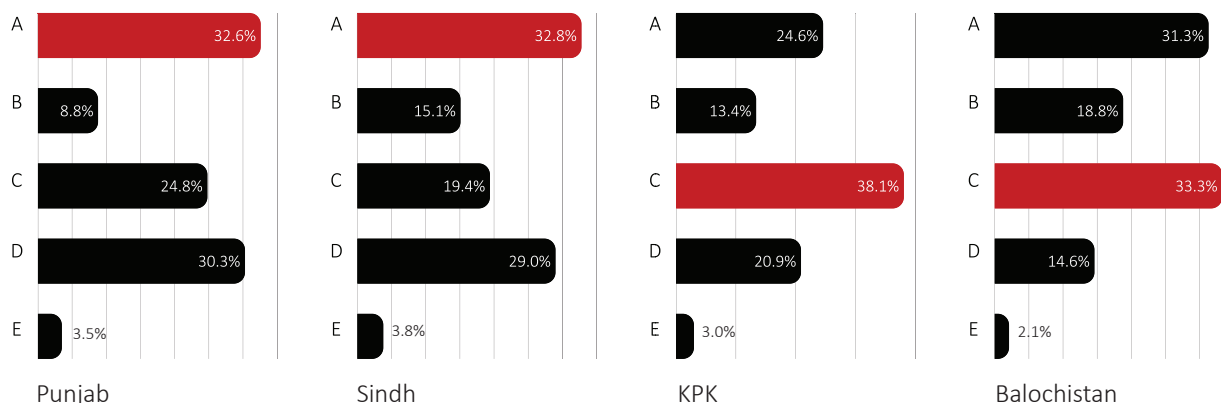
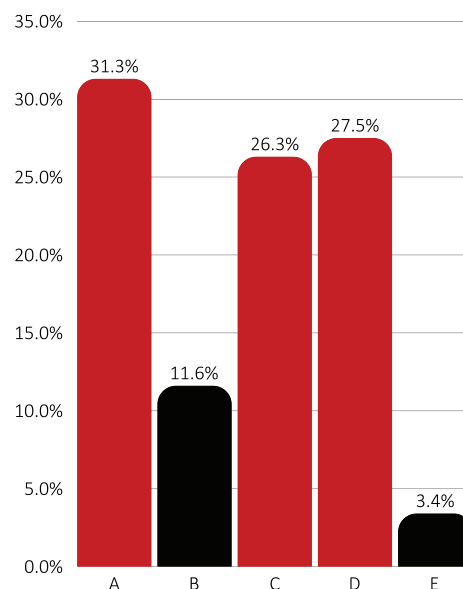
p-value: 0.0297

Degrees of Freedom (df): 12

Conclusion:

Since the p-value (0.0297) is less than 0.05, we reject the null hypothesis (H_0). This indicates that there is a statistically significant association between barriers to women getting help from NGOs/government and the region. In other words, the difficulties women face in accessing help vary significantly across Punjab, Sindh, KP, and Balochistan.

Among the barriers, the most frequently cited reason nationally was option A "We don't know where or how to ask for help" (31.3%), followed by option D (27.5%) and C (26.3%).



9. How do you think NGOs can best help women facing climate related problems?

- A) Provide food, water, and shelter after disasters
- B) Teach women new ways to farm and earn money despite climate change
- C) Involve women in making climate policies and local decisions
- D) Give financial help and grants to women to start businesses
- E) Facilitate Access to Healthcare Services

Chi-Square Test for Association Between NGO Support Strategies and Regions

To determine whether there is a significant association between preferred NGO support strategies and regions, a Chi-Square Test of Independence was conducted. The test examines if the distribution of preferences for NGO support strategies differs across Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Balochistan.

Hypotheses:

Null Hypothesis (H_0): There is no association between the preferred NGO support strategy and the region.

Alternative Hypothesis (H_1): There is an association between the preferred NGO support strategy and the region.

The Chi-Square statistic (χ^2) is calculated using the formula:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Chi-Square Statistic (χ^2) = 43.40

p-value = 0.0000193 (approximately)

Degrees of Freedom (df) = 12

Since the p-value is very small (less than 0.05), we reject the null hypothesis, meaning there is a significant association between the type of NGO support and the region.

Conclusion:

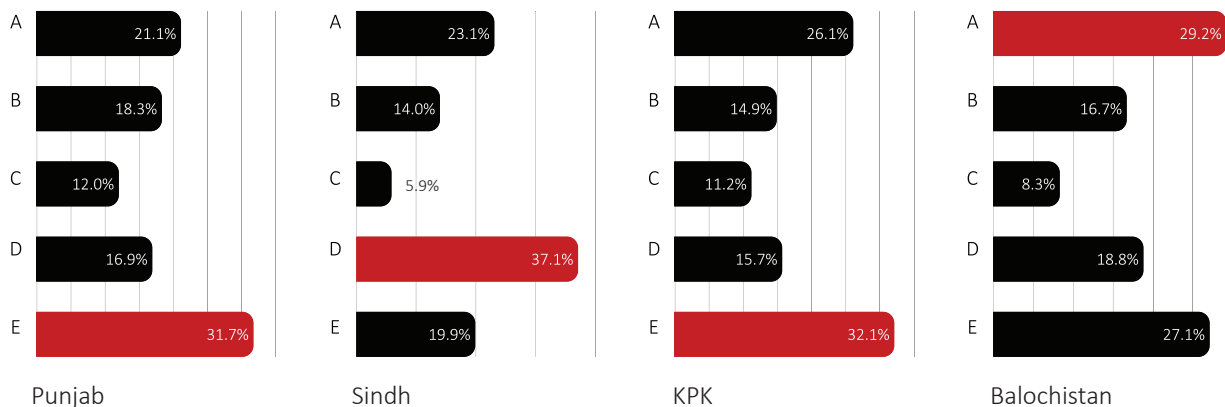
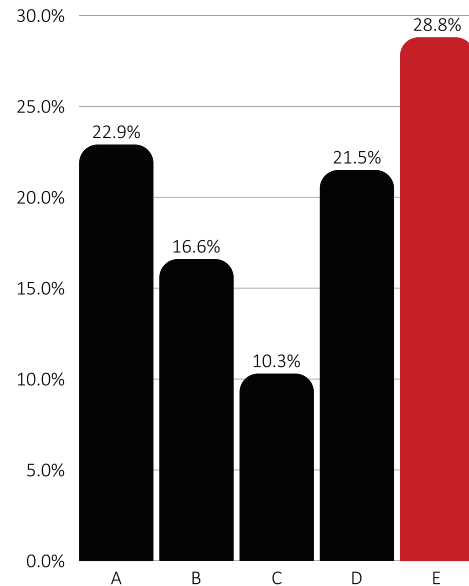
Based on the results of the Chi-Square Test of Independence, we conclude:

There is a significant association between the preferred NGO support strategy and region (if $p \leq 0.05$).

The most frequently chosen strategy nationally is "Facilitate Access to Healthcare Services" (28.8%), followed by "Provide food, water, and shelter after disasters" (22.9%).

In Sindh, the highest preference was for "Give financial help and grants to women to start businesses" (37.1%), while in Balochistan, the highest preference was for "Provide food, water, and shelter after disasters" (29.2%).

These findings suggest that regional preferences for NGO support vary, which could guide policymakers and NGOs in tailoring their interventions to regional needs.



10. How has climate change affected young girls in your community?

- A) More girls are forced to marry early because their families need money
- B) Many girls have dropped out of school to help at home
- C) Girls now have to walk longer distances to fetch water
- D) Girls are more vulnerable to health problems and malnutrition
- E) Extra work burden

Chi-Square Test for Association Between Climate Change Impact and Region

To determine whether there is a significant association between the impact of climate change on young girls and the region, a Chi-Square Test of Independence was conducted. The test examines if the distribution of reported climate change effects differs across Punjab, Sindh, Khyber Pakhtunkhwa (KP), and Balochistan.

Hypotheses:

- Null Hypothesis (H₀): There is no association between the impact of climate change on young girls and the region.
- Alternative Hypothesis (H₁): There is an association between the impact of climate change on young girls and the region.

The Chi-Square statistic (χ^2) is calculated using the formula:

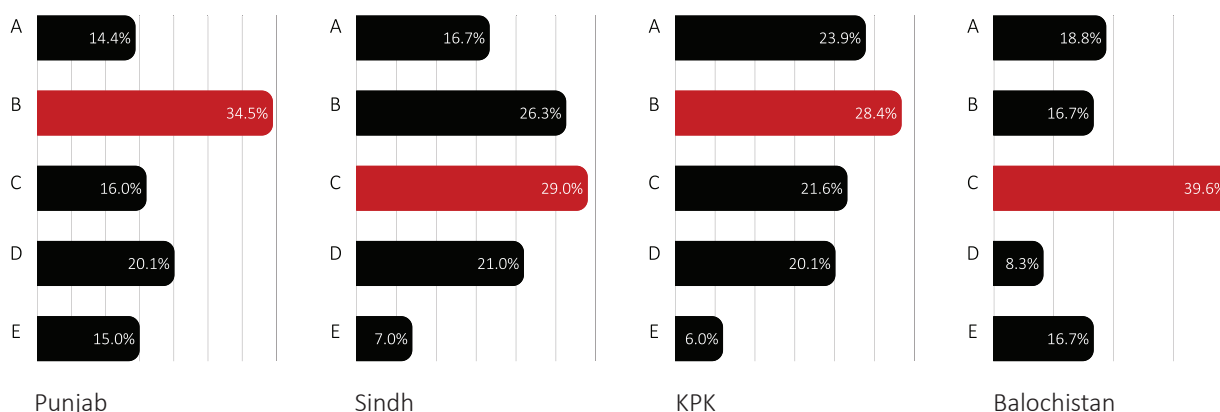
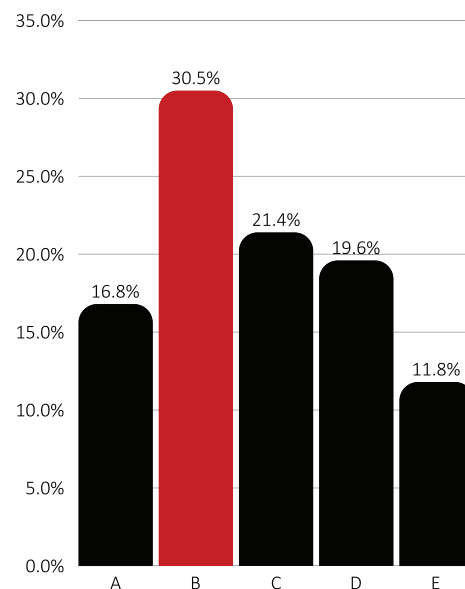
$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Result:

Using this formula, the Chi-Square statistic was computed as: $\chi^2 = 46.39$, and the p-value is $5.95e^{-06}$ with degrees of freedom $df = (Rows - 1) \times (Columns - 1) = (5 - 1) \times (4 - 1) = 12$

Conclusion:

Since the p-value is very small ($p < 0.05$), we reject the null hypothesis, indicating a significant association between the impact of climate change on young girls and the region. The most frequently reported impact at the national level is girls dropping out of school to help at home (30.5%), followed by girls having to walk longer distances to fetch water (21.4%). The impact varies significantly across different regions, suggesting that climate change affects young girls in region-specific ways.



4. FINDINGS AND RECOMMENDATIONS

This chapter synthesizes the core findings and resultant recommendations from our investigation into how climate change disproportionately affects women in Pakistan. Employing a mixed-methods approach, we first present key quantitative insights revealing nationwide trends and significant provincial variations in challenges like water scarcity, economic disruption, and health impacts. We then delve into deeper contextual understanding through thematic analysis of qualitative data, exploring systemic failures, socio-cultural barriers, and the lived experiences underpinning the statistics. Finally, grounded in this comprehensive analysis, we propose actionable recommendations designed to mitigate climate-induced vulnerabilities and empower women through targeted interventions.

4.3 Key Findings: Qualitative Analysis

Theme1: Government Failure in Climate Response and Women's Vulnerability

This analysis underscores the critical impact of government inaction on water scarcity, disproportionately affecting women who bear the responsibility of securing household water. Our data reveals that recurring droughts and the absence of sustainable infrastructure have intensified the daily burden on women, forcing them to walk long distances with no guarantee of access. The physical exhaustion and emotional distress of returning empty-handed not only compromise their health but also heighten their exposure to waterborne diseases and infections due to poor hygiene conditions.

The broader consequences extend to agricultural productivity and food security, with women farmers facing reduced yields and financial instability. Despite efforts to implement community-driven solutions like makeshift wells, the lack of institutional support renders these measures unsustainable. Our findings highlight a pressing need for targeted interventions—investment in resilient water infrastructure, policy reforms, and gender-responsive climate adaptation strategies—to break the cycle of vulnerability and provide long-term relief for women and their communities.

Theme2: Systemic Health Failures in Climate Response & Women's Vulnerability

Our analysis reveals that climate-induced disasters, particularly floods, severely impact women's health by contaminating water sources and increasing waterborne diseases like cholera, typhoid, and hepatitis. With women responsible for caregiving and water collection, over 65% of reported cases involve them, highlighting their disproportionate exposure to health risks.

Rural women face the added burden of walking longer distances for clean water, further straining their health and time. Industrial pollution and poor sewage systems worsen the crisis, leading to chronic illnesses. Systemic government failures in water management and healthcare leave women vulnerable, underscoring the urgent need for gender-responsive policies and climate-adaptive interventions.

Theme 3: Gendered Economic Vulnerabilities Amplified by Climate Change

Our analysis highlights that climate-induced crop damage

significantly exacerbates the economic vulnerabilities of women engaged in agriculture. Women, who constitute a substantial part of the agricultural workforce, face immense financial strain when floods, droughts, and heatwaves destroy staple crops. As a result, they are often forced to sell remaining produce at low prices or take high-interest loans, further entrenching them in economic hardship. Limited access to land, credit, and formal markets further restricts their ability to recover from these losses, making them more dependent on precarious coping mechanisms.

The data from Swat and other affected regions indicate that extreme weather events not only reduce agricultural productivity but also disrupt food security and household income. Many women rely on farming as their primary source of sustenance, and when crops fail, they experience direct economic setbacks with no alternative support systems. Additionally, heat stress and unpredictable weather patterns have led to declining yields of key crops like wheat, maize, and rice, leaving women with fewer resources to sustain their families. These findings emphasize the need for targeted interventions, including gender-sensitive agricultural policies and improved access to climate-adaptive farming resources.

Theme 4: Gender Based Violence and Systemic Vulnerabilities (due to Climate Change)

Our analysis reveals a direct link between climate-induced economic stress and rising domestic violence against women. As floods, droughts, and livestock losses push families into financial instability, tensions within households escalate, with women often bearing the brunt of this frustration. Men, facing job losses and economic insecurity, resort to physical and psychological violence, exacerbating women's vulnerability. The data highlights a concerning trend where economic hardship not only limits access to basic necessities but also fuels domestic abuse, leaving women trapped in cycles of violence with little recourse.

Additionally, women's financial independence has been severely compromised as climate change disrupts traditional income sources such as selling dairy or farm produce. This increased economic dependency on male household members further exposes women to control and mistreatment. With limited support systems and few alternative means of income, many women are left with no choice but to endure abuse, deepening their systemic vulnerability. Urgent intervention is required, including financial empowerment programs, legal protections, and climate-responsive social policies to address these compounded risks.

Theme 5: Climate-Exacerbated Educational Barriers for Women and Girls

Our analysis indicates that climate-induced disasters, such as floods and heavy rains, significantly disrupt girls' education by damaging school infrastructure and making access difficult. Schools in affected areas often remain closed for months due to damaged buildings and impassable roads, leaving students, particularly girls, unable to continue their education. Cultural norms and safety concerns further exacerbate the problem, as girls are often not permitted to travel long distances in unsafe conditions. The lack of transportation options leads to high dropout rates, cutting short their educational and personal development opportunities.

In rural and mountainous regions, the barriers are even more severe. Damaged bridges and destroyed schools force children to study in unsafe, temporary conditions, disproportionately impacting girls who face greater mobility restrictions than boys. Our findings highlight that in post-disaster recovery, rebuilding homes often takes priority over restoring schools, further delaying girls' return to education. Without targeted interventions—such as gender-sensitive infrastructure planning, safer transportation, and community engagement—climate change will continue to widen the gender gap in education.

Theme 6: Environmental Degradation and its Effects on Women

Our analysis highlights that soil erosion is severely impacting women in agriculture by reducing land fertility and lowering crop yields. As a result, women, who are often responsible for farm maintenance, must work longer hours under harsh conditions to sustain household food production. This increased labor burden not only affects their physical health but also limits opportunities for alternative income generation. Additionally, prolonged exposure to chemically contaminated soil poses serious health risks, including reproductive health issues and long-term illnesses, in areas with limited healthcare access. These findings emphasize the urgent need for sustainable farming practices, protective measures, and improved healthcare services to safeguard women's well-being.

Rising temperatures and shifting climate patterns are further intensifying agricultural and aquatic challenges, disproportionately affecting women in rural communities. Higher temperatures are damaging essential crops like wheat and maize, making farming increasingly difficult. Extreme heat also limits women's ability to work in the fields, reducing productivity and worsening food insecurity. In fishing-dependent areas, declining water levels and increasing pollution are depleting fish stocks, directly

impacting women engaged in small-scale fisheries and fish processing. Without climate-adaptive policies and gender-sensitive interventions, these environmental changes will continue to undermine women's economic stability and food security.

Theme 7: Societal and Cultural Vulnerabilities

Our analysis reveals that cultural restrictions on women's mobility significantly heighten their vulnerability during climate disasters. In many affected communities, women require male permission to evacuate, delaying their ability to reach safety. This lack of autonomy puts their lives at risk, particularly in fast-moving crises like floods. Even during relief efforts, societal norms limit their access to aid, as men freely navigate distribution points while women, burdened with childcare and cultural restrictions, struggle to secure essential resources. Additionally, the inability to interact with male aid workers or enter relief camps further isolates women, deepening their crisis.

These restrictions persist even within relief shelters, where women remain confined indoors while men move freely. The enforced separation not only limits their access to information and support but also exacerbates psychological distress. Women's dependence on male family members for movement and decision-making leaves them disproportionately exposed to harm, underscoring the urgent need for gender-inclusive disaster response strategies. Addressing these barriers requires culturally sensitive interventions that empower women with greater autonomy in evacuation, aid access, and crisis management.

Theme 8: Increased Migration

Our analysis highlights that climate-driven migration, triggered by floods and droughts, is forcing rural populations into urban areas, straining city infrastructure and worsening economic hardships. As rural livelihoods collapse, families relocate in search of stability, yet migrants—especially women—struggle with limited employment opportunities. Women who once worked in agriculture are often pushed into low-wage domestic or factory jobs, further entrenching economic marginalization. The rapid expansion of informal settlements exacerbates urban overcrowding, pollution, and inadequate access to essential services, creating a cycle where migration-driven environmental degradation fuels further climate vulnerability.

The gendered impact of migration is particularly severe, as women face additional cultural and safety barriers. While men often make relocation decisions, women bear the greater burden of adjusting to new environments while ensuring family well-being. Strict cultural norms, such as

veiling and restricted mobility, further hinder their access to resources, employment, and social support. Without gender-sensitive migration policies and targeted support mechanisms, displaced women remain disproportionately vulnerable, reinforcing the urgent need for inclusive urban planning and climate-resilient economic opportunities.

Theme 9: Transitional Gender Roles and Household Burden

Our analysis reveals that women in rural areas are not just supporting agricultural activities but are primary farmers who bear the brunt of both farm labor and household responsibilities. Despite their indispensable contributions to food security and rural economies, their work remains undervalued, reinforcing systemic gender inequalities. Women's daily routines include tending to crops, caring for livestock, and managing household chores, leaving them with little time for personal development or rest. Climate-induced hardships, such as crop failures and extreme weather, further exacerbate this burden, particularly when men migrate for work, forcing women to manage farms and households alone.

Beyond farming, women take on additional responsibilities to supplement household income, often at the cost of their physical and mental well-being. Their efforts to sustain livelihoods—whether through small-scale farming, livestock rearing, or informal labor—remain largely unrecognized, limiting their access to essential resources and training. Without targeted interventions to reduce their workload and ensure economic empowerment, women will continue to bear an unsustainable dual burden, further entrenching gender disparities in rural and disaster-affected regions.

Theme 10: Lack of Gendered Sensitive Planning and preparedness

Our research reveals that a lack of climate awareness among women, particularly in rural areas, leaves them unprepared to respond to climate-related disasters. Many women we spoke to had never heard the term climate change and struggled to understand its impact on their daily lives. This knowledge gap makes it difficult for them to adapt to rising temperatures, extreme weather, and agricultural losses. Limited access to communication tools, such as mobile phones and radios, further isolates them from critical information. As a result, they remain unaware of how to access aid, navigate relief efforts, or obtain necessary identification documents during disasters.

Even when climate experts attempt to explain environmental changes, many women find it hard to connect this information to their realities. Social exclusion and deeply ingrained gender norms restrict their participation in community discussions where

disaster preparedness strategies are shared. This lack of awareness is not just an educational issue—it directly contributes to their vulnerability, making it harder for them to protect themselves, their families, and their livelihoods in the face of climate change.

Theme 11: Psychological Issues Challenges Due to Climate Disasters

Our findings reveal that climate-induced disasters not only cause physical and economic hardships but also lead to severe psychological distress among women. Displacement, loss of livelihoods, and the responsibility of protecting their families create immense stress and anxiety. Pregnant women, in particular, face heightened risks due to malnutrition and food insecurity, leading to complications for both mothers and newborns. The destruction of assets, such as livestock that take years to mature, further exacerbates emotional distress, leaving women in a constant state of worry and uncertainty.

Beyond immediate stress, these disasters contribute to chronic mental health issues, including depression, exhaustion, and prolonged anxiety. Women, already burdened with caregiving and household responsibilities, struggle to cope with repeated losses and the overwhelming task of rebuilding their lives. Social isolation, lack of mental health support, and the continuous fear of future disasters further worsen their psychological well-being, making recovery an ongoing struggle.

4.1 Key Findings: Quantitative Analysis

1. Biggest Climate Issue for Women

Top Concern: Water scarcity is identified as the most pressing climate issue for women, with 28.5% of respondents nationwide highlighting it as their primary concern. The issue is most severe in Balochistan, where 66.7% of women report it as their biggest challenge.

Other Major Issues: Increased workload and responsibilities due to climate change are reported by 25.1% of respondents, followed by food insecurity (18.8%).

Provincial Differences:

In Balochistan, water scarcity is overwhelmingly the biggest concern. In Punjab and Sindh, increased workload and responsibilities emerge as major issues. KP has a more balanced distribution, with water scarcity (30.6%) and increased workload (21.6%) both being prominent concerns.

2. Access to Drinking Water During Shortages

Most Common Strategy: The majority of respondents (34.1%) report walking long distances to fetch water, with this being the most common response in Balochistan (47.9%) and KP (44.8%).

Alternative Coping Strategies:

Buying bottled water or using RO water (22.3%) is the second most common approach, particularly in Punjab (28%).

Relying on government or NGO water tankers (19.8%) is more common in Sindh (26.3%). Storing rainwater (6.8%) is notably more prevalent in Balochistan (31.3%), where rainfall collection is an important strategy.

Provincial Differences:

Punjab and Sindh rely more on purchasing water or using tankers. Balochistan and KP have higher rates of walking long distances for water, indicating more severe water access issues.

3. Difficulty in Preparing for Climate Disasters

Main Barrier: Financial constraints are the biggest hurdle, cited by 30% of respondents.

Other Challenges:

Lack of access to climate-related information (21.4%) limits preparedness efforts.

Cultural restrictions (17.5%) prevent some women from taking proactive measures, especially in more conservative regions.

Provincial Patterns:

Balochistan has the highest reporting of cultural

restrictions (29.2%), highlighting societal barriers to climate preparedness.

Punjab faces the most financial constraints (31.0%), reflecting economic difficulties in adaptation measures.

4. Impact of Climate Change on Women's Health

Top Health Issue: Increased workload and responsibilities lead to physical exhaustion and stress (32%), making it the most significant health concern.

Other Major Health Issues:

Heat-related illnesses (27%) are a serious issue, particularly in Sindh, where temperatures are extreme. Mental health struggles (15%) are also noted, with women reporting stress, anxiety, and depression due to climate impacts.

Provincial Contrast:

Sindh reports the highest incidence of heat-related illnesses due to extreme temperatures and humidity. Mental health issues are more pronounced in KP and Balochistan, where support systems for psychological well-being may be limited.

5. Government & NGO Support in Climate Crisis

Main Disruption: Increased difficulty in managing household tasks (36.2% nationally), with the highest reports in Sindh (40%).

Other Disruptions:

Less time for income-generating activities (23.7%), affecting women's financial independence.

Changes in children's routines (17.5%), as women prioritize survival needs over education and childcare.

Provincial Differences:

Sindh & Balochistan: Face the most disruptions due to extreme weather and resource shortages.

Punjab & KP: Report a moderate impact, though workload burdens remain high

6. Economic Impact of Climate Disasters on Women

Restricted Mobility: 42% of women nationwide report reduced mobility due to climate disasters.

Primary Reasons:

Flooded or damaged roads (28%), making travel unsafe. Cultural restrictions (25%), preventing women from traveling to safer areas during disasters.

Limited transport access (18%), especially in rural Balochistan and KP.

Regional Disparities:

Sindh & Punjab: Face more infrastructure-related mobility issues.

Balochistan: Reports higher cultural barriers limiting women's movement.

7. Role of Women in Climate Adaptation Decision-Making

Negative Impact: 58% of women nationwide report reduced income opportunities due to climate disasters.

Key Factors:

Loss of agricultural jobs (35%), particularly in Sindh and Punjab due to droughts.

Decline in market activities (22%), as economic disruptions limit business opportunities.

Increased household responsibilities (18%), restricting time for economic activities.

Provincial Breakdown:

Sindh & Punjab: Women in farming communities are most affected.

Balochistan: Reports lower impact, as fewer women are engaged in formal economic activities.

8. Access to Climate-Resilient Infrastructure

Limited Access: Only 28% of women nationwide report receiving support services.

Most Common Support:

Cash assistance (12%), mainly in Sindh & Punjab.

Food aid (9%), provided in disaster-prone areas.

Community awareness programs (7%), though participation remains low due to cultural restrictions.

Regional Differences:

Sindh & Punjab: Higher access to aid but still inadequate.

Balochistan & KP: Face the most limited support, indicating a need for greater intervention.

9. Awareness of Climate Change Policies

Low Participation: Only 21% of women nationwide report involvement in climate-related decision-making.

Main Barriers:

Cultural norms (40%), restricting women's role in community planning.

Lack of awareness (30%), as many women are uninformed about climate policies.

Limited representation (18%) in policy and disaster response teams.

Provincial Insights:

Balochistan & KP: Face the highest cultural restrictions.

Punjab & Sindh: Show slightly higher female participation, but overall involvement remains low.

10. Climate-Resilient Livelihood Opportunities for Women

Most Preferred Solution: Better water management policies (38%), addressing the core issue of water scarcity.

Other Key Recommendations:

More economic opportunities for women (22%), to reduce financial dependency.

Climate education & awareness (18%), empowering women with knowledge to mitigate risks.

Improved infrastructure (12%), including safer roads and access to clean drinking water.

Provincial Preferences:

Sindh & Punjab: Prioritize economic empowerment and water solutions.

Balochistan: Emphasizes water access and climate education.

KP: Supports infrastructure development to improve resilience.

4.2 Chi-Square Test Results:

The Chi-square test results indicate that for most questions, there is a statistically significant association (p-value < 0.05) between climate change-related challenges and regional differences. This suggests that women's experiences with water scarcity, disaster preparedness, economic impact, and access to resources vary significantly across provinces, highlighting the need for region-specific interventions. For example, Balochistan faces extreme water shortages, while Punjab and Sindh report higher concerns regarding workload and economic hardships. However, for some questions, such as health problems caused by climate change, the results were not statistically significant (p-value > 0.05), indicating that these challenges are experienced similarly across regions. These findings emphasize the importance of tailored policies to address the unique climate vulnerabilities faced by women in different areas. Theme1: Government Failure in Climate Response and Women's Vulnerability

4.4 Comprehensive Recommendations to Address Climate-Induced Gendered Vulnerabilities

These recommendations are designed to be actionable, addressing the systemic failures and gender-specific vulnerabilities identified in the research findings, with a primary focus on Government and Policymakers.

Focus 1: Policy & Infrastructure (Government & Policymakers)

1. Mandatory Gender-Sensitive Water Infrastructure Investment: Legislate and fund a national program to invest in decentralized, climate-resilient water infrastructure (e.g., solar-powered boreholes, RO plants) within a short, safe walking distance to eliminate the immense daily burden of water collection on women.

2. Legislate and Enforce Gender Quotas in Climate Planning: Mandate a minimum quota of 50% female membership in all Disaster Management and Climate Policy Committees at the local, district, and provincial levels to ensure that climate strategies are inherently gender-responsive.

3. Overhaul Disaster Aid and Relief Distribution Protocols: Reform aid distribution mechanisms to be inclusive and safe. This includes removing the requirement for a male family member to receive aid, ensuring that all makeshift shelters provide essential services (prenatal care, clean water), and providing Menstrual Hygiene Management (MHM) kits as non-negotiable non-food items (NFIs).

4. Prioritize Resilient School Infrastructure and Safe Access: Allocate specific, immediate post-disaster funds for the reconstruction of climate-resilient schools. Protocols must include improving road accessibility and providing gender-sensitive, safe transportation options to mitigate high dropout rates among girls.

Focus 2: Economic & Livelihood Protection (Government & NGOs)

5. Structural Support for Climate-Resilient Livelihoods & Assets: Launch comprehensive financial inclusion programs that provide direct cash assistance, micro-credit access, and targeted skill development in climate-resilient sectors (e.g., drought-resistant farming, livestock management). This protects women's assets (like goats and cows) and reduces the primary economic drivers of migration.

6. Integrate Climate Literacy and Digital Access: The Ministry of Climate Change and NGOs must launch targeted, community-based climate literacy programs in local languages, utilizing female community mobilizers and accessible tools (e.g., community radio) to provide early warnings and information on aid access, bypassing technology and mobility barriers.

Focus 3: Health & Social Safeguarding (Government & Researchers)

7. Integrate Climate-Health and Mental Health Services: The Ministry of Health must integrate the treatment of climate-induced health crises (waterborne diseases, heat exhaustion) and dedicated Mental Health and Psychosocial Support (MHPSS) into the primary healthcare system in disaster-prone regions, acknowledging the severe psychological toll on women (Theme 11).

8. Develop Culturally Sensitive Mobility and Evacuation Protocols: Policy must actively confront cultural restrictions by developing culturally sensitive evacuation protocols that validate women's autonomy to move and seek safety without male permission, thus ensuring their protection during rapid-onset disasters and facilitating their access to resources.

9. Enact Measures to Combat Gender-Based Violence (GBV): Introduce legal and social protection mechanisms that address the link between climate-induced economic stress and rising domestic violence. This requires establishing safe reporting channels and providing immediate financial and legal support for women experiencing GBV in disaster or post-disaster settings (Theme 4).

10. Researchers: Mandate Region-Specific Data and Monitoring: Researchers must commit to continuous data collection using disaggregated data (by gender, age, and district). This data must be used to specifically monitor the effectiveness of all new gender-sensitive policies and aid mechanisms, ensuring interventions are tailored to the unique provincial vulnerabilities (as highlighted by the quantitative findings).

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