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Gender, Climate Change and Media:

Perceptions of Pakistani Women Regarding Natural

Hazards and Disaster Risk Reduction

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A thesis submitted in fulfillment of the requirements

for the degree of Doctor of Philosophy

University of Auckland,

2015

Abstract

In the growing field of research on the impacts of climate change on human populations, there is an absence of academic study on the viewpoints of Pakistani women. By geographical location, Pakistan is central to concerns about climate change and natural hazards, the future consequences of which may affect billions of people across the Asian continent. At the same time, it is becoming clear that many climate change effects are gender-specific, impacting most heavily on those women who are already socially and economically disempowered. However, few studies have been done about women's experiences before, during, and after natural hazards, nor how they perceive conditions, receive information, or participate in dialogue about anthropogenic climate change. This study aims to give voice to literate and semi-literate, urban and rural Pakistani women as a significant source of knowledge and risk reduction potential regarding climate change, natural hazards, and disasters.

A triangulation of quantitative and qualitative methods was used to gauge Pakistani women's awareness of anthropogenic climate change, discover their usage and the effectiveness of media/non-media sources of information, and assess their current and potential future participation in climate change intervention, mitigation, and rehabilitation. Interviews conducted with academic, political, and policy-making experts confirmed that the opinions, knowledge, and ideas of Pakistani women are currently missing from the climate change conversation.

The results of the study reveal that Pakistani women from all levels of society are a tremendously under-utilized resource in the struggle to address global climate change and its consequential disaster-related harm and loss. The results of the study suggest that creating awareness and providing systematic education to Pakistani women through the

media about climate change, natural hazards and disaster risk reduction, as well as creating and empowering culture/gender-appropriate communication pathways, could significantly mitigate and reduce the current and future destructive impacts of climate change and natural hazards.

Acknowledgements

An endeavor of this magnitude involves the help and support of many people at its many different phases. It is with profound gratitude that I acknowledge all the people, multiple and generous who have contributed to the completion of this academic journey. I thank the people of Pakistan, and especially the women who participated in this research. You opened your lives, and entrusted me with your personal stories and experiences. May this work be of benefit to you and your generations to come.

I owe tremendous thanks to my thesis supervisor Dr. Misha Kavka. She has been an outstanding source of support, encouragement, and mentorship throughout this arduous process. Not only did she wisely guide me in shaping initial ideas into a remarkable and personally meaningful research project, but she also allowed me the freedom to explore my work in innovative ways. I hold her in my heart not only as an academic role model but also as a friend. To my co-supervisor, Dr J.C. Gaillard, I thank you for helping me to grow and mature academically and intellectually with your invaluable suggestions.

Thank you to my family, my husband Qurban Ali, my daughter Alishba Qurban Ali and my son Sarim Shafi, who all suffered due to my unexpected lack of attention and care for them. I trust that you understand and feel the depth of my appreciation for your flexibility, love, and helpfulness during this time of unruly and demanding PhD study. I also extend thanks to a special sister, Rhoda, who came along at just the right moment to help me organize and proofread the final drafts of this thesis.

Above all, I thank God, for sharing the miracle of His strength and blessings with all of us involved in this research project. He upheld our spirit of determination, and his through his grace; we remained positive and never gave-up. I look forward with faithful excitement to see what He has in store for me in the future.

Dedication

You selflessly encouraged me to depart from you, and our country to complete this PhD.

During my study time abroad, you were taken from the world,

and received into the divine light and eternal care of Heaven.

My academic journey is finished today.

May my work be blessed in your eyes, and pleasing to your spirit on high.

I will miss you with all my heart and soul until we are once again re-joined in the life

beyond this.

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Chapter 1 : Introduction

The brunt of climate change will be borne by poor women and their communities who are most dependent on the land and natural resources for their food, livelihood, fuel and medicine, yet less equipped to cope with natural disasters and weather variation. Women are particularly affected because of socially ascribed roles resulting from the entrenched feudal-patriarchal discrimination on them. Rural women also take a heavy toll being the ones engaging in various remedies to make ends meet. (WEDO, 2008, p. 5)

Climate change affects all the world's inhabitants and is a pressing issue for all societies. However, those who reside in the rural areas of developing nations face especially calamitous circumstances. Becoming more rampant because of industrialization, climate change has led to increasing natural hazards and environmental disasters: melting glaciers, the extinction of many animal species, and extreme weather events such as flash floods, hurricanes, heat waves, droughts, cyclones, and tsunamis. Intergovernmental Panel on Climate Change (IPCC)'s "Climate Change 2014: The Synthesis Report" explicitly links climate change and greenhouse gases to human activity, noting that human influence on the climate system is quite apparent, and recent anthropogenic emissions of greenhouse gases have been recorded as being the highest in history. Recent climate changes have had widespread effects on the human and ecosystems, but the impact of global climate change is expected to be unequally distributed across socio-economic groups and geographic space (IPCC, 2014).

1.1 Geographical Location of Pakistan in the Context of Climate Change and Natural Hazards

Pakistan is a predominantly hot country, but it also has some very cool areas, such as the glaciers in the north with the world's highest mountain peaks, which help to protect the south from the extreme cold of the north. The sea which creates the coastal region, namely the Arabian Sea, generates a great deal of moisture, which in the form of monsoon rains helps the area become irrigated and provides much-needed water for household as well as industrial use. However, climate change has caused changes to hydrologically generated power in the form of floods, droughts, increased temperature, heat waves and the resulting disasters. The Indus Delta is also a problematic area, as it is not only very hot, but the annual rainfall, like the coastal areas of Pakistan, is unpredictable and erratic. Its proximity to the sea leads to changes in sea temperature affecting this area. As Pakistan is composed of areas, which are both very dry and extremely moist and humid, this means that changes in one region affects another region as well. Whatever climatic changes occur in the northern areas of Pakistan affect the other parts of the country.

Pakistan is thus situated in a climatically chaotic region, which is continuously at risk of natural hazards. The northern areas of Pakistan, containing the Himalayan and Hindu Kush mountains, comprise the most susceptible region of Pakistan with respect to disasters. Along with wide-scale earthquakes and floods, soil erosion and glacial melting, storms, droughts, landslides, and tsunamis also cause destruction. Some of these cause moderate damage, while others cause damage, which is more severe in its aftermath.

1.1.1 Pakistan and disasters.

According to the Global Climate Risk Index 2012 issued by German Watch, Pakistan ranks highest among the most effected countries in 2010. Pakistan was among the top ten most affected countries as well for the period 1991-2010 (Harmeling, 2011). Major disasters hit the country in less than a five-year period, from 2005 to 2010: the 2005 earthquake was the first; the glacier melt in 2010 that created a lake in a residential area was the second; and the cyclone "Phet" in 2010 was the third. However, the recent floods in 2010 and 2011 created such huge havoc in Pakistan that The United Nation Secretary General Ban Ki- Moon on his visit to flood-hit areas said that he would never forget the destruction and suffering he had witnessed. He said that in the past he had witnessed many disasters around the world but nothing like the destruction in the wake of the flood (Dawn 15, 2010). An article published in the Pakistani newspaper "Dawn" on August 8, 2010 mentioned that a recent report on "Climate Change Facts - Pakistan" published by the Department for International Development (DFID) noted that variations in rainfall intensity, as well as shifts in the timing of the monsoon, could result in more frequent floods and droughts.

Figure 1-1 : Flood Victims in Sukkur, Pakistan, August 8, 2010- Photo by Reuter

1.2 Gender-Specific Nature of Climate Change and Natural Hazards

It is not simply the socio-economic circumstances of a population that determine how it will be affected by climate change and natural hazards. Irrefutable evidence has begun to emerge across the globe that climatic catastrophes and disaster experiences are gendered, and that women are particularly vulnerable during and after climate events (Lambrou & Sibyl, 2010; Neumayer & Plümper, 2007). At the International Conference on Gender and Disaster Risk Reduction (DRR) in 2009 in Beijing, Dr. A Singh contended that adding gender to our perspective forces us to take a wider view of what constitutes disaster. When the gendered effects of disasters are taken into account, disasters are no longer simply physical in nature; they also become social in nature (Singh, Turner, & Pandey, 2012). He further said that "disasters do not discriminate against people; humans most certainly do". This sentiment has been shared by other entities as well, for instance the Manila Declaration for Global Action on Gender, Climate Change and DRR, which comprised 250 participants and highlighted the absence of a gender-specific perspective in global climate change

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agreements. The declaration had 12 key features, amongst which were that women and men need to participate to an equal degree in climate change and DRR decision-making processes. These processes need to take place at the regional, national, community, and international levels. However, this can only take place if governments and international organizations allocate resources for gender-specific budgeting. This is especially important when it comes to addressing female specific vulnerabilities caused by climate change and natural hazards, but also when considering the underutilized human and social capital present in the female population. Taken more broadly, gender plays an important role in mitigation and adaptation processes (Reyes, 2002; Villagrasa, 2002; Neri Wamukonya & Rukato, 2001).With future disasters pending, it is imperative that all members of the society, especially women, are involved in measures to mitigate and create ways to adapt in such situations.

In general, men do not face the same social taboos as women that might interfere in rescue efforts or rehabilitation processes. In fact, many of the problems faced by women from climate change and natural hazards are exacerbated by prevailing mindsets that can compel or constrain political, economic and social action based on gender. The public's, as well as women's perceptions of climate change and natural hazards are shaped by the information they receive, not only through social networks but via the mass media. Some of this perception-building information can be accurate and factual and some inaccurate hearsay. This has been demonstrated by several international academic studies notably, (Bostrom, Ann, Morgan, Fischhoff, & Read, 1994; Kempton, Boster, & Hartley, 1995).

Climate change is affecting all nation-states, yet the impacts of climate change and natural hazards vary by country, region, generation and gender. For this reason, there is an urgency to understand climate change from a multidisciplinary perspective, and most

especially with the understanding that climate change and natural hazards affect genders differently. Additionally, we need to be aware that inequitable social systems cause certain populations to have increased vulnerability to the ravages of climate change and natural disasters (Elaine Enarson, 2000; Lambrou & Piana, 2006; Ulrike Rohr, 2007). Mitigating the impacts of global climate change and natural hazards will require a long-term holistic approach, however documenting that climate change and natural hazards are gender-specific issue is most urgent.

Cannon (2002) has compared the effect of climate change on men and women in Bangladesh. He categorically states that Bangladeshi women are at a higher risk for climate change misfortunes. Firstly, because they are more likely to be poor, and secondly because they are restricted by gender-specific behavioral norms like honor, shame, maintaining privacy, and avoiding strangers, even during severe environmental catastrophes. Likewise, Islam (2009) alleges that Bangladeshi women are more vulnerable to the effects of gender inequalities before, during, and after climate change-induced hazards. They are at risk in terms of their human rights, economic status, and housing conditions. In many countries, including Pakistan, women do not have the legal right to own property and thus cannot inherit or purchase land. This makes it challenging for women to maintain their land rights if they lose their home in a disaster. The 2010 and the 2011 floods in Pakistan exposed the fact that the situation of Pakistani women in a climate-induced disaster is not very different from Bangladeshi women. The floods destroyed their limited assets, worsened their personal security situation, and gave them the additional responsibility to respond to emergency conditions. However, the impacts of climate change and natural hazards vary greatly between rural and urban women. Urban women often work in the informal economy with little financial security and no social benefits. Worldwide, 60% of people working in

family enterprises without pay are women. In the home, women perform most of the chores without pay and often little value (UN, 2005). The percentage of unpaid women tied to the household is much higher in developing countries. In cases where women, especially the poor women of developing countries, are heads of their families, they suffer more than men do in situations of climate instability. Their financial situation is disturbed and their increased vulnerability affects all areas of their life. Empirical research reveals that monetary losses ravage vulnerable women disproportionately in times of disaster (Elaine Enarson, 2000).

At the same time, rural women are the main producers of the world's staple crops. In Southeast Asia, 90% of the rice-cultivation labor force is female and in Pakistan 50% of rural women cultivate wheat. Their contribution to secondary crops such as vegetables is even greater (FAO, 2011). Due to rural women's involvement in farming, which is greatly affected by climate change, floods and droughts, they are at risk of losing their livelihoods during natural hazards. When crops were destroyed in the Pakistani floods, many women lost their livelihoods and were unable to claim financial compensation. The Preliminary Gender Needs Assessment report by UNIFEM (2010) about the 2010 floods in Pakistan mentioned that, as the economic contribution of the Pakistani women is invisible, they may be ignored in the compensation process. In rural areas, food, water and energy provision come under the female domain, so women are expected to engage in activities aimed at survival such as collecting food and water during disasters. Yet as there is less food, malnutrition is spreading and it lays another serious burden on the shoulders of women during changes in climate and natural hazards.

According to Bernabe and Penunia (2009), of all farmers women are the least equipped to adapt to severe weather conditions and natural hazards. Changes in weather

conditions produce sickness and diseases, and women's responsibility of caring for children causes more difficulties for them. As managers of household resources, especially food and other needs, women are placed under stress, such as in the case of limited income from crop failure due to changing weather conditions. The finding of Bernabe and Penunia (2009) also reveal the sad fact that crop failures are associated with domestic violence, as men take out their frustration on women. While women's health is vital to the well-being of their families, they tend not to consider their health even before or after the disasters. They suffer because of violence, lack of education, and the unavailability of healthcare facilities, especially for reproductive and sexual health (Martin, Glass, Balbus, & Collins, 2011). As evidenced in the Pakistani media and other reports, however, access to health care for women, antenatal services in affectee camps, the involvement of women in house construction, and the resilience of women in disasters have brought identified changes in the perceived roles and relations on the gender front (UNIFEM, 2010).

On the other side of the vulnerability spectrum, women are the first responders to climate change and disasters. Either in their professional roles or in their household activities, women are more apt at sensing many environmental hazards. As they are closely associated with many domestic chores, they are more sensitive to patterns of sickness in their children as well as in the neighborhood. They can detect changes in water from their washing of clothes; they can smell changes in the ground where their children play (Harding, 1998). At local levels, women have often proven better equipped with information about different social groups facing losses in the post-cyclone or earthquake period, people in the community who are more at risk, and what is needed to meet challenges and which native trees should be protected (Elaine Enarson & Fordham, 2001). They acquire wider knowledge and experiences of their environment (Ariyabandu, 2003)

which are constantly appraised and updated whenever the social conditions of their associated environment change. This knowledge is a result of their responsibilities in their families and communities, and has proven useful in developing countries (Harding, 1998; Mercer, Kelman, Taranis, & Suchet-Pearson, 2010). It needs to be considered in the adaptation of vulnerable communities to climate change and natural hazards.

Increasingly, the importance of the local knowledge of women and their practices has been highlighted in relation to environmental hazards and disasters (Cronin et al., 2004; Julie Dekens, 2007; Julie Dekens, 2007; P. Howell, 2003; Jigyasu, 2002; Mitchell, 2006; Mitchell, Tanner, & Lussier, 2007). In those areas where women's knowledge, experiences and skills are used for adaptation and mitigation, there are fewer problems in sustainability. For instance, women in the Bihar community of Uttar Pradesh, India played a decisive role in the preservation of wild red rice, which serves multiple ecosystem roles (Singh et al., 2012). Likewise, the South Pacific Disaster Risk Program conducted a regional study in four Pacific island countries in 2002, concluding that men and women in Fiji, Samoa, the Solomon Islands and Kiribati perform particular roles in preparing for a catastrophe. In these four countries women were noted to have taken on the responsibility for the functional preparation of households, sharing information with family members, gathering food and water, and saving family belongings, while men were held responsible for establishing communication and co-operation with the government administrators, developing outer structures, making decisions about evacuation spots and timing, arranging water sources, distributing emergency relief, and receiving and spreading forewarnings to the larger community (SPDRP, 2002). The role of the Pakistani women in disasters is not very much different from that of women in the Pacific Islands.

Budding dialogues in developing countries demonstrate the complex interrelation between gender, climate change and poverty, which means that underdevelopment and gender inequities are mutually interrelated wherever women are not given their due place in development and decision-making areas. No doubt, women have a central role in families, communities and economies, but to date they have been relatively imperceptible in the area of disaster planning and response. In the rural areas of developing countries, women are often involved in deforestation and reforestation. In this way, they are empowered to some extent and their empowerment can be related to mitigation of climate change. Women who are better equipped and empowered with knowledge, resources and technical aids would be better able to avoid vulnerability and actively participate in addressing climate change and DRR (Khamis, Plush, & Zelaya, 2009). For example, in some areas of Kenya and Nepal, women's groups manage community forests. Likewise, Pakistan rural women's participation in forestation cannot be ignored. Women in the northern regions of Pakistan are responsible for procuring firewood to heat the home. As such, they husband the amount of firewood used and ensure that waste is minimized. Just as women in farming districts look after crops they are proactive in planting trees. In Pakistan, where the population of lower economic groups is comparatively larger than that of the middle or upper class, these issues are central to debates about climate change and DRR.

UN Secretary General Ban Ki-moon called increasing population the greatest challenge threatening humanity in the annual report of United Nation Population Fund (UNFPA, 2009). At that forum, women were appreciated for their positive role, compared to men, as models for humanity. The report asserted that women, being the farmers, were better caretakers of the earth than men. Their participation is thus required to gain success in climate change and DRR policies. The integration of voluntary family planning,

education, better livelihood arrangements, and proper supply of food and water is a more effective strategy for marginalized and vulnerable sectors of the developing countries of the world, especially the female segment of society. Nonetheless, women are still marginalized in decision making on disaster issues, in spite of the fact that they often possess vital social knowledge and a vast untapped capacity for reducing community risk (Elaine Enarson & Chakrabarti, 2009). There is thus a need to recognize women's inclination to save their resources and conserve the environment. Media has a prime responsibility to inform and to educate the women, so that they can perform their role more decisively and effectively in climate-induced hazards; media also has the means to encourage governments to make gender-sensitive environmental policies.

1.3 Media and Perception of Pakistani Women about Climate Change and Natural Hazards

In the present study, the perception of Pakistani women regarding climatic hazards is analyzed in relation to media use and contexts. It is important to study the perception of Pakistani women because this gives insight into their knowledge and understanding about climate change and natural hazards, while including the role of media in the study also invites reflections on how media manage the risk of climate change and natural hazards and assist in DRR. An important part of DRR is assessment of the potential of mitigating risk through the public's perception and awareness of risk components.

Public risk perception is a critical component of the socio-political context within which policymakers work. Media can influence risk perception in general (Wahlberg & Sjoberg, 2000). Studies have shown a positive correlation between exposure to the news and levels of concern over environmental issues (Mikami, Takeshita, & Kawabata, 1999).

The powerful influence of the media on public perceptions and attitudes is that media are not only successful in giving people issues to think about, but also in telling people what to think about (McCombs & Shaw, 1972). Further, it has been found that media is highly influential in shaping public attitudes towards problems that are out of reach and with which the people do not have regular, direct or meaningful contact (Yin, 1999), as is the case with climate change. A study of British media coverage shows that climate change has been "brought into the audiences" everyday experience of dramatic weather-related events in the discursive frame of climate change (Carvalho & Burgess, 2005). In another study, Mazur (1998) found that the rise in the American public's concern about the environment was reinforced by an escalation of environmental news coverage.

Media heavily influences the widening public awareness of various environmental issues (Sampei & Aoyagi-Usui, 2009). There are many examples of media having cultivated public perceptions and attitudes towards environmental issues. Research by Sakurai et al. (2011) found that most respondents said that newspapers, television, and the Internet are the main sources of information about global warming, indicating the significant role of these media formats in disseminating environmental information to the public, and influencing people's perceptions of environmental problems (Russill & Nyssa, 2009; Sampei & Aoyagi-Usui, 2009). Researchers have long found that mass media is contributing to public understanding (or misunderstanding) of global warming (Stamm, Clark, & Eblacas, 2000). The danger of climate change has, therefore, become a concept contested not only among scientists and policymakers, but among the public as well (Leiserowitz, 2005). Complex scientific and environmental matters are commonly reshaped into narratives by the media, which provide circumstantial, codified definitions of the risk at hand and convey distinctions and ideas concerning a contemplated or desirable order (J.

Smith, 2005). Nitz and Ihlen (2006) noted that a lack of coverage on a particular issue might make it difficult for policymakers to communicate with the public. This is an important concept to consider, as public opinion will be affected by political and media frames. Entman (2003) concluded that "public opinion cannot be divorced from the political discourse and the media frames that surround it" (p.142). Further, during disasters, the affected populations are very fertile ground for suspicion, mistrust and rumormongering. This can be effectively tackled through effective and pro-active media management and information dissemination (ERRA, 2007). Management means not only managing the production of news but also the methods by which it is conveyed to the public. It also refers to the topics that are emphasized.

The heavy bombardments of tailor-made messages on a certain topic also influence individuals' existing opinions, as extensive media dissemination affects public opinions regardless of the current opinion of the individual. It not only influences people's cognitive environmental orientations but their affective and evaluative orientation as well (Hansen, 1993; Yin, 1999) . The cognitive component is personal knowledge and beliefs about causes, responsibilities, and solutions for environmental problems. The affective component adds an emotional or evaluative element, whereby individuals decide whether postulated consequences from environmental problems are good or bad (more or less serious) based on their knowledge and beliefs (cognitive component). This evaluation activates a behavioral intention which is either support for environmental policies or take action to prevent personal harm (Schaffrin, 2011). This means that media not only reinforces and galvanizes existing opinions but also builds new opinions and pathways to activity. It is not just knowledge of environmental issues but also the emotions associated with such problems that need to be targeted, and media has the power to touch the emotions of people along

with giving information. In one study on the impact of the film "The Age of Stupid", it was revealed that even highly educated respondents believed that world devastation could happen by 2055 on the scale depicted in the film. The movie shows multiple stories that cover various aspects of how people contribute to climate change and how they are affected in return. This is not an emotionally distanced film that focuses on the predictable impacts of climate change, but a film whose affective impact motivates people to address the issue. After seeing the film, respondents felt increased motivation to act and had an increased feeling that they can do something about climate change (R. A. Howell, 2011).

The role of media becomes even more crucial when it comes to illiterate and semi-literate people, as they are heavily dependent on broadcast media (radio and television) for information regarding climatic events. A study conducted by Frank, Eakin, and López-Carr (2011) to find out the perception of farmers in the coffee-growing sector of Chiapas, Mexico discovered that they expressed confidence in the media as a credible source of information, associating media sources with the access to knowledge and higher education that the farmers themselves lacked. Uneducated people sometimes have more confidence in media information than their compatriots. In another study, Cunha, Rangel, Vieira, and Rego (2010) found that the majority of the respondents trusted radio (85%) followed by TV (82%) and newspapers (80%), to deliver information about global climate change. The respondents perceived themselves as being well informed, drawing information mainly through the media and trusting media more than any other source of environmental information. However, the findings of Haynes, Barclay, and Pidgeon (2007) showed that friends and relatives are consider the most reliable source of trust, while scientists, local/national government and the world press were also considered reliable sources of

information. Nonetheless, people tended to only trust those friends and relatives whom they considered well informed

In developed and developing countries, the use of media for severe weather warning is on the rise. In a study conducted in Nova Scotia, Canada, Silver and Conrad (2010) analyzed public perception and response to severe weather warnings. When asked where they obtained their weather-related information, 98% said that they use media sources. When asked in the study to rate the reliability of weather information provided by various sources, non-government and Internet sources were ranked the highest and national news was ranked the lowest, even so all respondents were heavily reliant upon the media channels for information. Even simple news broadcasts warning of extreme weather can help people dealing with the impact of extreme weather (Keatinge et al., 2000), as well as preparing non-affectees to address calamities if they encounter the same situation in future.

In order to find out the role of media in climate change and natural hazards, it is pertinent to know the political history of the media as well as the recent media context in Pakistan.

1.3.1 The recent media context in Pakistan.

In the first decade of the 21st century, the growth of a variety of print newspapers and the explosion of entertainment and news channels in electronic media have represented a major expansion of the Pakistani mediascape. Until, the late 1990s, Pakistani media was under the strict control of respective dictatorial governments. Media organizations faced curbs on their freedom of expression and checks by dictatorial governments and sometimes even by the tailored democracies as well. Under President Musharraf's regime, the situation has been changing rapidly. Pakistani media organizations have recently been far more

successful in resisting attacks on their freedom of expression and are now testing the freedom up to its maximum (Iqbal, 2012). In his book, "The Idea of Pakistan" Steffen Cohen suggests "[t]he media in today's Pakistan is perhaps the freest in the region".

1.3.2 Political history of Pakistani media.

In 1947, the total number of dailies was 34. After independence, within few years there had been effective development in the growth of press, the number of dailies, weeklies and other periodical increased. The publication of newspapers reduced but their circulation has increased. According to Ash (2010), Pakistan has the 10th highest newspaper circulation (7, 817,958) in the world. There are about 160 million populations in Pakistan with diverse ethnic groups and languages. This diversity is also reflected in the Pakistan's media. Urdu newspapers have a broader reach than the English-language papers (Official Pakistan Government). The English papers are circulated among the elite who are considered the opinion leaders of the society (Siraj, 2009). The Urdu press is circulated among the masses. Since there is shortage of the regional press in Pakistan, people concerned of the rural areas are not highlighted mostly (Pakistan Press foundation, 2006). Major cities like Islamabad, Karachi, Lahore, Rawalpindi and to some extent Peshawar get more news coverage than the rest of the cities in the country. As the flash floods 2010, 2011 and 2012 hit all the major cities along with rural areas so there was abundant media coverage of the disasters.

Print media has long been an essential feature of Pakistani society. As an old institution, unlike television and broadcast media, it is far less prone to influence by the government and its aims. The most important feature of this media form is its reliability and accessibility, as these are published in Urdu, English and even regional languages. The most prominent Urdu newspapers are Jang, Nawa-i-Waqt, Jasarat, Mashriq and Hurriyat while

the best known English newspapers are The Daily Times, The News, Nation, and Dawn (Akhtar, 2000). When discussing the print media, it is essential to highlight its sphere of influence. As an established institution, print media can address and galvanize the Pakistani people to struggle for and implement change. According to Rai Shakil Akhtar, no matter who you go to, even if it is the rickshaw driver on the street, everyone in Pakistan has some basic knowledge of politics and has an opinion (Akhtar, 2000). In the same vein, Ryan C. Crocker, former United States Ambassador to Pakistan, comments that, there is a great deal of interest in the Pakistani people for getting one's viewpoint heard in the press. Conclusively, it can be said that Pakistan's citizens are well informed because of media availability, and they need media outlets that allow them freedom of expression. Media can be a staunch democratic aid by being a primary source of information, facilitating the exchange of ideas and providing a platform for debate around issues of climate change, natural hazards and DRR.

However, Pakistani media is not fully able to facilitate the exchange of ideas that is necessary for the growth and development of democracy. The foremost reason for this is rampant self-censorship. Despite the fact that there is no formal censorship entity, journalists have been hindered due to the strictures placed on their reporting by numerous external factors. An apt example can be found in the reporting of the earthquake that took place in October 2005 in Pakistan. There was at the outset no visible censorship acting on the Pakistani press and it was allowed to report freely, but print media subtly presented the government's mandates and curtailed critique of the government.

In the aftermath of the 2005 earthquake, both Pakistani and international newspapers emphasized the victims' plight and the inadequacy or absence of prompt relief. However, the majority of the Pakistani newspapers presented a general image of these problems; they

did not overtly emphasize or condone the ineptitude of the government's actions or even highlight the military that had been incompetent in addressing the situation. Another example of a more specific nature can be found in the media coverage of the United Nations (UN) conference that took place in Pakistan on 19 November 2005. The international community, spearheaded by the UN, offered 3.2 billion USD for earthquake relief. This amount was insufficient and would deepen Pakistan's debt situation, but the Pakistani print media presented the UN conference as very successful. An example of the picture presented by Pakistani media can be seen in the Pakistan Tribune's claim that "every Pakistani feels elated on the success of the conference and that the world community has joined hands with Pakistan and has not left them alone". Akhtar (2000) has commented on these reports as being emblematic of self-censorship. Even after President Musharraf admitted the inefficiency of the government's response and the inability of the government to attract aid, the press only praised the General for admitting the problem instead of criticizing him for not providing relief in the first place. While an independent and honest media would have faulted the Pakistani government for its ineptitude, self-censorship in the Pakistani media prevented this from happening. Since then, the media has not questioned the government for its failures in aiding victims and getting relief assistance (Akhtar, 2000).

1.3.3   Development of electronic media in Pakistan.

On September 26, 1964, the first transmission of Pakistan Television Corporation (PTV) was aired (Hussain & Sultan, 2008). It was beamed by a small pilot TV station situated in Lahore. After this successful transmission, other television centers were created in Karachi as well as Islamabad and Rawalpindi in 1967, followed by the establishment of television centers in Peshawar and Quetta in 1974 (Bashir, 2013) Entertainment via TV was used as a means to inform and educate people and create a greater awareness of their

history. This was also linked to the socio-cultural heritage. Awareness related to current problems, developments and current affairs across the world was also propagated. In 1976, PTV initiated color transmission and in 1991-1992 full-scale satellite broadcasting. This was further developed through the advent of digital TV satellite broadcasting in 1999 (Bashir, 2013). From its infancy, PTV has provided entertainment and remained a source of information on a broad spectrum of issues. From 1977 to 1988, a change in television control took place. During Zia-ul-Haq's regime, PTV, was used as a prop for the military ruler's propaganda (Akif, 2013; Hussain & Sultan, 2008). Television producers were manipulated into self-censoring their programs and staff members who did not comply were forced to resign.

Until 1989, PTV was the only channel that the public had recourse to. Now, most middle class families in Pakistan's urban areas can access more than 50 channels. This access has initiated a positive move on the part of Pakistan's media network. Pakistan has now liberalized its previously limited media policy. As a result, local entrepreneurs related to radio and satellite channels were given an incentive to establish their own channels. This encouragement has led to rapid growth in the sector of media corporations. Now in Pakistan, there are about 28 foreign-based TV channels (such as CNN, BBC etc.), 77 satellite TV channels, 129 FM stations (both on air and licensed) and about 2346 cable operators. This is in addition to the existing 46 radio channels. The total investment in this sector has been estimated to reach an astounding 1.5 billion US dollars and expected to create about 150000 new jobs created and indirect employment will be somewhere in the neighborhood of 7 million. Consequently, the advertising market has also seen a substantial improvement. In 2008, it stood at 431 million dollars and within a year, it rose to 691

million dollars (Z. Ali, Jan, & Bukhari, 2013). Due to this unprecedented growth, information is now more readily available and up to date.

However, in order to ensure the "exclusive and first" policy, there is a great deal of competition in media. Initially, the rulers of Pakistan used electronic media as a means of self-propaganda and image enhancement. Therefore, the reliability and quality of the news was substandard, and the presentation of news items was one-dimensional; as a result, the society lost interest in this medium. Different electronic media outlets, such as private channels, cable TV, and satellite TV, have since created a greater degree of awareness among the public and provided more opportunity to cover environmental issues. The Pakistani government came up with different policies in order to control this sector once it realized the potential of private electronic media, which was fast gaining popularity when compared with state-controlled TV. In March 2002, Musharaf created the Pakistan Electronic Media Regulatory Authority (PEMRA). Subsequently, 56 new private TV channels were established (Iqbal, 2012). Musharaf was playing the adroit politician when he facilitated competition between TV channels: "I have", he said, "done what no previous government has dared to do. I have set the press free" (Shoeb, 2008). Ironically, it was this very act, which led to his downfall. PEMRA had established some controversial rules with reference to the dissemination of information, for instance, that radio stations were prohibited from broadcasting news, although TV stations were encouraged to report news.

In Pakistan, where a large number of the population is illiterate and cannot read the newspaper, TV and radio have become the main sources of information. Pakistani media consumption is directly proportional to class and economic background. The main reason for this is that literacy and access to special equipment is important for the interaction between users and media outlets.

In order to understand and analyze the working process and the power of media we also need to understand the political economy of the Pakistani media. The political economy approach emphasizes institutional interests and the control they can have on government and media actions (Golding & Murdock, 1997). For example, media companies may be dependent on advertising revenue from fossil fuel industries, and if the advertisers do not approve of the media company's coverage of climate change, they may take their advertising funds elsewhere, to the detriment of the media company. When the media highlights environmental issues, which are important, the audience pays attention to the environmental agenda as presented by the media. Another reason could be that the media works as a bar for societal values, indicating which behavior is accepted by the society and which is not (Iqbal, 2012). Media and personalities on the media can directly or indirectly affect how viewers, especially the youth, address the environment (Lee, 2011).

Further, it makes a large difference whether one is viewing a public service channel or a commercial channel. The privatization of mass media limits the state's control over what is being communicated and gives media the space to operate without being too concerned with the political agenda and cultural institutions. During the recent Pakistani floods, this drove privately owned media to give particular coverage and reference to specific actors and systems, and thereby forced the intervention of the government to answer the calls of the people. The rapid growth of media coverage in Pakistan has encouraged internal competition for the news stories regarding the day-by-day issues emerging out of the socio political, economic and environmental scenario in Pakistan.

Media is especially important when it comes to issues and problems faced by the public. Pakistan faces not only economic problems, but these same economic issues are exacerbated by the frequent natural hazards that take place in the region. Since Pakistan's

location renders it prone to natural hazards, the media becomes even more important in disseminating information and awareness. Climate change creates a domino effect on how the public will be affected by natural hazards. Since natural hazards are inevitable, focus needs to be placed upon DRR. The more aware the public, the better it will be able to participate in DRR.

1.4   Climate Change and DRR Policies

DRR is about looking beyond hazards alone to considering the prevailing conditions of vulnerability as shaped by the social, cultural, economic, and political setting of a particular country. The basis of this approach is simple: the national character and chosen form of governance can be as much of a determinant in understanding the risks in a given country, as are the various environmental determinants.

Like other developing countries, climate change and DRR policies in Pakistan are still in their infancy, even though the country was amongst the first to ratify the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and has also approved the other related protocols like Kyoto and Montreal. There are various international norms and standards that lay the foundation for promoting gender mainstreaming and equality in a humanitarian response, such as the UN Charter on fundamental human rights, the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW, 1979), and the Security Council Resolution 1325. Various instruments such as the Hyogo Framework, the United Nation International Strategies for Disaster Reduction (UNISDR 2008, 2009), and toolkits developed by the Inter-Agency Standing Committee (IASC) address the differing needs and situations of women and girls and have been integrated into humanitarian crisis responses. However, the

implementation of gender mainstreaming across the globe has not necessarily resulted in advances for women, as it is usually associated with a winding back of women-focused policies and programs (Alston, 2013). Gender mainstreaming refers to:

> *the process of incorporating a gender perspective to any action, policy, legislation, or action in order to ensure that the concerns of all are addressed and that gender inequalities are not perpetuated through institutional means (Alston, 2013).*

Gender mainstreaming was first proposed at the 1985 Third World Conference on Women in Nairobi and later formally featured 1995 at the Fourth World Conference on Women in Beijing (Booth & Bennett, 2002). The role of gender mainstreaming in policies helps to reduce disaster risk, keeping in view women's needs and concerns. It requires enhancing the gender balance in policies relating climate change and DRR (Ginige, Amaratunga, & Haigh, 2009). Within the global restraints and due to various stakeholders, the government of Pakistan has also developed gender-mainstreaming guidelines, addressing the social vulnerability of women in its newly formulated National Climate Change Policy (2012) and Pakistan's National Disaster and Management Authority (NDMA) policies.

1.4.1   The 2012 National Climate Change Policy (NCCP)

In order to manage the issue of climate change, the government of Pakistan formulated the National Climate Change Policy (NCCP) in 2012 that was launched in March 2013 but has so far not been implemented. However, as far as the document is concerned, one of the main objectives of the policy is to focus on gender-sensitive adaptation. Article 4.8.2 of the policy explicitly addresses gender under a separate heading. Although the NCCP is not only addressing the vulnerability of women due to climate

change, it has also acknowledged that women are powerful agents of change. The report also states it is imperative that women be involved in all climate change-related policies and procedures, such as formulation of policies and other decisions (NCCP, 2012).

Although the climate policy passed legislatively in March 2013, progress with the policy has seen a setback. In June 2013, the finance minister of Pakistan announced a cut of over 62% in annual spending for Pakistan's Ministry of Climate Change and it has been downgraded from a ministry to a division. This will hamper the working of the institution and its proposed gender measures as well. The role that the media can play in this regard is crucial. It can help the policy-makers realize the importance of addressing the issue of climate change in general and the gender perspective of climate change in particular. NCCP aims not only to enhance awareness but also to augment this awareness with skills and to build pertinent institutions. This could only be possible if the policy comes into implementation. Similarly, Pakistan has a very comprehensive gender-sensitive national DRR policy that addresses the varying issues and problems of women during disasters, though it remains to be seen whether and when this can come into effect.

1.4.2 The 2013 national DRR policy

The first concrete step in disaster management was taken in 2007 after the Kashmir Earthquake of 2005. This was based on the establishment of the National Disaster Management Commission (NMDC). This institution was established on a national level and then gradually extended to the Union Council level. The commission is the highest body of policy and decision-making with respect to disaster risk management. Amongst its various functions, one is to oversee and supervise the incorporation of disaster risk management

issues into development plans and the management of this implementation through the NDMA, which is chaired by the Prime Minister.

The National DRR Policy was formulated by the NDMA in 2013. Articles 1.3.1 and the article 3.2.4 of the policy aim at reinforcing groups that are especially vulnerable, such as women and children. As mentioned in the policy, women and children are often overlooked, which further exacerbates their vulnerability and this in turn leads to more financial loss and loss of lives (NDMA, 2013). According to the policy, the only way that DRR measures can be properly applied is if women are involved in the DRR process and data is directly acquired from them so that their problems are emphasized and an effective response can be implemented. The policy also looks into the possible role played by women in addressing natural hazards/disasters at the local level and how they can be involved in DRR, specifically through their participation in DRR forums and other such platforms (NDMA, 2013). How much women are involved in DRR by the government needs to be investigated, but this is beyond the scope of the present study. It is important to note that there were hardly any women involved in the formulation of the policy.

1.4.3 Disaster management infrastructure in Pakistan

Disaster risk and management cannot be limited to only one agency and it should consist of the involvement of various sectors. The NDMA is merely a focal point that facilitates the coordination of various institutions/bodies and the implementation of various disaster strategies related to addressing disasters. It has a direct line of communication with all immediate personnel, including ministries and agencies that would have an impact on disaster risk management. The provincial government then has the authority to form the PDMA (Provincial Disaster Management Authority), which is chaired by the Chief

Minister. If a disaster does actually occur, this authority organizes emergency responses through a district emergency operation center. This center upholds the link with the PDMA and corresponding departments. The town and tehsil[1] levels are of primary importance in such instances as these are primary administrative unit to address DRR and come up with a coping mechanism as well as directly communicating with the community.

Rather than depending on governmental policy only, one of the most important things is to create awareness among the people themselves about the effect of climate changes and natural hazards and how to manage these risks. A vibrant Pakistani media can play an effective role in preparing the nation to encounter climatic-induced hazards. Thus, it is important to evaluate the role played by Pakistani media in the recent disasters by analyzing the perception of those who were most affected as well as of the educated women in the society. This is the entry point for the media; on the one hand, it informs and educates the masses to help them play a constructive role in combating climatic-induced hazards and, on the other hand, it can compel the government to make gender-sensitive environmental policies.

1.5   Significance of the Study

The present study aims at analyzing the role of media in shaping the perceptions of Pakistani women about climate change and natural hazards and building their prepardness for better DRR. Climate change and natural hazards are as much social problems as these are physical ones. Purely technical responses to climate change and natural hazards will not address the complex social, cultural, and behavioral changes that must occur if humans are to successfully confront the potential complex environmental challenges ahead. As stated

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[1] A tehsil is an administrative division in Pakistan. It is an area of land with a city or town that serves as its administrative center, with possible additional towns, and usually a number of villages.

previously, climate change and natural hazards are not gender- neutral phenomena. Women are unable to voice their specific requirements even though the impact of climate change and natural hazards affect women and men differently. The potential of women as agents of change for climate mitigation and adaptation thus remains untapped. The empowerment of women through climate mitigation and adaptation fosters economic growth and socioeconomic development, keeps environmental problems in check, reduces poverty, and increases the potential for adaptation and management of natural hazards, which is of benefit to both women and men. This project aims to produce a reliable evidence base for gender-sensitive data in order to increase knowledge about gender in relation to climate change, natural hazards, and DRR, and to better understand media's role in such relations. The results of the study may be used to formulate policies that address a more constructive role for women in mitigation and adaptation activities relating to climate change and DRR.

Gender, the role of media, and the reduction of risk due to climate change and natural hazards have not been studied together from a global perspective or in the Pakistani context; the present study thus presents an empirical investigation to map these connections. It assesses the role of media in creating awareness among women about climate change issues along with disseminating information about how to manage the risks of natural hazards. The findings of the study will help to improve social awareness of how the Pakistani media addresses national as well as global climate change and natural hazards, while giving due salience to gender issues in order to address the improvement of women's situations as well their participation in managing climate change and natural hazards.

The project highlights the gender inequalities and inequities in Pakistan with reference to climate change, natural hazards and DRR by using the microscopic lens of women's perceptions. It can help think tanks and policy makers on behalf of government in

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formulating national and provincial gender-sensitive environmental policies. It may help produce gender-sensitive budget allocation to bridge the prior gaps and meet the impending challenges posed by climate change and natural hazards along with their risk reduction. This study is a useful gender-sensitive Pakistani portrait of the role of media in mitigating climate change and natural hazards, which can help determine the capacity of women to address climate change/natural hazards and contribute to risk management. It reveals the role of media in representing climate change and natural hazards by analyzing it through the lens of gender.

1.6   Objectives and Research Questions

This study collects and analyzes women's thoughts about the causes and consequences of climate change and natural hazards, attempting to understand of the degree to which their perception is related to their media-usage habits and their use of various media as sources of information. Within these overarching aims of the research project, my empirical goals are to

1) analyze the perception of Pakistani women about the causes and consequences of climate change and natural hazards;

2) explore the role of the Pakistani media in creating awareness about the causes and consequences of climate change and natural hazards;

3) examine the perception of Pakistani women about the representation of gender in media coverage of climate change and natural hazards;

4) study the perception of women about the role of new media related to climate change and natural hazards;

5) examine the perception of Pakistani women about the role of media in DRR;

6) investigate the role of media in publicizing climate change issues and natural hazards.

In pursuing these goals, I focused on questions such as: what is the perception of women about climate change?; what is the perception of women about the causes and consequences of climate change and natural hazards?; what is the degree and pattern of media usage among women?; what is the role of media in creating awareness about climate change and natural hazards?; does media educate women about climate change and natural hazards?; what is the perception of women about having a gendered voice in media coverage of climate change and natural hazards?; and, what is the perception of women about the potential of new media related to climate change and natural hazards?

1.7   Research Design

In order to examine the perception of women about climate change and natural hazards in Pakistan to study directly interviewed women in order to grasp their problems, perceptions and sources of information. This research seeks to determine whether and which media sources had an effect on women by providing information and educating them about climate change, natural hazards and DRR. This project also has sought to include the role of non-media channels such as family, friends, neighbors or coworkers in addressing climate change and natural hazards. Since Pakistani society focuses on community bonds in the guise of strong family ties, particularly in rural areas, people share their opinions and experiences very openly with other; I am, therefore, interested to ascertain the impact of interpersonal communication as well as governmental influence. Given the complicated relationship between media, government and the public, this study also explores how the

Pakistani government serves people in addressing climate change and natural hazards in the broader context of DRR.

In order to find the answers to my research questions, I utilized qualitative and quantitative methodologies to carry out the project. I collected quantitative data by administering 384 paper-based questionnaires to literate women with tertiary education. A further 350 questionnaires were administrated verbally to illiterate or semi-literate women, and their responses were filled out by me and my team with their consent. I further conducted focus groups and in-depth interviews with experts to collect qualitative data. Sixteen community focus groups were conducted in total, four in each of the four provinces of Pakistan. Eight community focus groups involved illiterate or semi-literate Pakistani women and eight university-based focus groups involved educated women. Each focus group was composed of six to eight women.

Through these multi-method pursuits, I endeavored to find the answers to the research questions from both literate and semi-literate women. Educated and uneducated women apprehend the role of the media in cultivating perceptions about climate change and natural hazards differently, as each group has different media exposure. Educated women have access to all types of media (print, electronic and new media) whereas uneducated women have fewer resources of information about climate change as they cannot read print material. I found that educated women reflected more on the role of media in general regarding climate change and natural hazards while uneducated women, especially those most affected by climate-induced hazards, provided useful evidence of the perceptions cultivated by electronic media about climate change and natural hazards as well as the options for risk management.

The research procedures were carried out in four provinces of Pakistan- Punjab, Sind, Baluchistan and Khyber Pakhtunkhwa- as the women in the four provinces have different media exposure. Even within the same province, the media exposure of educated and uneducated women is different, so I included both literate and semi-literate respondents from the same province to maintain inclusiveness in the research design. In-depth interviews of 10 experts in one or more of the relevant research areas were also conducted.

To date, there have been a number of valuable studies that have investigated media and gender, media and natural hazards, and gender and natural hazards respectively. Moreover, in recent years, research has been evolving rapidly around media and climate change, although there are quite a few empirical studies about gender and climate change. However, thus far there has been no systematic and interdisciplinary study that has looked into gender, media and climate change for the sake of better DRR. This exploratory research is an effort to address the dearth of research on gender, media and climate change/natural hazards altogether. I believe my research will contribute in various ways. First, and foremost, it will contribute to the nascent debate about the gendered nature of climate change and natural hazards through perceptions of women, while also examining the Pakistani media's role in this regard. Second, by focusing on climate change and disasters, I believe that my research may hold some potential to contribute to important global issues as many recent studies and reports are concluding that extreme weather patterns and disasters are due to climate change. I hope that insights from my research may improve the media' s role in communicating climate change and disasters by illuminating and clarifying some of the hidden potential of women in addressing such chaotic environmental issues.

In short, this study focuses on the perception of Pakistani women about the role of media in creating awareness of climate change and natural hazards leading to DRR, because women's risk perceptions are critical components of the gender-sensitive socio-political context within which policy-makers must operate. As climate change and natural hazards are not gender-neutral phenomena, so these need to be properly represented in and addressed by media. First, the media itself has to overcome the inequality in representation of gender issues in climate change and natural hazards before it can be expected to properly represent other social, cultural, economic and political inequalities relating to women and the reasons for the vulnerability of women in climate-induced hazards. Media can also play a role in highlighting the other compounding factors and stressors for women that aggravate their vulnerability. This act of balanced representation of the gendered aspects of climate change in media can play a powerful role in tackling climate change issues, gender mainstreaming, planning and policy efficiency, and women's capacity-building and empowerment.

This study is a useful gender-sensitive Pakistani portrait of the role of media in creating awareness about climate change and natural hazards, which can help to address climate change/natural hazards and contribute to risk management. The role of media in the study invites reflections on how media manage the risk of climate change and natural hazards and assist in DRR. An important part of DRR is assessment of the potential of mitigating risk through the public's perception and awareness of risk components. Public risk perception is a critical component of the socio-political context within which policymakers work. Media can influence risk perception in general (Wahlberg & Sjoberg, 2000). Studies have shown a positive correlation between exposure to the news and levels of concern over environmental issues (Mikami, Takeshita, & Kawabata, 1999). In media

studies, the present study reveals the role of media in addressing climate change and natural hazards by analyzing it through the lens of Pakistani women perception.

In development studies, there is much scholarship available that emphasizes the significance of gender sensitivity in addressing any issue pertaining to development. However, the academic scholarship available regarding environmental issues such as climate change, natural hazards and disaster risk reduction in the context of developing countries in general is scarce, especially in the case of Pakistan in particular. The specific argument that the present study contends incorporates data based evidence and relevant discourse in media to maintain that climate change, natural hazards and DRR are not gender neutral phenomena. Furthermore, the study provides the reasons for handling these environmental issues and phenomena in a framework that draws from a gender perspective. Climate change and natural hazards are not solely physical problems related to the physical environment, but also complex social experiences with repercussions for the communities and societies they impact. Women are unable to voice their specific requirements even though the impact of climate change and natural hazards affect women and men differently. The potential of women as agents of change for climate mitigation and adaptation thus remains untapped. The empowerment of women through climate mitigation and adaptation fosters economic growth and socioeconomic development, keeps environmental problems in check, reduces poverty, and increases the potential for adaptation and management of natural hazards, which is of benefit to both women and men. While collecting data, the voices of women were given prominence and respect, hence, this project has produced a reliable evidence base for gender-sensitive data in order to increase knowledge about gender in climate change, natural hazards, and DRR, and to better understand media's role in such relations. The following chapters will address these issues in detail.

1.8   Structure of the Thesis

The heart of this thesis is in the melding of the four fields of gender, climate change, natural hazards and media. This multi-disciplinary approach highlights the inter-relationship between these academic areas as they apply to a case study of women in Pakistan.

Chapter 1 In this chapter, I tried to solidify the rationale for a gendered perspective in addressing climate change, natural hazards and DRR as well as the urgency of conducting research in Pakistan.

Chapter 2 describes the strands of literature that inform the study. Part A analyzes the available literature regarding the gender aspects of climate change and natural hazards. It provides a background for taking a gendered perspective regarding role of media in climate change, natural hazards and DRR. Part B highlights media coverage of climate change. It analyzes the extent of this coverage and the vein in which climate change is reported, if reported at all. The sensationalism of such coverage is explored as well as the beneficial aspects of such coverage. Part C addresses the media myths and realities of natural hazards.

Chapter 3 describes the methodology of the study, which includes qualitative data collection through interviews and focus groups, and quantitative data collected by surveys. It presents the research design of the study in detail. It highlights the target population, sampling procedure, research instrument and its distribution as well as establishing the reliability and validity of the instrument. It explains the administration of focus groups amongst urban literate and rural semi-literate women and in-depth interviews with ten experts in one or more of the research areas.

Chapters 4 delves more deeply into the research conducted with Pakistani women, describing their perceptions of media effectiveness in timely and accurate information during a disaster or natural hazard, and in informing and garnering support post-disaster. This chapter will discuss two important questions linked to gender and climate change: firstly, in what ways does climate change affect women differently than men; and secondly, what is the perception of women about the gender coverage of media with regard to climate change and natural hazards?

Chapter 5 focuses on ascertaining the perception and awareness that women, both literate and semiliterate, have about climate change. This chapter emphasizes the degree of awareness regarding socio-economic and environmental impacts of climate change and natural hazards so that proper measures can be taken to impart pertinent knowledge to the female populace.

Chapter 6 analyzes the relationship between media ownership, effectiveness and trust. A comparative analysis between literate and semi-literate women's use of media is given and the main sources related to gathering data are presented, as well as the trust level of these sources.

Chapter 7 is related to new media. It describes the usage patterns and kind of information relayed by way of the Internet and mobile phone. Literate women's perception about new media's role of disseminating information is also conveyed and analyzed.

Chapter 8 discusses the relationship between media and DRR. Various topics related to DRR are explored, such as the effectiveness of media in lieu of DRR. The actual role that media has played during disasters in Pakistan, such as in the 2010 floods, the 2010 glacier melt which created Attabad Lake, the 2010 Phet Cyclone, and the 2005 earthquake and the role of women in DRR is also highlighted.

Chapter 9 concludes the thesis with a summary of the study and a series of recommendations for lessening the catastrophic impacts of climate change and natural hazards on women.

Chapter 2 : Literature Review

2.1 Introduction

This chapter will bring together three streams of academic literature that have not previously been connected in the fields of gender, media, climate change, natural hazards, and DRR.

Part A: Gender in Climate Change and Natural Hazards

The literature on climate change and natural hazards has increased exponentially during the last few years, generating recent studies that emphasize and reinforce a gendered perspective about climate change and natural hazards. There are two main arguments when it comes to gender. The first argument is that women, especially if they come from a poor background, find it more difficult to cope with climate change and natural hazards, since they are prone to become poorer, and they suffer from archaic social inequalities. In the wake of climate change and natural hazards, the existing socio-economic gender patterns victimize them even further. The second argument takes the opposite approach, arguing that women can play an essential role to reduce their vulnerability in climate change and natural hazards. In this view, they help others and save the environment because they are more in harmony with nature and they are involved more directly with the environment. Vulnerability can be experienced as a social process and as a state of flux, but women do actively and constructively work to move themselves out of their vulnerable situations (Baker, Hunt, & Rittenburg, 2007). Some studies mention the inherent potential of women to help with climatic crises, but there is so far relatively little literature available about women as the change agents in addressing climate change and/or DRR. Nonetheless, this chapter will discuss the literature that focuses on these two main points of views.

2.2 Vulnerability of Women due to Climate Change and Natural Hazards

Climate change impacts diversely upon people of different ages, class, income, occupation and gender (IPCC, 2001). However, those countries, communities and sections of society that are already vulnerable and less equipped with awareness or resistance capacity are more likely to suffer and be affected by the unfavorable impacts of climate change and natural hazards. More than 1.4 billion people live on less than US$ 1.25 a day, which is classified as extreme poverty; two-thirds of these are women (IFAD, 2010). Socially disadvantaged classes are marginalized groups with little political visibility, so both females and the poor of both developed and developing countries (Drexhage, 2006) are vulnerable in the face of climate change and natural hazards[2]. IPCC's Fourth Assessment Report (AR4) revealed that the North American poor, including Native American populations, were the most vulnerable- the same is true for Africa (Boko et al., 2007; Downing, 1991; Roncoli et al., 2009), and South Asia (Agnes R. Quisumbing & Pandolfelli, 2010).

It is not climate change itself that has inequitably adverse effects on women; it is actually the ravages of the social system, which has created conditions where climate change and natural hazards provokes vulnerabilities. Climate change aggravates pre-existing poverty and particularly affects those who depend on the resources available in their natural environment for daily survival. They have few alternatives should their environment suddenly change. Therefore, climate change multiplies pre-existing inequities in both developed and developing countries. Transnational NGOs and UN Women emphasize the importance of addressing social and gender inequality, poverty, and natural

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[2] (W Neil Adger et al., 2007; W Neil Adger et al., 2009; Cardona et al., 2012; Kates, 2000; D. R. Nelson, Adger, & Brown, 2007; Paavola & Adger, 2006)

resource exploitation as critical aspects in dealing with the impacts of climate change on women and societies in general. Michelle Bachelet, the current head of UN Women, stated at the Earth Summit+20:

> *We cannot afford to leave women marginalized; this is not sustainable.*
>
> *This social exclusion of women is not hurting women; it is hurting all of us.*

Women are especially vulnerable to climate change and disasters (Elaine Enarson, 2000; Lambrou & Piana, 2006; Ulrike Rohr, 2007). The pre-existing political, cultural, socioeconomic, and institutional norms give rise to a differential vulnerability[3]. Such vulnerability can be said to include socio-culturally nuanced parameters such as dependence, inequitable power provision, and the incapability of groups/communities to fulfill their needs and requirements (Baker, 2009; Baker et al., 2007; Cardona, 2004). As the impact of climate change and natural hazards on gender relations is beginning to be taken more seriously (V. Nelson, Meadows, Cannon, Morton, & Martin, 2002), a number of studies have been conducted in order to ascertain the increased vulnerability of women during and after disasters (W Neil Adger et al., 2007). This is a double-edged sword, however, as it draws attention away from the other socio-cultural causes of inequality (Arora-Jonsson, 2011; Guzmán, Martine, McGranahan, Schensul, & Tacoli, 2009; Nightingale, 2009).

Gender-based vulnerability is apparent when considering access to socially and environmentally provided resources. In rural, natural resource-based economies, men have greater access to natural and financial resources, as well as to healthcare and educational

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3 See for example (W. Neil Adger, Eakin, & Winkels, 2008; Alston & Whittenbury, 2013; Alston, Whittenbury, & Haynes, 2011; Arora-Jonsson, 2011; Brouwer, Akter, Brander, & Haque, 2007; Buechler, 2009; Carr, 2008; Dankelman, 2010; Demetriades & Esplen, 2008; Heckenberg & Johnston, 2012; Lambrou & Piana, 2006; MacGregor, 2010; Nightingale, 2009; Osbahr, Twyman, Neil Adger, & Thomas, 2008; Rahman, 2013; Resurreccion, 2011; Shackleton, Campbell, Lotz-Sisitka, & Shackleton, 2008; Terry, 2009)

facilities. For example, studies in Tanzania and Malawi showed that women gave essential and highly nutritious food items to other family members, especially their children, and subsequently suffered malnutrition themselves (Kakota, Nyariki, Mkwambisi, & Kogi-Makau, 2011; V. Nelson & Stathers, 2009). Of the eight hundred million people who are currently undernourished in the world (FAO, 2012), 262.6 million of them live in South Asia (Lobell et al., 2008). The combination of climate change and social vulnerability serves to intensify periods of starvation in South Asia, and women become even further malnourished (Lambrou & Nelson, 2013). This in turn reduces their immunity to diseases, such as reproductive tract infections and water-borne pathogens (Campbell-Lendrum, Pruss-Ustun, & Corvalan, 2003; Comrie, 2007; Markandya & Chiabai, 2009; Semenza & Menne, 2009). It is also observed that food shortages affect the growth and development of children. This is more the case for girls rather than for boys (Cook & Frank, 2008). Hence, the most vulnerable social groups are women, children, the disabled/sick and the elderly, all of whom are variously disempowered when it comes to fulfilling daily tasks and coping with risks.[4]

Where poor women are actively involved in agriculture, farming and forestry, they suffer more than men due to climate change effects and natural hazards. Women are the major producers of the world's staple crops, providing up to 90% of the food in rural areas and producing in total 60-80% of all food in many developing countries (Aguilar, 2004a). Women are not only expected to bear and raise children, but are also faced with increasing pressure to be involved in intense farming activities due to climate change. For instance, research in Australia pointed out that due to the frequency of droughts women were expected to not only labor more on the farm, but to find work outside of the home/farm to

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[4] (J. Ayers, 2011; J. M. Ayers & Huq, 2009; Barnett & O'Neill, 2010; E. Boyd, Grist, Juhola, & Nelson, 2009; O'Brien & Wolf, 2010; Petheram, Zander, Campbell, High, & Stacey, 2010)

shore-up the family income (Alston, 2009). Often a family will take out a loan in order to survive, but the heavy debts incurred and the inability to repay loans (Z. Ahmed, 2013; Renton, 2009) as well as the inequitable and discriminatory policies regarding women and marginalized groups, contributes to a "poverty trap" (Campbell, Dalrymple, Craig, & Crawford, 2009; McDowell & Hess, 2012).

2.2.1 Poverty traps.

In villages and other rural areas, poverty traps arise when climate change affects the destitute over a great period of time, by producing stressed ecosystems and environmental degradation (Hertel & Rosch, 2010; Kates, 2000; Sissoko, van Keulen, Verhagen, Tekken, & Battaglini, 2011; UNCCD, 2011). Poverty traps also occur because the rebuilding of assets after a series of disastrous events seems impossible (S. H. Eriksen & O'Brien, 2007; Sabates-Wheeler, Sabates, & Castaldo, 2008; Sallu, Twyman, & Stringer, 2010). Destitution is exacerbated by the rural framework, as people are dependent upon ecosystems which are affected by floods, droughts, as well as scarcity of land for agriculture, and internal conflicts restrict mobility which results in insecurity (Eriksen & Lind, 2005; Eriksen & Marin, 2011; Silvestri, Bryan, Ringler, Herrero, & Okoba, 2012). As most poor women live in rural areas, any further lapse in food security due to climate change or disasters can have disastrous results. For example, female farmers in the Philippines were jailed because they defaulted on debts they had incurred in order to overcome loss of crops (Peralta, 2008). In developing countries, the average of households run by women has increased and most of them belong to the poorer section of society. Many studies reveal that women as heads of families are less educated than their male counterparts; most often have less land to farm and have limited financial strength and less farm labor to work with them. Shortage of capital and farm labor compels these women to

compromise on crop patterns and farming systems. These compromises yield decreased production and shifts towards less nutritious harvests, and such households face malnutrition and food shortages. As the agricultural sector is increasingly privatized, small-scale farmers, especially poor women, fail to achieve targets due to their shortage of capital as well as the higher transaction costs consequent on dispersed settlements (Friis-Hansen & Duveskog, 2012). Such problems affect their ability to achieve food supply targets. Thus, reduced agricultural produce directly affects food security.

Women are both economically and provisionally frugal. They try to store their crops for the rainy season; for instance in Mali, women save their harvest in order to be able to cope with periods of drought (Intercooperation, 2008). Rationing may be seen as the initial response to food shortage at the onset of a food crisis. However, often rationing initially occurs among women (Hyder et al., 2007; Ramachandran, 2006). Rationing is a symptom of social vulnerability and lack of food security. Rather than focusing on how to eradicate rationing, it is imperative that vulnerabilities be decreased. If women are involved in agricultural activities, poverty traps can be addressed. This will also result in employment and labor opportunities (FAO, 2012).

Poverty traps lead people living in rural areas to migrate to urban areas in search of food and jobs. Often, they live urban slums and which are susceptible to poor shelter and sanitation facilities, which results in worsening of their situation (Akter, 2009). Cities as well as rural areas which are severely affected by natural hazards such as flooding and other disasters caused by climate change face issues in ensuring that the affectees are provided with proper food and hygienic water. Often, flooding and other climate-induced problems cause inflation of food prices (Bartlett, 2008); this is in addition to the economic loss caused by spoilage of food by floods and other disasters. The 2004 floods in Bangladesh caused a

30% increase in the price of rice in Dhaka and a 100% increase in the price of vegetables. This affected shanty dwellers and the rural dwellers the most (Douglas, 2009). The most affected people in the urban areas appear to be the laborers, who, in order to avoid starvation, spend their savings to keep up with the inflated prices of food (S. A. Ahmed, Diffenbaugh, & Hertel, 2009; Hertel & Rosch, 2010). When the price of food increases, the poor try to cope with these changes by decreasing their food intake, consuming less expensive/nutritious food, or by working more hours. This is detrimental to overall community health, and especially those who are already vulnerable to ill health. Women tend to sacrifice their own nutrition for that of their families and become mal-nourished (M. J. Cohen & Garrett, 2010). When this community dynamic is intensified by frequent disasters, it creates not only new poverty traps but also intensifies the existing ones.

Jiang and Hardee (2011) have emphasized that vulnerability can be alleviated and adaptation can be eased by focusing on demographic changes brought about by different factors. Hardee (2009) earlier addressed gender inequality in terms of increasing population, which makes world resources scarce and directly affects different factions of society, such as women. In his editorial, he draws on the report "Facing a changing world: Women, population and climate", published just weeks before national delegations reached Copenhagen in 2009 to create a new climate treaty. As mentioned earlier, UN Secretary General Ban Ki-moon called increasing population the greatest challenge threatening humanity in the UNFPA report. The report also highlights the fact that investments related to female empowerment help alleviate sever economic conditions, and reduces poverty, which in turn helps to combat the after-effects of climate change. The report also emphasizes the importance of investing in health facilities for females (both women and girls) to decrease the number of maternal deaths, and diseases such as TB. Educated women

are not only financially better off, but they are also cognizant of the benefit of smaller families, which leads to healthier families, as a smaller number of children ensures that each child will be given more attention. Women with recourse to reproductive health facilities tend to have fewer children (UNFPA, 2009).

2.2.2   Gender-specific mortality due to climate change and natural hazards.

In recent years, the literature has shown that climactic events have become gender-specific, leading to a difference in mortality rates for women and men. Women and children are 14 times more liable to die during a catastrophe than men. During the 1991 cyclone in Bangladesh, 140,000 Bangladeshi were killed, of whom 90% were women (Aguilar, 2004b). Similarly, in developed countries, more women died than men during the heat wave in Europe in 2003 (Fouillet et al., 2006; Kovats & Hajat, 2008; Poumadere, Mays, Le Mer, & Blong, 2005; Robine et al., 2008). Similarly, during the catastrophe of Hurricane Katrina in the USA, African-American women, as the poorest section of the society, faced the worst difficulties in terms of survival.

In a study conducted by Neumayer and Plümper (2007), the data of catastrophes collected in 141 countries in the period between 1981and 2002 shows that gender differences in death tolls from disasters are related to women's social and economic conditions. Empirical data from countries such as Sri Lanka, Kenya, India and Malawi shows that female tea pickers' mortality rates increase during periods of increased temperature. The simple reason for this is that they are paid for the quantity, not the duration; therefore, they take fewer rest breaks (Renton, 2009) . The main reasons for a difference in life expectancy are the roles that have been assigned by the society and culture. This may be due to social mores and taboos or just cultural dictates. Socio-

economic disadvantages and natural hazards intensify discriminatory biases, causing a greater number of women die during floods and hurricanes (Neumayer & Plümper, 2007; Ray-Bennett, 2009). In Nepal, during flooding, many more girls than women died (13.3 for every 1,000 girls). It is evident from the study which S. Ahmed and Fajber (2009) conducted in rural communities of India in Gujarat that women's vulnerability is often directly related to cultural appropriateness and matters of modesty. Rahman (2013) and Nellemann, Verma, and Hislop (2011) have emphasized the gender disparity that exists when it comes to swimming during natural hazards. For instance, studies in Bangladesh have shown that the majority of women cannot swim; consequently, during flooding they are extremely vulnerable (Ulrike Rohr, 2006; Sharmin & Islam, 2013). During the Asian tsunami women who attempted to save their children did not have the ability to swim well and thus were often killed (Rofi, Doocy, & Robinson, 2006). In Nicaragua, the social infrastructure dictates that the middle class should remain within their homes and so during flooding and other natural hazards they face a greater risk of dying (Bradshaw, 2002). Social taboos and restricted mobility prevent Bangladeshi and Nicaraguan women from leaving their homes during floods (World Bank, 2010). This shows that social conditions affect the differential life expectancy of men and women.

2.2.3 Gender-specific physical and mental health risks due to climate change and natural hazards.

Many studies mention that climate change and natural hazards bring further distress for women because of their roles and responsibilities (Aguilar, 2004a, 2009; Aguilar, Araujo, & Quesada-Aguilar, 2007; V. Nelson et al., 2002). Natural hazards and environmental deterioration affect women's health more than men's because they have to fulfill a variety of roles (Babugura, Mtshali, & Mtshali, 2010; Boetto & McKinnon, 2013),

such as increased pressure on caring duties (Arora-Jonsson, 2011; Kakota et al., 2011; MacGregor, 2010; Muthoni & Wangui, 2013; V. Nelson & Stathers, 2009; Petrie, 2010; Resurreccion, 2011; Shah, Dulal, Johnson, & Baptiste, 2013). Campbell et al. (2009) and Resurreccion (2011) found in various case studies in Vietnam that during natural hazards and other climatic events, the workload for women increased, with adverse climate effects on biodiversity bringing hardship for women in the procurement of water, firewood, wild edibles and medicinal herbs. The scarcity of water affects food provision and even the financial standing of various countries. The growth in population further exacerbates the deficit in water supply. This dilemma is intensified by the fact that water resources will be further depleted due to climate change in precipitation patterns, temperature, heat waves etc. In Malawi, climate variability increases the food insecurity faced by women because it reduces the variables of food production and access to food by reducing the quantity and quality of food. In Nepal, change in monsoon patterns, periods of drought, and decreased amount of snowfall forces Dalit female members (the "untouchables") to engage in growing drought-resistant buckwheat and laboring for the higher caste Lama Landlords. Shifts in the workload mean that catastrophes increase women's responsibilities in household work, in many paid and unpaid workplaces in formal and informal sectors, and in the community while working towards pre-disaster management as well as in the post-disaster reconstruction (Lambrou & Piana, 2006).

In a post-disaster period, women might also face severe violence (Elaine Enarson, 2000). Feminist scholarship demonstrates that domestic gender-based violence is on the rise when it is indirectly related to climate change and the aftermath of disasters; this can be attributed to disrupted safety nets, grief, and increased stress and tension factors as reported. This phenomenon, which occurs after natural hazards, causes problems in both developed

and developing countries alike. Droughts, which are a byproduct of climate change, not only have physical repercussion but mental and psychological effects as well. Both men and women, but especially women, face increased workload and this leads to nervous breakdowns and depression. Australia's ten-year drought in the Murray-Darling Basin showed a distinctly different effect on women with regard to depression, especially when there was absolute reliance on agriculture with no substitute means of livelihood (Alston & Whittenbury, 2014). Whitten's findings with reference to the Murray-Darling Basin revealed increased instances of domestic violence. Other studies conducted in Australia show those instances of family violence increase during and after disasters. Houghton conducted a study which showed that there was an increase in domestic violence after flooding in 2004 took place in Whakatane, New Zealand (Houghton, 2009). The main reason was that when families were affected by financial loss, women became the target of frustration and depression. Other studies, which were conducted in third world countries such as Bangladesh, came to the same conclusion. Not only are women vulnerable due to societal dictates but they also experience greater instances of physical abuse, especially when they live in temporary residential structures, as documented by American and Australian agencies (Anastario, Shehab, & Lawry, 2009; Jenkins & Phillips, 2008; Whittenbury, 2013). Gender-based violence is not emphasized enough during the formulation of national policies intended to address climate change, while local communities faced with natural hazards are not involved in policy formulation. In the absence of gender-specific policies and disregard of gender-tailored government policies, gender-based violence still remains an issue which is not properly addressed by climate researchers (Alston, 2012a)**.**

2.2.4 Gender-specific economic vulnerability.

The economic status of women is another decisive factor in this regard. Women are more adversely affected by climate change and natural hazards because of their vulnerability due to lack of financial resources. It has been observed in India that a greater number of women, especially low-class women, work on daily wages in order to overcome the loss of their crops (Lambrou & Nelson, 2013). Women belonging to the lower strata of society are more affected than wealthy women by climate change and disasters. For example, in Tanzania, wealthy women hired those that were not as well off to collect animal fodder during periods of drought and scarcity (Muthoni & Wangui, 2013). The loss of production capacity due to climate change and water shortage places women in a more vulnerable position, partly because employment alternatives demand higher education and do not pay living wage (Buechler, 2009). Women engaged in professions like pickling, canning and fruit gathering do need not higher education, but if climate change deteriorates their earning level and they try to shift to other modern means of livelihood, they need a better technical and professional education. So wherever women are engaged in economic activity and are not better equipped to deal with climate change, they tend to suffer. The reorganizing and slump of primary activities (e.g., resource extraction, trough hunting, and fishing) and secondary activities (e.g., processing of resources through filleting, salting, and freezing etc.) in rural areas and the expansion of the service sector primarily affect women as they are not educated and equipped to adjust to an emerging service sector (Rasmussen, 2009).

Women are more vulnerable to gender inequalities before, during and after climate change-induced disasters in their exercise of human rights, political and economic status. In most developing countries, the majority of the women have less land ownership and poorer

housing conditions. Ugandan men, for instance, were able to access land during droughts, but women were adversely affected due to their lack of land assets (Quisumbing, Kumar, & Behrman, 2011). African women usually do not have personal land and cash resources; therefore, they are doubly vulnerable to the effects of climate change and natural hazards. If a crop is destroyed due to floods, only the owner of the land can gain any benefits, sometimes in the form of subsidies. Women already comprise less than 20% of the world's land proprietorship and this is further exacerbated by the fact that women make up a great deal of the world's farming community, as around 43% of farming in developing countries is done by women. Women make up about 43% of the agriculture labor force of developing countries, ranging from 20 percent in Latin America to almost 50 % in Eastern and Southeastern Asia and in sub-Saharan Africa (FAO, 2011). Islam (2009) suggests that the government in Bangladesh should procure and ensure women's access to land ownership, improved livelihood, information and education, community development, self-dependence, and increased participation in decision-making, all of which will help in addressing climate change and natural hazards. That holds true for Pakistan as well, as the majority of the women lack the right to own property.

Different population groups are exposed and affected by natural hazards that occur due to climate change. For instance, in urban and suburban areas, the poor and marginalized factions of society (due to gender or ethnicity) tend to settle along rivers, canals, and the seashore, as this real estate is less desirable and thus less expensive. These areas are more prone to flooding due to sea level fluctuations. Also, the buildings adjacent to unfortified rivers and coastal areas are often not built according to regulatory codes, rendering them more dangerous in times of natural hazards (Hardoy, Mitlin, & Satterthwaite, 2014; Pelling, 2003).

The risk to the poor (and women in particular) in times of natural hazards is exacerbated by inadequate income, meager assets, poor infrastructure, and the unavailability of transport (Moser & Satterthwaite, 2010). The poor depend upon public transport to get to work/school. For example, after the March 2013 flood in Georgetown, Guyana, a study showed that poorer households that depended on public transport were more liable to lose time at work/school. Without access to private transport, this segment of the population had to wade through floodwaters and were thus exposed to waterborne pathogens (Linnekamp, Koedam, & Baud, 2011). Thus, poorer households were also shown to be more vulnerable to health problems due to natural hazards, which is worsened by their poverty-induced lack of access to healthcare (Tamerius, Wise, Uejio, McCoy, & Comrie, 2007). Similarly, the risks caused by transportation problems are not gender-neutral and need to be granted more attention (Levy & Egan, 1998; Peters, 2001). Women use public transportation, or walk to their destinations more than men (World Bank, 2010). When any disaster undermines the transportation infrastructure of a country with insufficient capacity to remedy such problems immediately, women are put at risk.

Natural hazards do, of course, displace a great number of people, which causes loss of residence and financial loss. However, only sometimes is this displacement rendered permanent in the shape of migration (Hallegatte, 2012; Naqvi & Rehm, 2012). In some cases, both males and females are pushed to leave their native regions for the sake of livelihood. Most available literature, as presented in the IPCC SREX report, shows that an increased ratio of climate intensity and natural hazards will eventually lead to a greater number of people being displaced, causing loss of residence and financial loss. In some cases, both males and females are pushed to leave their native regions for the sake of livelihood. Where women support families, more women than men are inclined towards

migrating permanently away from their home, community and region. However, only sometimes is this displacement rendered permanent in the shape of migration (Hallegatte, 2012; Naqvi & Rehm, 2012). The displacement caused by disasters shows that people who have been displaced prefer to return to their households and rebuild rather than settle anew. The floods in Pakistan which occurred in 2010 caused displacement on a local level rather than migration across longer distances (Gaurav, 2010).

If climate change also causes men to migrate in order to obtain jobs, this leaves women to be the household breadwinners (Chindarkar, 2012); livestock and crop changes also affect how labor is divided among the genders (Lambrou & Piana, 2006). When the male members opt to migrate, as they do in Niger and South Africa, women are left to cope with the extra burden of agricultural tasks but do not have sufficient extra labor (Goh, 2012). Reyes (2002) also observed that men most often leave their native places to find work, while the major responsibilities of response and reconstruction are left with women. Therefore, when there are extreme weather changes in the guise of climate change, this has a domino effect on migration. There is also a divide among genders due to access to resources, especially water and wood (Tandon, 2007b), which leads to conflict between the genders (Omolo, 2010). Usually, women face the brunt of extreme events such as tsunamis and floods (Neumayer & Plümper, 2007). Women are also physically and emotionally exhausted due to the additional workload, as shown in a study conducted in South Africa (Babugura et al., 2010). When the male members migrated to make up for loss of livelihood in their rural framework, Bangladeshi women were faced with dangerous working conditions, loss of respect and in some cases exploitation (Pouliotte, Smit, & Westerhoff, 2009). However, sometimes male migration does have its benefits, as it motivates women to

expand their boundaries, look for different economic options and even push their way into public decision-making spaces (CIDA, 2002; Fordham, 2011).

2.3   Women and Ecosystems: Women's Local Knowledge and Role as Change Agents

Numerous studies have argued that local knowledge is very useful in reducing disaster risk in developing countries (Ajani, Mgbenka, & Okeke, 2013; Mertz, Mbow, Reenberg, & Diouf, 2009; Nyong, Adesina, & Elasha, 2007; Speranza, Kiteme, Ambenje, Wiesmann, & Makali, 2010). There is a need to recognize women's inclination to save the earth and to conserve the environment. This differentiation based on gender is most visible in terms of livelihood and the allocation of responsibilities: both genders are placed under pressure for increased productivity, but only women are responsible for increased reproduction (Resurreccion, 2011). According to Shiva (1989), "rural indigenous women are original givers of life and therefore the right caretakers of nature" (p. 42). In South Asia, the link between women and their environment is quite strong, as witnessed by the fact that women have been proactive in preventing deforestation by barring commercial loggers, who are detrimental not only to forests but also to the means of livelihood connected to forests. Since women in South Asia depend on natural resources rather than on industrial means for their livelihood, they are inclined towards protecting nature and its resources. As such, they also serve as the primary caretakers of the environment and as its guardians. In many cultures, they are considering the unacknowledged custodians of the planet, who serve to protect it for coming generations.

Resurrección (2013) points out that the 1985 Nairobi conference was the first platform where women's role in environmental preservation was highlighted. The example given was that of the Chipko movement, which revolved around how women in India had

protected trees from being cut down when faced with the threat of massive deforestation. There were also other instances that were cited (Shiva 1989, p. 42). The Chipko movement became a catalytic emblem for women wanting to bring about change in third world countries. This not only showed their initiative, but it also highlighted their awareness and concerns for the environment and showed that the Pakistani women, too, were active participants when it came to environmental concerns (Dankelman & Davidson, 1993). Today, it is more imperative that women be involved in coping with climate change and natural hazards. Due to social inequalities, they are marginalized in spite of the fact that they deal closely with the environment, and thus have social and ecological knowledge which can be effective in coping with environmental issues (Figueiredo & Perkins, 2013).

Gender-sensitive ecosystem management or sound environmental management can offer cost-effective solutions to reducing community vulnerability to disasters (ISDR, 2009). Women fulfill basic roles in their communities to decrease the perils of disaster and through policies of acclimatization. As they face demonstrations of the variability of the climate, they acquire knowledge and experience to mitigate such hazards. Thus, their knowledge and experience must be taken advantage of while planning adaptation processes for vulnerable communities (Carvajal-Escobar, Quintero-Angel, & Garc′ıa-Vargas, 2008). Women have better knowledge of the use of wild plants, both edible and inedible, grass species and domestic animals. Men, by contrast, tend to have more knowledge of wild animals and bird species. As home gardens are adjacent to family houses, women are able to run their homes and work efficaciously in dry seasons. Similarly, Aaron M. McCright (2010) conducted a study in United States and revealed that women better understood climate change and its effects as compared to men. Rohr (2004) also concluded through her study that women had a better understanding of the detrimental effects and severity of

climate change as compared to men. The differences between the perceptions may be because women are more concerned with socially responsibility, and that enhances their understanding of the causes and consequences of climate change (Carvajal-Escobar et al., 2008; Wenden, 2011).

A thorough investigation of climate change and natural hazards along with their impacts at local level is necessary to plan and design livelihood policies, which are adaptive and responsive to the local livelihood and food systems and also supportive of the role of women in agriculture, nutrition, food systems and conservation (Nazare, Mdluli , Babugura, & Banda, 2005). According to Tasokwa (2011), policy intervention that should enable women to gain control over cash, income and land, as well as promote access to climate information. Natural resources and technologies are likely to have community benefit. Where women's knowledge, experiences and skills are not used for adaptation and mitigation, there are problems in sustainability (Demetriades & Esplen, 2008; Patt, Daze, & Suarez, 2009). If given the chance, women will try to find solutions to the shortage of drinking water, accessibility to health and education, and the vulnerabilities of their communities when they come across hydro-meteorological happenings linked with climate change as well as other prospective natural hazards; constituting networks with other women in turn increases their social capital. Therefore, sustainable water usage policies should include input given by women, as they possess first-hand knowledge of how to ration water during climate change and hazards. (Figueiredo & Perkins, 2013).

A very important aspect was that not only are women more aware of climate change, but they also have the ability and percipience to bring change to their environment (Dankelman, 2002). The level of awareness in women and their potential contribution in reducing and alleviating the various impacts of climate change and natural hazards was in

direct opposition to the orthodox view of women's vulnerability and their lack of awareness. The portrayal of women as victims not only underestimates their potential but also emphasizes their vulnerability as the main problem that they face (Arora-Jonsson, 2011; MacGregor, 2010; Manzo, 2010). In order to fully realize female potential in climate change and natural hazards, it is important that women be involved in policy-making related to mitigating and adapting to climate change and addressing DRR.

In severe climate conditions, vulnerable women have played a remarkable role. Many researchers have recorded that women have been efficient in mobilizing the community in the various stages of risk management required of the adaptation scenario (Enarson, 2001; Wenden, 2011; Yonder, Akcar, & Gopalan, 2005). No doubt, women in both developed and developing countries play a central role in families, communities, and economies, but women remain relatively invisible in the arena of disaster planning and response. Though there is still a lot of work to do, their contribution in facing catastrophes and in the adaptation processes to climate change and climate vulnerability tends not to be appreciated by the outer community. However, the contribution of women from developed nations is to some extent acknowledged and there are fewer ideological constraints for them. For instance, women were heavily involved in the recovery after the major hurricane in Miami in 1992. The non-hierarchical organization *Women Will Rebuild* kept the uniquely feminist movement of Miami women responding to the disaster by mobilizing heterogeneity and democratic participation (Enarson & Morrow, 1998). The majority of the women who participated in the reconstruction asserted that their participation benefited their family (Bradshaw, 2002).

Climate change is a major global issue of our era, which needs wise handling. Both developed and developing countries are required to show seriousness and a commitment to

their role in conserving the environment by implementing climate change policies effectively. Gender considerations need to be given utmost importance while dealing with the climate change and natural hazards issues as the most affected and vulnerable sections of society are the poor and the socially marginalized. Amongst these women of developed countries in general and of developing countries in particular, the most affected are those who are socially, economically and politically constrained. A deeper understanding is needed of the gender dimensions of climate change and natural hazards with respect to participation in decision-making processes, division of labor, access to resources, and knowledge systems. The exploration of agricultural adaptation to climate change in Tanzania by Nelson and Stathers (2009) shows that future gender-sensitive climate-adaptation efforts require seeking guidelines from "resilience thinking", "political ecology", and environmental anthropology in order to assess the power struggles and cultural norms at play in the socio-ecological system. It is generally acknowledged that failure to involve women in decision-making processes about climate change mitigation and adaptation at local, national, regional and international levels not only aggravates gender inequalities, but also deteriorates the effectiveness of climate change responses. It is most important to understand the hurdles to women's participation in decision-making, and devise ways to overcome these obstacles through awareness at grassroots level, confidence building, advocacy and leadership training projects. Special attention is required for supporting girls' participation because girls can be excluded doubly due to youth and gender from decision-making processes.

2.4   Gender Perspectives in Climate Change and DRR Policies

In sum, the problem has been that gender aspects are included in climate change policies because there is insufficient gender-sensitive data and knowledge about the relation

between gender justice and climate change. The lack of participation of women and gender experts in climate change negotiations are contributing factors (Hemmati & Rohr, 2009). However, many International NGOs, ENGOs, women's organizations, and governmental delegations from the developed countries have played a vital role in highlighting the significance of gender in climate change dialogue from the start of the Conference of Parties (COP) held by United Nations Framework Convention on Climate Change (UNFCCC). Since then, most of the analyzes done from a gender perspective have focused exclusively on women in developing countries, where Clean Development Mechanism (CDM) projects are in operation and where there are active women's networks in the energy sectors.

Climate change committees have also looked into other areas of discrimination. The climate change regime has recently acknowledged other issues of procedural justice. The establishment of the Least Developed Countries Expert Group (Decision 29/CP.7.) increases the voice of LDCs in international adaptation planning and decisions. Provisions to increase the participation of women in the Convention bodies are also related to procedural justice (Decision 36/CP.7.). However, the climate change regime is still characterized by several procedural injustices (Paavola & Adger, 2006). Denton (2002) argues that the climate change policy has to guarantee a secure future with the joining of progress and climate change issues. It must cater to the interests of all concerned parties, especially women. Still, environmental policy-makers are not influenced by the threats of impending global warming and they have not acknowledged the significance of women as contributors to their sustainable development. The Global Environment Facility and the Clean Development Mechanism of the Kyoto Protocol can only perform better when women and the poor are not disenfranchised from the policies.

Lambrou and Piana (2006) in their study presented the scientific assessment of climate change, its impacts and interrelated influences on human and natural systems as well as international response to environmental issues; the results revealed that the gender dimensions have been mostly neglected in the international environmental policies. In furtherance of this cause, during COP10 in Buenos Aires in 2004, it was suggested that gender should be blended into all processes, policies, steps, strategies and guidelines in the climate change debate at all international forums. Since the mid-2000s, gender issues have begun to gain more attention in international climate change dialogues (Jämting, 2008; Rohr, 2009). The demand for women participation was tabled in a congress session held in Manila in October 2008 that included parliamentarians, spokespersons of environmental and women's organizations as well as donor agencies. It emphasized that climate change and its influences should be perceived as part of a development issue with gender dimensions, as gender implications pervade all sectors and levels. Nevertheless, it requires strenuous efforts to confirm that climate change and DRR measures can be gender-based, responsive to local knowledge systems and sensitive to human rights. The Manila declaration insists that institutions like UNFCCC initiate policies and projects that will advantage poor women and men and promote the active participation of women (Smyth, 2009). Isis International, Philippines, brought out "Declaration of Women in Asia on Climate Change" after over 70 women of varied backgrounds from different parts of Asia held a meeting in September 2009 in Bangkok. The subject matter of this declaration affirms the upcoming status of women in climate justice. It emphasizes the central role of women as catalysts in primary management of communities and climate change. The draft asserts the intrinsic position of women in agriculture, fishery, forest, energy, health, water, sanitation and funding for climate change mitigation and adaptation. The participants, who

were from Armenia, Bangladesh, Cambodia, India, Indonesia, Malaysia, Pakistan, Philippines and Thailand, conducted a march to the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) in Bangkok on October 1, 2009 with the slogan "No Climate Justice without Gender Justice". They accentuated that women were most vulnerable to climate change despite their lesser role in carbon emission. They insisted on the significant involvement of women in the climate change dialogue. Women's input is not only important but also gives an insight into the communal psyche; for instance, the women blamed developed countries, especially the United States, for the devastating effects of climate change (Somera, 2009).

Both climate change and natural hazards-related policies influence gender relations, particularly in developing countries. Poor women face many gender-specific hurdles that decrease their ability to handle and adapt to the changing climate. Such hurdles should be removed in the interest of gender equity and adaptation success. To date gender issues have hardly been integrated in international public policies to curb carbon emissions, including the UNFCCC and Kyoto protocol. However, feminist lobbying and the increasing involvement of gender specialists are positive steps towards gender-specific climate change policies (Terry, 2009). Years of efforts culminated in a major breakthrough in the formation of "gendercc-women for climate justice," a global network of women and gender activists working for gender and climate justice at COP 13 in 2007 at Bali, Indonesia (Hemmati & Rohr, 2009). It was claimed at COP 13 that all parties and stakeholders had pledged themselves to ensure that climate change as well as mitigation and adaptation efforts will not aggravate the injustice, inequities and inequalities between men and women (Rohr & Hemmati, 2008). That is why it was suggested that focus be placed on the application of gender budgeting and gender audits. Investments in programs for adaptation and mitigation,

technology-transfer, capacity building, etc. need to be also measured by their contribution to social justice, and gender justice particularly. In mitigation activities such as Clean Development Mechanism, capacity building, technology transfer, vulnerability studies and programs for adaptation, the poor, the majority of whom are women, should be targeted and made active contributors in decision-making (Wamukonya & Skutsch, 2002). This is especially true for developing countries who do not properly cope with climate change.

Developing countries are not well equipped to cope with the uncertain climate change patterns. Developed countries as well as international donor agencies have to come forward with funds as well as technology transfer to rescue them from the deteriorating conditions. Aguilar (2009) proposed that the UNFCCC should promote a gender strategy, encourage female representation, sponsor the gender-specific climate change research, and develop a system to use gender-specific indicators and criteria for governments to send national reporting to the UNFCCC Secretariat. The principles of gender equity and equality at all stages of research, analysis, design, and implementation of mitigation and adaptation strategies must be adopted in the international climate change negotiation process and climate policies at local, national, regional and international levels. Women should be given equitable access to the benefits of market-based approaches to manage climate change and natural hazards.

In Pakistan many stakeholders consider climate change gender-neutral, while there are also a few that are trying to raise their voices for gender sensitivity, and gender equality to cope with social, physical, economic and political vulnerabilities for the women and the poor (Zahur, 2008). Like other developing countries, climate change policy in Pakistan is still in its infancy even though the country was almost the first to ratify the United Nations Framework Convention on Climate Change (UNFCCC) in 1994 and has also approved the

other related protocols like Kyoto, and Montreal. The forthcoming national climate change policy is equipped with gender dimensions; however, it lacks implementation. The Government of Pakistan (GOP) has developed a new National Disaster Management Authority (NDMA), which is trying to cater for the disaster vulnerabilities of the communities residing in the hazardous regions with a view to gender sensitivity (Zahur, 2008). The overlooking of female citizens in the sphere of climate change further intensifies the detrimental effects of climate change/natural hazards; this is especially true with reference to developing countries.

Gender inequality and gender bias in regard to information and communication technologies add to women's and their dependents' vulnerability (Wong, 2009). The increasing number of women on technology committees has not been significantly effective in challenging gender stereotypes. A gender-sensitive structure for technological inventions as well as alternative livelihood policies is required to decrease the poor reliance on the local elites for subsistence (Wong, 2009). Lane and McNaught (2009) investigated the way in which gendered approaches to climate change adaptation could be fortified in the Pacific region among the Tikina Wai community. The study shows that the formulation and implementation of successful strategies to deal with community vulnerability often depend on the complementary roles of men and women, which demands their working together in partnership to ensure sustainability. It also reveals that strategies are more likely to be successful when there is a perception of gendered roles prior to heading natural resource usage, as it can considerably assist in securing and improving livelihoods and food security.

2.5   Summary

Avoidance of the detrimental effects of climate change and disasters can be said to be synonymous with focusing on the most vulnerable because the overall resilience of the population ensures the combative strength of individuals. If women are granted more resilient capacity, this will automatically lead to a more prosperous future (Kevany, Siebel, Hyde, Nazer, & Huisingh, 2013). Their participation is essential as their contribution in the form of knowledge has been less effectively used and their experiences and their knowledge cannot be set aside. Women are not powerless sufferers of climate change and disasters; they are vigorous catalysts and their role and knowledge cannot be ignored. Women can help in dealing with matters like energy consumption, deforestation, burning of vegetation, population and economic growth, development of scientific research and technologies, and relevant policymaking. Making adaptation policies and DRR programs gender-sensitive is not meant to add a burden to women, but it requires deep understanding of gender vulnerability and strengthened commitment of financial, technical and human resources to address gender-specific priorities. Women can help or hinder the development as they are more than half of the population of the world and their absence from the decision-making process as well as implementation of mitigation and adaptation policies will cause the failure of global efforts to cause effective climate change. As has been already voiced, there is no climate justice without gender justice. Therefore, it can be safely said that equity in gender is equity in climate and improvement of the gender environment is a gateway to better handling of climate change and avoiding natural hazards turn to be disasters. Here, media organizations have a role to play in fearlessly opposing gender inequality in climate change counter-measures, resource distribution and reconstruction on the ground. The media is a powerful tool by which people can transmit information.

Part B: Media Coverage of Climate Change

2.6   Introduction

The recent rapid, turbulent, and catastrophic changes in climate have gained the attention of the entire world. Media is the main mode though which people become informed about climate change and natural hazards. The media has its own agenda in giving coverage to these issues, but is also influenced by the agendas of politicians, celebrities, and the rich and powerful. The media's representation of climate change affects people's perception of the problem, which subsequently influences their responses and the actions that they might take to address the issue. In addition, policy-makers rely on media information when making decisions. This section will therefore study the representation of climate change in the media.

2.7   Increasing and differing media coverage of climate change

According to Maxwell T. Boykoff (2006), the first documented coverage of anthropogenic climate change was Cowen's 1957 article in the Christian Science Monitor. This article was entitled "Are Men Changing the Earth's Weather*?"* and stated, "Industrial activity is flooding the air with Carbon Dioxide gas. This gas acts like the glass in a green house. The gas is changing the Earth's heat balance". Since that time media coverage of climate change has continued to grow (Doulton & Brown, 2009); however, the focus has not been consistent or regular (Maxwell T. Boykoff, 2007; Sampei & Aoyagi-Usui, 2009). In addition, wide international research on the phenomenon of climate change reporting demonstrates that media reports about climate change are surprisingly dissimilar. These trends in climate change reporting raise two questions; firstly, why has there been a recent amplification in climate change media coverage? And secondly, why does the coverage

offer such varied understandings of the issue, in spite of widely accepted scientific consensus on anthropogenic climate change?

2.7.1 Increase in media coverage.

Liu, Vedlitz, and Alston (2008) reviewed 795 news articles about global warming and climate change printed in the Houston Chronicle from 1992 to 2005. The study revealed that the frequency of articles covering climate change increased over this period and that the greater portion of the articles focused its harmful impacts. Between 2003 and 2006, two major increases in American and British media coverage of climate change occurred, Maxwell T. Boykoff (2007) revealed in a study that these increases in coverage coincided with international conferences, special large-scale scientific inquiries, and film/book launches. The first conference of significance was the G8 Summit in Gleneagles, Scotland, which created increased scrutiny of greenhouse-gas emissions from air travel. This G8 summit strategically followed a joint-statement from 11 top international science bodies – including the UK Royal Society and the US National Academy of Sciences – stating that "it is likely that most of the warming in recent decades can be attributed to human activities" (Joint Science Academies Statement 2005). The media included this statement in their reportage of the G8 meeting. Since the UK summer is a peak travel period, this fueled further debates and critiques of "carbon offsetting" in the media. September–November 2006 brought another increase in media coverage of climate change. This coincided with the UK release of Al Gore's film "An Inconvenient Truth" and the Britain's Royal Society's open letter to the UK division of ExxonMobil. The documentary showcasing Al Gore's efforts to educate the public about climate change was a box-office success, and the Royal Society's letter suggesting that ExxonMobil was deliberately spreading propaganda to undermine scientific consensus on climate change, was very controversial (Adam, 2006).

Immediately after that, Richard Branson gave a much-publicized "donation" of three billion dollars to fund renewable energy initiatives and bio-fuel research. This personalized story was widely published; it was appreciated as a philanthropic act, but also criticized because the money was invested in Richard Branson's own company, Virgin Fuels.

The Stern Review is a 700- page report released on October 30, 2006 by economist Nicholas Stern that accounts for the additional growth in media coverage during this period. The report concluded that the benefits of strong early action on climate change far outweigh the cost of not acting. The review provides the potential impacts of climate change on water resources, food production, health, and the environment. Heavy media exposure of the Stern Review was followed a week later by coverage of the Twelfth Conference of the Parties to the United Nations Framework Convention on Climate Change (COP12) meeting held in Nairobi.

According to BoyKoff and Boykoff (2007), media coverage acted to frame public sentiments regarding climate change and created demands for policy action; for instance, the public rally "Stop Climate Chaos" attracted thousands of people to London's Trafalgar Square in November, 2006. Also in November, the US Supreme Court examined whether the Environmental Protection Agency's (EPA) had authority to regulate greenhouse-gas emissions under the Federal Clean Air Act. Boykoff (2007) claims that all these events enhanced media coverage of climate change. He concludes that public events such as high-profile international conferences, scientific statements, film launches, court cases, and publicized celebrity philanthropy directly shaped media coverage of climate change around the world.

2.7.2 Differing media coverage.

Though there is currently scientific consensus that global warming will cause significant and devastating climate change, the media continues to present ambiguous information. Some media provide mixed messages about the reality of global warming/climate change and others completely deny that anthropogenic climate change is occurring. This shows that climate change is not simply a national and international environmental-ecological issue, but one that is subject to a variety of narratives linked with other public issues.

The two major contrasting narratives about climate change in the last decade are due to climatologists' conflicting points of view. Wilson (2000) examined reporters' understanding of climate change by identifying the sources of their climate change knowledge. The results revealed that reporters who heavily relied upon scientists or scientific journals for climate change knowledge, and who spent more time in environmental reporting had the most accurate climate change knowledge. Wilson (2000) also points out that public confusion is greatly increased by reporters who misconceive the fundamental scientific principles of climate change.

One school of thought claims that human actions are contributing to climate change while the other denies that claim; instead they claim that climate change is a natural fluctuation in a long-term weather patterns. Earlier in the decade the scientific understanding of the causes of climate change was somewhat limited; however, there is now broad scientific consensus that human actions are major contributory factors to climate change. Even so, the exact extent of human attribution is still being determined. Oreskes (2004) claimed that there was a unanimous agreement about the presence of an obvious human signature on modern climate change data. In 2007, the United Nations sponsored the

Intergovernmental Panel on Climate Change (IPCC). It is Fourth Assessment Report (AR4) from Working Group One narrated, "Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations" (p. 12). This clear declaration of scientific understanding was developed through a multi-stage process of peer-review and consensus building, including the comments of 30,000 experts. Risbey (2008) noted that the variation in climate change discourse demonstrated a serious conundrum. Some climatologists viewed the shift in narrative as related to the science community's perception of the nature of problem (alarming). Others thought that the shift was simply rhetorical and inconsistent with the science (alarmist). Climatologists were also divided about the urgency of the issue-one group predicted that global warming would break down the Greenland and West Antarctica ice -sheets within the next centuries, causing sea levels to rise to disastrous effects. The second group considered that the melting of ice-sheets might possibly be a slow process spanning millennia. Actually, much of the relevant dynamics of ice-sheet breakdown have not been currently included into climate change models, so the timeframes for quick breakdown are not well known. However, the climatologists in the "alarming" school of thought consider that the rate of ice-sheet break down can only be faster than IPCC estimates. This discourse adopts a firm standpoint regarding both the problem and the solution.

Additionally, the interests of industry that use atmospheric carbon increasing fossil fuels have exercised notable influence on some scientists, and subsequently on climate policy in the US and the UK. These scientists and policy makers who challenge the importance of human contribution are often called climate contrarians. They have been originally based in United States universities, think tanks, and lobbying organizations

(McCright, 2007). These contrarian voices appeared in the US in the late 1980s considerably through the Global Climate Coalition, which represented a consortium of mainly US-based coal and oil interests. These groups have been highly influenced climate policy makers since then that time (Leggett, 2001).

Therefore, media coverage of climate change since the 1980s has reflected the divergent information offered by scientists in the US and the UK. Media coverage is now becoming increasingly convergent as the body of scientific evidence for has become so compelling that s, no matter what industry they represent cannot help but agree that climate change is a reality. Additionally, journalists and editors have begun to contextualize and label the categories of climate change reporting- censorship of dissenting views is now seen as a tactic of media manipulation. Research has shown that placing differing climate change information in the broader political and social context has mitigated media bias and the subsequent public misunderstandings uncertainty and confusion (Corbett & Durfee, 2004).

The New York Times article "Exxon Backs Groups that Question Global Warming" is the direct criticism of the contrarian's point of view (J. Lee, 2003, pp. C 5, May 28). This article discusses the media coverage of climate change in the US before 2005. It reports Exxon's viewpoint on anthropogenic climate change as well as disclosing the multifaceted philanthropy of ExxonMobil. An article entitled "Exxon Spends Millions to Cast Doubt on Warming" by the UK publication, the Independent, also cast doubt on the integrity of reportage based on scientific studies backed by the carbon and oil industries. This added to the confusion about the scientific consensus on the human contribution to climate change (Buncombe & Castle, 2006). An article in the newspaper, USA Today, summarized the differing scientific viewpoints with the intention of questioning the credibility of environmental scientists whose findings gave evidence of anthropogenic climate change.

Pat Michaels, a well-known contrarian, relied upon this article to question the integrity of climate change science.

As media discourse attempts to provide balanced coverage, it reports contrasting views. Actually, this can lead to unintentional biases. Antilla (2005) described in a study of numerous US newspaper articles that the coverage of climate change focused on debate, controversy, and scientific uncertainty. There was a clear-cut inclination towards journalistic balance; however, this led to unintentional bias in defining the contours of climate change since they reported the views of climate skeptics who had strong ties with the fossil fuel industry.

This bias in coverage is explored empirically by Boykoff & Boykoff (2004) that when the journalistic norm of balanced reporting was adhered to by these publications from 1988 to 2002, there was a significant divergence between the popular discourse and the scientific discourse. The study revealed that the prestige-press' insistence on balance, in fact, lead to biased coverage of both anthropogenic contributions to global warming and resultant action. In this endeavor, the US media has been more tactical than fair in interpreting the true meaning of climate change.

The shift from balance to bias in the US media also represents a shift from convergence to contention. Boykoff (2007) describes the transformation in media representation of climate change to a focus on the differing scientific viewpoints. M.T. Boykoff evaluated the US media's focus on anthropogenic climate change related factors between 1995 to 2006. He reviewed newspapers and television news sources, and conducted semi-structured interviews with climate scientists and environmental journalists. He used power and scale analytic methods, and collated the issues of journalistic framing into the categories of "certainty" and "uncertainty". He discovered that the differing

frameworks were not random but systematic; presenting climate change through the lens of socioeconomic and political power relations, as well as the journalist norms of balanced reporting. Boykoff and Boykoff (2007) continued to study journalistic norms about climate change and observed through content analysis of US newspaper and television coverage of anthropogenic climate change between 1988 to 2004 that the journalistic norm of creating interest by; personalization, dramatization, and novelty had significantly affected the norms of authority, order, and balanced coverage. This led to misrepresentative and biased media coverage of the climate change issue. Thus, the journalistic norm of balance has been Janus-faced in informing the public about the emerging scientific consensus about the role of human actions in global climate change (Boykoff, 2007). They especially noticed in an analysis of "balanced climate change reporting" in US and UK newspaper coverage between 2003 and 2006 that there was a significant divergence from scientific consensus in the US during 2003-2004, but UK coverage showed no major divergence.

Additionally, Boykoff (2008b) also studied the role of broadcast media with the purpose of evaluating climate change reporting from the balanced/biased perspective. His article "Lost in translation?" quantitatively describes the US television news coverage of anthropogenic climate change between 1995–2004 in the ABC World News Tonight, CBS Evening News, NBC Nightly News , CNN WorldView, CNN Wolf Blitzer Reports and CNN NewsNight. The results revealed that 70% of US television news clips had delivered balanced coverage of anthropogenic contributions to climate change vis-à-vis natural radiative forces, but a significant difference was recorded between this television coverage and scientific consensus of anthropogenic climate change during that period. Therefore, through the institutionalized journalistic norm of balanced reporting, US television news coverage had carried out an informational bias by clearly diverging from the scientific

consensus on human contribution to climate change. This has created a domino effect whereby the media of other countries reflect the US media's point of view, in spite of the emerging scientific consensus that recently noted climate changes are anthropogenic. Additionally, a content analysis study of the US print media coverage of global warming from 2005 to 2008, focusing on specific linguistic elements, showed that media published by journalists, sociologists and geographers, gained a pronounced degree of certainty after the UN Climate Change Conference in December 2007 (Kuha, 2009).

Maxwell T. Boykoff (2008a) research discusses the cultural politics of climate change discourse in four UK tabloid newspapers. The period of study of representation of climate change in these newspapers is from 2000 to 2006 focusing on triangulated Critical Discourse Analysis, framing and semi-structured interviews. Framing of news articles on climate change was predominantly through weather events, charismatic mega-fauna and movements of political actors and rhetoric, contrarily few articles emphasized on climate justice and risk. Furthermore, headlines were overwhelmingly highlighted with plenty of fear, misery and apocalyptic endings. The climate change had not been an interesting topic until it was placed in the decision-making process of the political system. The media covered the climate change issues when they were related with the elites.

2.8   Politicization and Clebritization of Climate Change

Public figures are actively engaged in maintaining and managing their positive image in the eyes of the public (as seen and reported by the media). Moreover, symbiotically the publicity drawn by politicians and celebrities as they highlight climate change, or visit areas impacted by natural hazards influences the general public's views. Certain sudden disastrous weather events become focal points of attention that the media

exploits in an alarming and thrilling manner. Russill and Nyssa (2009) call these moments "tipping points" in the climate change dialogue. Their study revealed that tipping points underline moments or intervals of high popular sensitivity to sudden and irrevocable climate changes, and identifiable quarters of danger. When a political figure or celebrity is shown at the site of a catastrophe, or discusses it in an interview, the environmental issues of region where the natural hazard occurred, as well as the public figure involved, get extended media coverage.

The trends of charismatic mega-fauna have changed from polar bears and wild moose to human celebrities shaping new discourses on probabilities for environmental governance and day-to-day action. In the last decade a significant increase in the media coverage of celebrities connected to climate change, has been observed in the various media outlets. New trends of neoliberal spaces have been generated by growing privatized and individualized manners of uttering environmental issues. U2 front man Bono in his interview with Vogue in October 2002, presented many complex, interwoven and contradictory factors very gracefully when he orated, "celebrity is a bit silly, but it's currency of a kind". Critics debated that whether such movements denoted betterment of the people or rather plutocratic and extraordinary elitist behavior of distraction.

2.9   Media framing of climate change

Climate change has become an interesting topic now that it has been championed by public figures. Therefore, scientists gave a push to the climate change media coverage with the politicization of the environmental issues. Similarly, personalized stories got more space in the media. Scientists, media reporters and politicians perceived and communicated differently and differences between them were systematic. Weingart, Engels, and Pansegrau

(2000) maintained that the ecological risk of climate change might be a fact but its communication differed among the people of science, politics and media, for example, some perceived the risk of climate change through social construction and communicated it in different way from other sectors. The differences between these three sectors were not random, rather systematic, given the particular risk perceptions each of them encountered. In German discourse on climate change, scientists politicized the issue, politicians reduced the scientific complexities and uncertainties to CO_2 emissions reduction targets and the media overlooked the uncertainties, rephrased them into a sequence of events leading to disaster, and needed immediate rectification. The interference of discourses was attributed to specific selectiveness - both inclusions and exclusions – happening as the issue of climate change was communicated. The issue was not truly or appropriately defined, rather it was assumed that the differences in perception were irreducible. Political will without winning public opinion for climate change cannot be made operational and effective for which global public is yet to be effectively engaged. Gavin (2009) observed the climate change coverage plays its role in a public sphere, which is international in character, but in a modest way making political intervention difficult. Schipper (2007) wrote a paper focusing on the exploration of the international discourse on adaptation to climate change and the meaning of adaptation to climate change in the context of development. The work on adaptation until 2007 had concentrated on responding to the impacts of climate change instead of sufficiently focusing on the underlying factors that yielded vulnerability. Though there has been a significant shift in adaptation to be better placed in development all around but still there is a lot to do to get it. The successful adaptation process needed properly addressing the underlying causes of vulnerability and that is the role, which development has to play. However, Liu et al. (2008) found that the emphasis on the solution of issues

was placed more on mitigation strategies than on adaptation behaviors. Both governmental and non-governmental responsibilities and actions were proposed for handling climate change.

Media frames represent climate change issues by transmitting a purely scientific knowledge in contextualized and de-contextualized forms shaping contemporary cultural power politics of environment where a complex web, of formal environmental science and policy making in direct relation with everyday life, is evolved (Carvalho & Burgess, 2005). Media representations of environmental, political and individualized actors, policymaking, governmental actions, predicaments and development are the key and vital influences, which devise media discourses about climate change.

Maxwell T. Boykoff (2009) discusses that legitimate claim makers are being consistently challenged and interrogated. Leiserowitz (2005) considers these arenas of claims making and framing are "exercises in power- those with the power to define the terms of the debate strongly determine the outcomes" (p. 1441). The comments and quotes of scientists, business and ENGOs actors helped occupying more space in the popular culture, especially in contemporary entertainment media and such developments have changed the structure and strategy of the cultural politics of climate change.

Similarly, Finnegan (2006) observed that Arnold Schwarzenegger approved a California bill to cap industrial greenhouse gas emissions and encashed his popularity in his re-election campaign. Moreover, when Democrats turned up in the US Senate, Californian Democrat Barbara Boxer replaced Republican James Inhofe from Oklahoma as Chair of the Senate Environment and Public Works Committee. Inhofe (2003) in his famous comment on the floor of Senate declared, "Could it be that man-made global warming is the greatest hoax ever perpetrated on the American people? It sure sounds like it" (p. 33). Simon (2006)

maintains that Boxer, in contrast, has declared global warming "the greatest challenge of our generation" and uttered plan for Congressional legislation to cap emissions of anthropogenic greenhouse gas.

The best-selling fiction author of "State of Fear" and the renowned anthropogenic climate dissenter Michael Crichton had been reported to be consulted by the President George W. Bush on the issues of climate policy (Janofsky, 2006). These contrarians as well as carbon and fossil fuel industry interests persuaded media coverage by discursive pull and highlighting the existence of climate contrarianism. In February 2007, the Guardian examined that the US-based American Enterprise Institute, which was funded by the ExxonMobil, had offered $10,000 for article that emphasize the shortcomings of [then released] report from the UN IPCC (Sample, 2007). These apparently evident strong ties between carbon and fossil fuel industry, contrarians' lobbying and policy actors of United States Federal Administration not only proved the funding sources but also, as Oreskes (2004) mentioned, revealed that contrarians research was funded by such sponsors, which wanted predetermined results and interestingly researchers already knew what might be the outcome of their research. Such activities produced clear conflict of interest, undermining the integrity of the research conducted.

2.9.1 Accuracy challenges to media coverage of climate change.

Journalistic pressures and routines to cover climate change in enough depth to be considered accurate. Media coverage of climate change itself is a controversial and debatable issue which strongly influences public awareness, perception, opinion and knowledge, and negatively in the areas of scientific uncertainty, miscommunication and public misunderstanding. Media are the most important and heavily relied upon interpreters

of scientific environmental knowledge and governmental policy information. Media are operated by commercialization (McQuail, 1997), having editorial pressures, media routines, journalistic norms and values (Boykoff & Boykoff, 2007), political, economic, social, cultural and institutional challenges as well as power relations, which affect the framing of environmental issues. The great environmental gestalt swindle of media have been a discursive battlefield of contrasting theories of climate change. It covers international scientific consensus on anthropogenic climate change at one hand and on the other hand raising question marks on the sources and multifaceted factors of media coverage. It has caused a consequent uncertainty and confusion that yields to lack of proper and timely governmental actions on grave environmental issues like global warming, glacier melting and sea level rising, which are intrinsically threatening human life, their livelihood and existence of the planet itself.

There are many associated political, economic, social, cultural and institutional challenges to allocate space and time to climate change issues in media. Media men like reporters, journalists and editors often work within a competitive environment. Journalistic routines, norms and power relations engage them in the production of news articles and stories that can attract more audience or generate more revenue.

Many studies have been conducted on media coverage of climate change[5]. These studies at one hand observed media coverage and on the other hand focused on different factors like politics, celebritization and elitism, scientists, ENGOs, sources of reporter knowledge, multi-scale factors shaping media reporting, journalistic norms of balance and

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5 For example, in the USA (Antilla, 2005; Maxwell T. Boykoff & Boykoff, 2004, 2007), Canada (J. R. Fisher, 2010) the UK (Maxwell T. Boykoff, 2007, 2008a; Carvalho & Burgess, 2005; Doulton & Brown, 2009; J. Smith, 2005), Belgium (Mormont & Dasnoy, 1995), Finland (Dispensa & Brulle, 2003), Germany (Weingart et al., 2000), France (Brossard, Shanahan, & McComas, 2004), Portugal (Cabecinhas, Lázaro, & Carvalho, 2008), New Zealand (Bell, 1994; Howard-Williams, 2009; Kenix, 2008), Japan (Sampei & Aoyagi-Usui, 2009) and India (Billett, 2010; M. Boykoff, 2010; Panagariya, 2009), Peru (Takahashi, 2012)

bias, limitations of media routines, climate change certainty and uncertainty, scientific consensus, influential contrarians, fear and alarm, tipping points, masses and policy makers' perceptions and skepticism, and concerns of developing countries. No doubt there are other means of climate change coverage like direct publication of scientific literature, reports of seminars and conferences, reports of ENGOs, IPCCC, UNFCCC, and environmental fictions etc. but the major part of the dissemination of the climate change is through media, and it is the main source of public and policy makers' information, awareness, and perception of environmental issues (Sampei & Aoyagi-Usui, 2009).

With the increase of media coverage as well as non-media publications, stakeholders raising claims about environmental issues have continued to expand in numbers and this has not been decided yet even negotiations among international bodies that who are authorized definers, spokespersons and legitimate stakeholders of environmental issues. Maxwell T. Boykoff (2009) describes that ENGOs have recently gained popularity and occupied the position of legitimate claim makers with their expertise and focused work plans on environmental issues. Scientists are actually engaged in their research and innovative pursuits of knowledge; they are least interested in sharing their findings related to impending dangers of climate change (Antilla, 2005). This vacuum of sharing knowledge with the public for their benefit is partially filled by the ENGOs taking responsibility of sharing scientific knowledge using their available funds and well-designed strategy to approach masses. Other actors are governments, International organizations and multinational companies dealing with carbon and fossil fuel industry. However, masses neither have easy access to, nor, are easily attracted towards distinct scientific knowledge disseminated by the non-media sources; however, media have a far greater approach and influence on the general masses.

Alison Anderson (2009) pointed out, climate change reportage is subservient to socio-political factors and these factors are further affected by industry and economic concerns. Many cultural and structural factors affect their individual journalistic decisions and other routine factors like limited time to press, limited word counts, segment timings, deadlines, limited funding for investigative journalism, and space considerations, editorial preferences and decisions and publisher pressures also influence their performance. J. Smith (2005) observed that media had to work under the influence of sourcing of story-making, competitive and time-pressured newsrooms, and timely trimming of news items into short news pieces. Howard-Williams (2009) maintains that media representations had been almost always positive towards climate change issues but often they were found connected with consumerists' values and were generally in favor of the social and political status quo. Commercialization of media with the modern multinational media organizations protecting developed countries' interests has either consolidated the media coverage operations or closed the concerned desks due to economic pressure. Lack of journalistic training also affects the quality of reporting. Block (2010) conducted a study to discuss the significance for journalists to undergo interdisciplinary training to prepare them for reporting and communicating scientific and environmental knowledge. The poor scientific knowledge of the media and journalism has created skepticism in the public concerning facts of climate change and global warming. The author suggested that incorporation of environmental education in journalism schools was needed in order to better prepare graduates in environmental reporting. These structural issues intersect with processes like journalistic norms and values - personalization, dramatization, novelty, authority-order bias and balance - precision, accuracy, fairness and objectivity, translating hypotheses in certainties and theory into practice.

2.9.2 Media created victims and villains of climate change.

Media coverage of developing nations showed a different path from the media coverage of developed countries. The issue of development in the perspective of environmental issues, which is directly related with the carbon and fossil fuel industry and greenhouse gas emissions, is in conflict with the question of clipping the unruly development and the developing countries seem its victim that are already dependent on western nations for their development. Doulton and Brown (2009) suggested that impacts of impending catastrophe due to climate change on the development require immediate action to reduce them. This has increased the media coverage of climate change in UK newspapers. While discussing climate change UK media highlighted and continued the predominantly held views of developing countries as unfortunate victims confronting another set of disasters, which were already dependent on western nations.

There is much scholarship available on media and climate change in the western world; however, few scholars have examined the developing countries' standpoint about anthropogenic climate change. Billett (2010) examined India's four major national circulation English language newspapers quantifying and qualifying framing of climate change issues. The results displayed a strong contrast with previous studies of developed countries when the framing of climate change was studied along with a "risk-responsibility divide". The Indian national press adopted a highly nationalistic position on climate change, which divided the issue on developmental and postcolonial lines. Boykoff conducted a follow-up research in 2010 in response to Billett's paper "Dividing Climate Change" (M. Boykoff, 2010). Billett's research was a great catalyst, which initiated further investigations in India, in other countries as well as in comparisons across countries and media forums. Billett disclosed both the feelings of hope and despair in his analysis of Indian media

climate change coverage in the background of global trends. Billett's work demonstrated worn-out and nonproductive discourse along with a risk responsibility divide, while this study showed a steady increase in Indian English-language national newspaper climate change coverage. The shift in Indian media discourses might be the start of shaping and scaling of prevailing challenges of North-South relations, risk-perceptions, matters of responsibility, and issues of mitigation, adaptation, justice and equality. In Panagariya (2009) view, India underwent an impact of climate change in the last century, which showed that India needed enough preparation for adaptation to probable extreme weather change effects otherwise it would cause an urgency in sustaining high rates of growth and poverty alleviation. The proposed efficient solution to mitigation can be reached either imposing carbon tax or internationally tradable emission permits. The developed countries bear the major responsibility to compensate the developing countries keeping in view the past emissions. Media coverage of north and south as well as developed and developing countries depicted that climate change is a global issue and needs attention based on justice and fair play (Boykoff, & Roberts, 2007), because media coverage affects the public perception and opinion. However, many researches in the last decades have revealed how these influential individuals and groups had projected competitive discourses, which disabled the emerging climate science and intensely rephrased climate science and policy matters as uncertain, consequently causing public misunderstanding and confusion (McCright & Dunlap, 2003; Zehr, 2000). Similarly to Billett (2010), a study of Peruvian media showed an absence of controversy regarding the scientific research of climate change (Takahashi, 2011). Interestingly, these results were different from the US and Europe media coverage of climate change (Boykoff & Boykoff, 2004; Carvalho & Burgess, 2005).

Corbett and Durfee (2004) in their study examined whether simple and common elements of controversy and context in news framing affected readers' understanding of scientific uncertainty. The contextual information in the news stories significantly played role in readers' certainty of the scientific claims. The readers of newspaper stories containing contextual knowledge were more certain of global warming than those readers who read news stories with controversy or stories having neither context nor controversy. Bell (1994) made a comparison of the New Zealand public talk and media discourse of climate change focusing on the understanding of people about climate change along with identifying and analyzing the examples of overstatements, over-certainty and confusion in the media text. The study revealed that there had been a significant mismatch between media reporting of scientific environmental knowledge and public's understanding of that information. People generally over-estimate scientific situations of temperature and rising of sea level. They confuse the greenhouse effect and ozone depletion. People have little knowledge of greenhouse effect. This misunderstanding is socially and politically frustrating because it misleads people away from concentrating on an issue of western consumer society most closely associated with the consumption of fossil fuels. Kenix (2008) found one of reasons of people's lack of understanding of climate change by analyzing the climate change coverage in New Zealand in the mainstream – The New Zealand Herald - and alternative media – news site of Scoop. It revealed that mainstream media coverage of climate change lacked while alternative media had been distinctive in framing, however coverage of climate change science in both mainstream and alternative media had been thrilling concentrating on extreme predictions instead of creating conceptual understanding of root cause of climate change.

The greater the coverage of an issue, the more powerful its effect: there is no doubt that media coverage is enormous yet it is not regular and continuous. Sampei and Aoyagi-Usui (2009) observed that the analysis of coverage of global warming from 1998 to 2007 in Japanese newspapers and the impact of that coverage on public opinion during that period demonstrated that the public opinion about climate change was directly affected by its coverage. A dramatic increase in coverage in 2007 was directly related to an increase in public concern of the climate change issue media coverage of global warming had short-term impact on the public concern. The number of front-page articles on global warming significantly affected the public concern for climate change issues. Therefore, it is the media, which has to educate the public on regular basis being more responsible, cautious and impartial by allocating proper space and time to the coverage of climate change – an issue affecting the entire world.

Media needs to educate the population to bring human change. Much of the media discourse revolves around creating technological changes that will address the climate change issue. US media coverage supports the dominant paradigm which serves the scientific, economic and governmental communities in their quest to promote technological rather than human solutions to climate change (Wilkins, 1993). According to Takahashi (2012), the dominance of political and industry discourse in Peru is related to technological solutions and possible economic losses, which excludes the effects on more vulnerable population. Likewise, in Brazilian press, the ideology on environmental issues underlying most news is one in which the legitimacy of techno-centrism is presented as the best way of looking at environmental crises, while other environmental ideologies that would criticize advanced capitalism and status quo do not receive the same amount of attention in the media (Guedes, 2000).

To cushion the effects of natural hazards and climate change, there is thus a need for Pakistani media to use the power of the pen to push policy makers not to prioritize DRR and involve women in decision-making. It can lobby for political commitment to make the leaders more responsive to the vulnerable communities' needs and demands through consistent reporting. It can also help create early warning systems by providing adequate information to the people. Media can trigger donations from the national and international community as well as push the government to increase budgetary allocation for affected women in disaster programs. It can improve the integration and coordination of risk assessment by the policy makers and donor communities to save lives in the affected population or vulnerable communities and thus can play a more decisive and effective role in disaster management.

2.10 Summary

Keeping in view the findings of numerous other studies, the present study conceptualizes the role and power of media on perception building as media profoundly influences the public awareness of numerous environmental issues. Studies have shown a positive correlation between exposure to the news and levels of concern over environmental issues. Furthermore, it has been found that media is highly persuasive in shaping public attitudes towards problems that are out of reach and with which the people do not have regular, direct or meaningful contact, as is the case with climate change. As mentioned earlier, the rise in the American public's concern about the environment was reinforced by an increase of environmental news coverage. British media coverage also shows that climate change has been brought into the audiences everyday experience of dramatic weather-related events in the discursive frame of climate change (Carvalho & Burgess, 2005).

The heavy bombardments of tailor-made messages on a certain topic also influence individuals' existing opinions, as widespread media dissemination affects public opinions regardless of the current opinion of the individual. It not only impacts people's cognitive environmental orientations but their affective and evaluative orientation as well. Media activates a behavioral intention which is either support for environmental policies or take action to prevent personal harm (Schaffrin, 2011). This means that media not only reinforce and galvanize existing opinions but also builds new opinions and pathways to activity. It is not just knowledge of environmental issues but also the emotions associated with such problems that need to be targeted, and media has the power to touch the emotions of people along with giving information.

The present study considers the role of media becomes even more crucial when it comes to illiterate and semi-literate people, as they are heavily dependent on broadcast media (radio and television) for information regarding climatic events. Uneducated people sometimes have more confidence in media information than their compatriots and trusting media more than any other source of environmental information.

The previous section has revealed the complex opinions and socio-political dynamics that surround the topic of climate change. Climatologists are divided on the degree of urgency that should be reflected in climate discourse, and the media attempt to reflect a balanced view however, they are also under pressure from the fossil fuel industry to present a viewpoint that support their interests. The author suggests that a better sense of the real dangers of climate change that will occur in the next century should be emphasized in the media discourse. The following section further discusses the ways in which the media influence public opinion in natural hazards and disasters.

Part C: Media Myths and Realities in Natural Hazards and Disasters

Media coverage of environmental change and natural hazards plays an important role in setting and reinforcing public perceptions of issues and the social construction of events. According to Benthall (1995), disasters do not exist-except for their unfortunate victims and those who suffer in their aftermath- unless publicized by the media. In this sense the media actually construct disaster.

Public most often switch to media for accessing disaster-updated information and also trust the information provided. In a poll, 65% respondents gave the media positive marks during the coverage of Katrina as a trusted source of information regarding the risk associated with Katrina (Pew, 2005). Media stand to gain substantial audiences at moments of disaster (Fernando, 2010). Stewart and Hodgkinson (1988), in an article write that media coverage of disasters needs no further justification as their increased consumption by readers and viewers reflects people's interest in crisis situations. People even pay to watch disaster movies. The audiences may feel dreadful seeing misfortunes of others but yet be attracted to watch such movies (Antilla, 2005).

Media are the most important and significant actors in dealing with all stages of a disaster. Media coverage of the disaster events leaves lasting impact on the minds and souls of the audience and can effectively motivate people to help or can cause criticism of the situation. In disaster scenarios, particularly, national and international media coverage plays an important role in either expediting or hindering rescue and relief activities. Media coverage rouses humanitarian passions among the mass audiences, which can yield the quick response of a nation in providing relief activities to the victims. Media coverage can prop up rescue and recovery efforts by imploring charitable actions from the members of audience. Media can also enhance public awareness and facilitate public assistance in local

communities (Brown & Minty, 2006; Oosterhof, Heuvelman, & Peters, 2009). Media encourage affirmative behaviors from members of the audience. They also play a pivotal role in relieving the psychological stress of the victims by providing emotional support and developing social connection to disaster victims (Perez-Lugo, 2004). Television and online media sources transmit images and stories of disasters, focusing on the victims' emotional responses of shock and helplessness (Liebes & Blondheim, 2002; Walters & Hornig 1993). More broadly, media have the capacity to enhance public discourses of compassion that can potentially influence individuals' readiness to give a helping hand to others affected by the disaster (E. L. Cohen, Ball-Rokeach, Jung, & Kim, 2002). According to Putnam (2000), media at its civic best can be a gathering place, a powerful force for bridging social differences, nurturing solidarity, and communicating essential civic information. This enables common social experience in any heterogeneous society that may lead people to join together for relief work in the wake of natural hazards. Live and recorded reports and visuals showing people dying of hunger and epidemics as well as shortages of shelter and security produce a psychological and emotional response that causes the audiences to come together for a national and humanitarian cause. Bernett and Kottasz (2000) found that images of victims in media, representation of people helping themselves and thoroughly emotive publicity imagery boost fund-raising in disasters. Public attention built up by media coverage activates civil society, relief activists and NGOs to come forward for rescue, relief and rehabilitation activities.

2.11 Disaster Marathons

Media have always been concerned with events and stories that have human impact. Natural hazards in some sense have the most impact as they destroy a large volume of human and material elements. Disasters have been part of media discourse ever since there

were newspapers. Even before television, news pictures like the explosion of the Hindenburg captured the attention of audiences (Scanlon, 2007). As soon as a big disaster hits, media suspend regular programming and start broadcasting "disaster marathons" (Liebes, 1998). Media provide the latest information and updates on the catastrophe and ongoing occurrences. Reporters are interested in collecting data and information about damage, destruction and casualties even when no one is yet clear about the situation in the early stages of the disaster. MacDougall and Reid (1987) are of the opinion that no reporter covering a disaster can avoid reporting casualties, collateral damage, causes of the disaster, rescue and relief activities. The economic priorities of media compel them to send half-baked information about a natural hazard at its early stages without sufficient background research, which can lead to misinforming and misleading the public. At such moments of competition and hurry, information is disseminated without much "quality control" to fill the time and space already devoted to the coverage (Waxman, 1973). As Miller and Goidel (2009) have noted, during Hurricane Katrina, the media had the invaluable role of reporting the "breaking news" and everyday developments of the disaster, but were unable to gather contextually rich information about the causes and consequences of disaster. Media such as television and newspapers also tend to favor the dramatic components of the disaster if they are available to "pump up ratings" and to be critical of governments (Ardalan, Linkov, Shubnikov, & LaPorte, 2008).

During disasters, hype is accelerated by journalistic competition with a drive to be the first "with the scoop". Therefore, journalists try to reach the scene immediately to gather information that in turn becomes a commodity. Media personnel are trained to gather information. Moreover, they are also trained to compete. They jump into an unknown situation to capture the story in the rush of being the first, original, and exclusive (Ali,

2013). Reporters lead towards the scenes themselves for gathering information from victims, survivors, rescue workers, relief activists, and government officials. Thus, media make the best use of the opportunity to sell themselves as organs of information when a disaster strikes. Their sole purpose to be there at the scene of disaster is to uphold their status of information provider in the eyes of the audience who thoroughly rely on the media for this specialized task.

2.12 Media Sell the News Information as a Commodity

When considering the role of media, it is important to keep in mind that it is not just a means of information transfer; rather it is also an independent actor with its own biases and agendas (Maxwell T. Boykoff & Boykoff, 2004). Media sell the news information as a commodity and safe guard their political agendas. Individuals or business groups own media; consequently, their media content, editorial, and news agendas openly reflect their political and economic interests (Monbiot, Lynas, Marshall, Juniper, & Tindale, 2005; Oreskes, 2004). Local and International media have their own vested agendas. Where, media are vulnerable to political motives, however, it may create complications for the audiences and policy makers in disasters. As Perera (2006) noted the Sri Lankan media were and are indisputably part of the conflict , which is why it has been providing biased reporting to the public. Reporters failed to highlight the concerns of the victims due to their political bias that seriously hampered the recovery operations in Sri Lanka (Fernando, 2010). The attitude of media in other developing countries is not very much different. Media report humanitarian crises, yet not objectively; rather their reporting of crises is necessarily in accordance with the needs of the political economic situation of that particular media (Robinson, 1999).

2.13 Media Representation of Affectees

As discussed, the majority of news organizations are not free from the institutional biases that may lead to misinformation, stereotypes and misunderstanding and create a biased picture of the reality (Miller & Goidel, 2009). Such partial view of the community facing a disaster can throw in doubt whether the media can serve a favorable ally. Disasters are no exceptions to sensationalism because media assume that disasters sell. While engaged in both reporting and public service, the media sometimes present oversimplified and distorted characterization of the human responses to the disasters. Updated reporting and images of chaos may be immediately useful to the affected public in the wake of a disaster, but media over- emphasizes destruction and devastation (Wenger & Friedman, 1986). Media often portrays these communities as helpless waiting for external aid and support, unable to cope and deserving of charity. News reports and media stories that depict victims and survivors as dazed and confused can create an environment of public misunderstanding. It is pertinent to mention that every community has the potential to cope with a disaster (Gaillard, 2007). Not all are paralyzed; only a few are panicked and confused, while most of the community members, even stricken with grief, start immediate rescue and relief activities either individually or in groups. Media may not be able to focus, in the first instance, on the local and self-devised strategies of the communities. Media may fail to cover rescue and relief efforts by focusing only on the death tolls and material losses. The media's stereotypical portrayal of victims deforms the image of disaster-stricken community in the eyes of domestic and international audience and can generate negative attitudes among the other stakeholders. According to Fernando's (2010) "Media in Disaster vs. Media Disasters", inadequate media reports created confusion among the victims and international public in general about the situation in the Haiti earthquake. The media

coverage was not very much different in 2005 Earthquake and 2010 flash floods in Pakistan. Media often build negative image of minorities in both developing and developed countries. International media reports and stories portray victims and communities of the third world countries stereotypically. In repeated photographs in Katrina's aftermath, African Americans were consistently shown as "looting" goods, while white people involved in exactly the same activities were described as "finding" supplies. As a result of media portrayals and decisions of official bodies, "black victims were seen and treated as unworthy victims" (Moeller, 2010, p. 65).

Media coverage of disasters, however, contains not only stories of sorrow and misfortune but also stories of survivorship and bravery (Walters & Hornig 1993; Worawongs, Wang, & Sims, 2007), although such stories are very few in numbers. A case study of the 2000 Mozambique floods and the 1999 India cyclone, conducted by Olsen, Carstensen, & Høyen, (2003) discovered that the world had never seen on television a woman giving birth to a child in a treetop and simultaneously could hear the striking sound of rotor blades of helicopter hovering over the women. This was a big news story in international media motivating people for quick action. Media coverage of disasters have lasting impact and matters a lot in terms of motivating the audience and their responses and it has a strong appeal if the framing is innovative (Olsen et al., 2003). Steering the media in positive direction can be invaluable as the overzealous or sensational portrayals of events can cause irreparable damage to the victims and the relief operations, rather media can be affirmatively engaged in educating the communities in areas of high risk and within the range of disasters about the precautionary measures and positive attitudes of the members of the communities to reduce the vulnerability of natural hazards and disasters. In August 2007, *Characteristics of a Disaster-Resilient Community: A Guidance Note* considered the

positive attitude as one of the characteristics among disaster ridden community to help them maintain confidence to lessen the impact, manage the response and ensure a swift recovery (Twigg, 2009).

2.14 Media, Climate Refugees, and IDPs

Media, with the coverage of the developments at the site of the event, can catalyze the process of rehabilitation of the climatic refugees. Robert (2004) feared that majority of the refugees of extreme weather events and sea-level rise will be from Asia and Africa. Therefore, the media of these areas need to behave very cautiously and sensibly to address the problems of IDPs and climate refugees. Many of the climate refugees and IDPs are compelled to reside in make shift tents or live in and around urban and suburban areas for prolonged periods in very dilapidated conditions even without basic amenities of life such as food, water, shelter and health care (Adam-Bradford, Hoekstra, & van Veenhuizen, 2009). IDPs need media-sustained support in the wake of a disaster as people have an appeal fatigue and loss the interest in helping the affectees. It takes time for victims to revert to their normal life after a disaster.

2.15 Stakeholders of Media Coverage of Natural Hazards-A Publicity Tool

Media coverage of natural hazards attracts several stakeholders who can be the subsequent beneficiaries or adversaries of media discourse. Stakeholders like politicians, government officials, NGOs, IGOs[6], environmental activists, and the scientific community are all very active in the wake of disasters to make better use of such opportunities to materialize their own vested agendas. It has also been often observed that media give coverage to a disaster when prominent social and political figures are involved. Media give

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[6] Intergovernmental organizations

priority to the content, of what the important personalities say, keeping in mind the news value of leaders, figureheads and VIPs (Allern, 2002; Hasan, & Norma, 2007). Hence, politicians, celebrities, community leaders and directors of various government and non-government organizations use media coverage of natural hazards as a publicity tool. Staged photo opportunities with the victims have been an example of how they attract maximum media coverage for their own publicity and positive image building. For example, Hurricane Dean significantly affected the island of Jamaica a few weeks before the 2007 general elections. The electronic media consistently showed members of a particular political party distributing relief goods to the victims, which aired a subliminal message that the political party was efficient to respond to the needs of the victims than the other. Incidentally, the political party that was portrayed in a positive role by the media won the election and formed the new government of Jamaica (Goolaup et al., 2007). Similar findings by Bechtel and Hainmueller (2011) confirm:

> *The 2002 Elbe flooding in Germany provides an upper bound for the short- and long-term electoral returns. We estimate that the flood response increased vote shares for the incumbent party by seven percentage points in affected areas in the 2002 election. Twenty-five percent of this short-term reward carried over to the 2005 election before the gain vanished in the 2009 election (p. 851).*

Politicians are quite alert to this power of the media and make their best efforts to use it maximum for their own and party projections. They particularly, try not to miss any opportunity to appear in the media showing concern for the victims. Sometimes, however, the media focus on the visits of the important persons to the affected areas and neglect the coverage of real problems of the victims. Such visits and photo shoots hamper the direct coverage of disaster-stricken people who need a voice in the media and also affect the relief

activities to some extent. On the other hand, the importance of the visits of the important persons of the disaster sites cannot be ignored because such visits fetch the attention of the international and national media, indirectly, to the disaster sites and evoke international community responses to such disasters too. It is the main responsibility of the media to observe the fair play during the humanitarian activities in a natural hazard. If media steps back from its role of a watchdog, it means media have compromised the situation. While exposing the shortcomings in relief works and corruption in emergencies, media can also itself be involved in corruption. Sometime, media fail to expose the corruption of humanitarian aid agencies and government departments due to their own vested interests, lack of long-term attention on a particular event and their own vulnerability to corruption. The realization of media of their vital role in disaster coverage can make them ambitious to use their power either to fortify the rescue and relief activities or to misuse their strengths to snub other stakeholders for their own vested interests.

It has been observed whenever disaster strikes; media focus their attention on the disaster with their field reporters and special studio desks for transmitting live and updated disaster related information with their instant switching from a normal to emergency situation. The situation becomes appalling when people lose interest and media forget the issue after a few days when a disaster is over. Old commodities sell less well and disaster news is one such commodity so the corporate interests of the media compel them to allocate less time and space for the same issues. When media get the impression that a chronic disaster has become a normal way of life, it thereby ceases to be news (Benthall, 1995). Media fatigue and their financial interests suggest limited sale of disaster scenes after peak time, they show less interest in the disaster and reduce coverage. However, the affectees need consistent media support in post disaster situation. Media could help resolve the

drastic humanitarian issue with a little consistent endeavor of keeping the issue alive with tracking follow-ups media news and reports.

2.16 Limitations of International Coverage of Disasters

International media also strive to be number one in transmitting information from disaster-stricken areas. Usually, international media dispatch their correspondents in the countries of global importance to cover incidents of international news value. International coverage of disaster-stricken areas provides information about the impact of disasters on affected communities. Extensive human and infrastructural loss leads to enhanced volume of coverage in international media. Humanitarian interest and an element of fear about identical situations in people's respective countries can attract a large international audience. Therefore, media reports of disasters are transmitted to communities and individuals all over the world (Maxwell T. Boykoff & Boykoff, 2004). Nevertheless, the natural hazards and disasters like earthquakes, typhoons and floods in third world countries have been less covered proportionally to their severity. Adams (1986) concludes his study with a hierarchy of value, claiming that the "death of one Western European equaled three Eastern European equaled nine Latin Americans equaled eleven Middle Easterners equaled twelve Asians". Franks (2006) researched 64 daily and weekly publications in nine countries including UK, Germany, France, Spain, Italy, Netherland, Pan-Europe, USA and Australia for the coverage of six disasters: the Pakistani earthquake 2005, Hurricane Stanly 2005, Hurricane Katrina 2005, Bam earthquake 2003 and the humanitarian, not natural, crisis in Sudan. In his CARMA report revealed that there appears no link between the degree of a disaster and media interest in news stories. The human loss had been greater in Pakistani earthquake as compared to Stanley and Katrina. However, Katrina got far more attention in the international media. However, the report disclosed that there is a significant

correlation between the perceived economic impact of a disaster on western market and the quality of the coverage. Katrina got more coverage due to the global economic interest and there was no global economic interest in Kashmir so not a single article discussed the economic aspect while covering the Pakistani earthquake 2005. It means, instead of human suffering, the perspective of politics remained the West's key interest when a crisis is not of an economic interest (Franks, 2006).

International coverage of a disaster has many limitations. Their disaster coverage provides a limited and biased picture of the reality, as sometimes the coverage may suffer from their unfamiliarity with the socio-political, economic and cultural contexts of the disaster-stricken areas, their brief visits to affected areas and heavy dependence on humanitarian aid agencies for their news stories. The foreign media in the early hours of a disaster, obsessed with the destiny of their own citizens who are affected by disasters, might be compelled to focus only their own citizens. In disaster-affected areas, foreign media often have limited access due to their limited housing facilities and security dangers in the ravaged areas. According to Sri Lankan journalist Perera (2006), foreign reporters while covering disasters could only present a distorted picture of the reality as they were able to approach only the accessible locations. Sometimes, politically weak and unstable governments do not permit and facilitate the international media to reach the disaster-stricken areas for their independent reporting. In 2008 cyclone, in 2008 cyclone, Myanmar authorities imposed restrictions on journalists of international media covering the deadly cyclone, but Myanmar reporters were allowed more freedom of mobility inside the country than foreigners (Haddow & Haddow, 2009). During the 1999 floods, the Indian government declared a state of emergency in the country and flood affected areas as no-go zone. International media were not permitted to visit the flooded areas for the first four or five

days, but by the time the media had received permission, the international community and media had lost interest in the situation and fresh footage was also not accessible. This certainly affected the aid allocations as the Mozambique floods got more aid as compared to the Indian Cyclone (Olsen et al., 2003).

2.16.1 International media coverage and relief activities.

At the same time, International media coverage of a disaster has various advantages as well. The issue may attract the attention of the international community and it may affect the volume of relief activities and aid allocation. There is a link between media attention and political action known as the "CNN-effect", a term that implies that the media are able to affect the decisions of political leaders deciding the foreign policy agenda of Western governments. Massive media coverage of a disaster leads to increased allocation of funds (Olsen et al., 2003). This is evident from the comparison of the foreign aid allocations during the 1999 India cyclone and the 2000 Mozambique floods. Similarly, the connection of international media coverage and the volume of foreign aid are also very clear from the floods in Pakistan in the year 2010 and 2011. International media gave little importance to the 2011 floods in Pakistan as an old story and considered it a low-priority component of the "news-attention cycle", so it did not give as much coverage as the 2010 flood attained. The aid response from the international aid agencies and the community was very slow. According to the UN, flooding had badly affected 5.4 million people and National Disaster Management Authority of Pakistan declared on October 3, 2011, that there had been more than 400 deaths and 750 injured victims during the recent floods. For media, the number of casualties also determines news value. The fewer casualties in 2011 floods in Pakistan may be another factor of lesser attention of the international media coverage. However, 5.4 million affectees is not a small number. Therefore, the lesser coverage of the flood news in

the international media might be due to 2011 floods being the old commodity having lesser market and selling value, which arises from media fatigue covering the Pakistani floods every year.

The International media leave lasting impacts on international community. The inadequate, partial or slanted media coverage may create havoc with the lives of disaster-stricken people. Foreign aid bureaucracies have many factors to observe while deciding international donations and aid for disaster-stricken countries and one of these factors is the international media coverage of the disasters. For instance, the study conducted by Potter and Van Belle (2004) reveals that the news coverage is a statistically significant factor in Japanese aid distribution. J. C. Campbell (1996) also notes that Japanese decision makers take press attention as a surrogate for public opinion. A study of US foreign disaster assistance from 1964-1995 highlighted the powerful impact of a disaster's media salience as one New York Times article was worth more disaster aid dollars than 1500 causalities (Drury, Olson, & Van Belle, 2005) whereas the similar findings were observed in Brown and Minty (2006) s' study that a 700-word story in the New York Times or Wall Street Journal raises donation by 18.2% of the daily average. Most of the western mainstream media do not give importance of coverage to the situation unless the disasters cause collateral damage in the developing countries (Olsen et al., 2003).

2.16.2 International media and aid allocation.

Although there are many factors in aid allocation, the role of the media cannot be ignored. As disasters attract the attention of international media and audiences and the coverage of the disaster-stricken country in the international media increases, it plays an affirmative role in the aid allocations by the international humanitarian aid agencies and

international community (Van Belle & Hook, 2000; Drury, Olson, & Van Belle, 2005). It has been observed that international aid allocations are roughly in line with media coverage.

Greater the media attention received by a particular disaster, the more likely that the generous amount of aid would be allocated. Foreign public officials neither regularly observe public opinion polls while making policy decisions nor accept briefings from international media personnel. However, they assume, correctly or incorrectly, that media coverage is the public opinion. They perceive media criticism to be an actual reflection of the public view. The Tsunami Evaluation Coalition (TEC) report revealed that it was the television coverage that was the basis of fund allocation. These decisions were not based on any formal need assessment rather these were taken measuring the domestic political pressure in donor countries (Cosgrave, 2007) which is often built up by media coverage of the issue. Ashlin and Ladle (2007) are of the opinion that disasters bring opportunities as well as risks for creating awareness of environmental issues, funding mobilization and steering action to socially and environmentally vulnerable areas of the world. As a result, NGOs, intergovernmental entities and government departments have to be attentive to the long-term consequences of global media concerns. It is acknowledged that media coverage of any disaster helps the victims, the survivors and the public of the outer world to pay attention to the catastrophic situation. Disasters have a greater propensity for being "forgotten crises" when major aid donors, especially Western governments, have no particular security interests vested in the affected areas. In such a situation, the level of aid wholly depends on the existence of humanitarian stakeholders in the disaster affected areas and the inquisitiveness and the persistency of the international press.

2.17 New media and Natural Hazards

New media are multifaceted forums of information sharing; they are used for not only for information dissemination but also playing a significant role in disaster preparedness, recovery and relief activities. New media can play an effective role in managing natural hazards by providing an opportunity to the public through their direct involvement. In 2001, an earthquake struck the Gujarat region of India, online news media begun disseminating news of earthquake along with appeals of donations (Kodrich & Laituri, 2005). Media and new media are competing to share information. User-generated content on new media is now challenging national and international media and also their narrative. The 2004 Asian tsunami has been defined by Dan Gillmor as "the turning point"-a before-and-after moment for citizen journalism (Cooper, 2007). For instance, in Aceh, the tsunami-torn province of Indonesia, user-generated content through SMS, emails, tweets and other social networking sites not only outpaced national and international media coverage but also challenged the reports of media as well as the working of national and international NGOs (Benthall, 2008). Similarly, when seismic sensors first detected the tremors of the earthquake in January 2010 in Haiti and in March 2011 in Japan, the information was transmitted around the world in seconds. It was not the traditional media but through online social media like Twitter and Facebook that disseminated information, within a very short span of time, about disasters in the quickest and most efficient way. The executive director of the Pacific disaster Center in Hawaii claimed that the first information of the Japanese earthquake and the potential threat for a tsunami were disseminated through the center's twitter feed and using a smart phone application before CNN started reporting of the catastrophic event (Tucker, 2011).

Media are well aware about the potential emergence of the new media as new and vibrant sources of information sharing and transmission and are trying to incorporate these new technologies in their business ventures. Now, traditional media reporting of natural hazards like newspapers, radio and television are being supplemented with new media. Media, especially on the occasion of a disaster, are becoming more democratic and open, owing to their receiving of thousands of SMS and emails a day from general public. For example, the BBC received numerous SMS, emails and phone calls every day at the beginning of life threatening famines in African countries, and among top ten that accessed the BBC through mobile phones were five African countries (Benthall, 2008). During disaster coverage, media professionals depend heavily on their use of mobile phones. In 2006 Indonesian earthquake, mobile phones immediately turned to be the mobile news services for journalists and reports covering the disaster developments. Internews – an international media support group – established connections with more than 180 Indonesian journalists to set up a quick, low-cost text messaging service that helped local radio stations to report on updates of relief activities (Hattotuwa, 2007). Mainstream news organizations and major networks such as Reuters, AP, Al-Jazeera, BBC, and CNN have dedicated particular portals and forums for citizens and users of new media across the worlds, who are actively involved to send their "palm-grown" content to share it with users and the media professionals (Hattotuwa, 2007, p. 5). Media rely on this content to the extent that much of the real time footage of disasters on networks is actually captured by citizens through their mobile phones. Simultaneously, millions of people can use multiple services of sharing; uploading information and watching it live. In the aftermath of the recent earthquakes in New Zealand and Japan, Google created a Person-Finder page where people could go if they were looking for someone or if they had some information on someone. For instance,

the Japan page includes more than 530,000 records. The American Red Cross collected donations from the people of United States for Japanese earthquake victims via text messages (Tucker, 2011). Similarly, almost $275 million was raised by the US charities in the first week after the disaster for the Haiti victims (Haq, 2010; Keim & Noji, 2010).

Civic amenities and communication services may be badly affected by some earthquake or a tornado and might lead to a prolonged power failure and people without a battery-operated radio or TV can be cut off from the news, so in such a situation, social media tools via internet and text messaging services through their mobile phones might be the only way to communicate with the out world (Aten et al., 2011). The disaster management can tell the people with 140 characters of tweet to go to safe place or be away from unsafe area. Similarly, one person on a beach, who is practically witnessing the catastrophe, can inform hundreds of people that a tsunami is invading through the text-messaging service from mobile phone. The use of their Internet and mobile phone during disasters has exposed many shortcomings of not only mainstream media but also of governments. During 2008 cyclone in Myanmar, where the Internet and mobile phone access are limited, the military government refused to allow aid workers or journalists to reach disaster areas and moved fast to restrict communication. However, these Burmese blogs and new sites were quick to react by posting eyewitness accounts of the disaster and mobilizing fundraising efforts. We see from the above information that much suffering and loss could be averted, not only by effective communication before and during disasters, but also most importantly by comprehensive pre-disaster preparation, and planning. The following section discusses the how and why the media, government and NGOs should collaborate to create a DRR program.

2.18 Media and DRR

With the passage of time, natural hazards have been increasing in number and magnitude. Such a situation has compelled states, at least, the industrialized nations like USA to allocate more public funds for the preparedness, disaster management, and relief activities. The past justification of public funds that disasters are the unpredictable acts of nature and humans can only rehabilitate and hope for the better future, are no longer valid. Rather this dictum has changed into mitigation and adaptation. Most disaster management programs are designed with the basic objective of preparedness, and the media are determined to be the most important stakeholder in the campaign of public awareness of natural hazards.

In many recent disaster management programs, preparedness has been the key objective and the media can be an effective actor in creating awareness about disasters along with churches, local authority figures, community leaders, meteorologists, development planners, and emergency managers (Perez-Lugo, 2004). Hence, the role of media can be made more effective if media are involved with stakeholders to create awareness about natural hazards, disasters and long-term impacts of climate change and other environmental issues. In DRR, aside from government, the people themselves are one of the most important stakeholders. People can be educated through the well-organized use of media about mitigation and adaptation to reduce the risks of natural hazards. Many national and international NGOs use media to disseminate valuable DRR strategies among different communities. People can be engaged in DRR initiatives.

DRR is defined as 'the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise

management of land and the environment, and improved preparedness for adverse events.'(UNISDR, 2009, p.10-11). DRR suggests that there is a significant potential for reducing vulnerability by involving the local people, considering them not as passive victims but as capable of handling disasters with the use of their wisdom within their own communities. What is important is to train them by presenting knowledge in a community's own language in understandable non-scientific terms through innovative media[7]. For example, Red Cross produced an audio soap opera with the cooperation of different organizations that have policy interest in DRR strategies. This program developed to train the masses how to reduce risk and cope with disaster. Red Cross used the same audio material with different community sectors like school, sport clubs, business centers for their better understanding of the preemptive measures that communities could adopt for DRR.

Public awareness is a key factor in effective DRR. Its development is pursued, for example, through the development and dissemination of information through media and educational channels, the establishment of information centers, networks, and community or participation actions, and advocacy by senior public officials and community leaders (NARPIMED[8], 2010). Improving public awareness through education has been recognized widely as a basis for reducing the risk for disasters (UN/ISDR, 2004). The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards. Awareness does increase significantly as a result of global education, awareness raising campaigns, public debate and media focus (Mc Donnell, Lecomte, & Wegimont, 2003).

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[7] Global Environmental Change and Human Security (GECHS) Report 2008

[8] Natural Risk Prevention In Mediterranean Countries

The most nerve-wrecking aspect in the wake of a natural hazard is dealing with human element, as evacuation warnings before, during and after disaster can displace numerous people. Media perform a kind of social intervention by providing disaster-related information to the masses that helps in answering to the immediate needs of survivors. Empathy and practical support and advice by providing required information works like a "Psychological first aid" that is usually sufficient to set the masses on the path of recovery (Chandra, Pandav, Ofrin, Salunke, & Bhugra, 2006). A community's quick adoption of precautionary and preventive measures can reduce the dire consequences of a disaster. Proper and timely warnings about natural hazards through media prior to a disaster can yield an effective preparedness (Cretikos et al., 2008). In a cyclone preparedness program created by the International Federation of Red Cross (IFRC) and the Swedish Red Cross in back 1966, media outlets like radio and TV as well as personal warning equipment were employed in order to strengthen the establishment of an early warning system for the people residing at the coastal belt of Bangladesh, that reflects the role of media in disaster preparedness since long. Since major cyclones hit Bangladesh every couple of years, its social workers have developed an effective coping mechanism that can be replicated in the USA and other countries (Mathbor, 2007).

In disasters, media are used as information transmitters (H. W. I. Fisher, 1996; Mileti & W., 1992; Wenger & Friedman, 1986; Wenger & Quarantelli, 1989; L. Wilkins, 1995). There were 77% in Haiti and 73% in Chile earthquake information related stories; but there were only 2 % in Haiti and 4% in Chile media stories which were focusing on risk reduction (Richard Stuart Olson, Juan Pablo Sarmiento Prieto, & Gabriela Hoberman, 2010). It is frequently presumed that facilitating the public with information related to natural hazards and mitigation of their consequences would persuade people for

preparedness (K. Smith, 1993). However, the content analysis of four US newspapers in Hurricane Katrina showed that more articles addressed response and recovery than mitigation and preparation. Media framed stories by emphasizing the government response and less often addressing individual and community levels of preparedness or responsibilities (Barnes et al., 2008).

Media could serve in the role of watchdog in all DRR activities from planning to implementation. They might adopt a consistent policy of monitoring DRR operations at all stages. Media starts with high ambitions to keep an eye on all developments of a disaster but the rush diffuses with the decrease in social and humanitarian pressure. Media play a crucial role in collecting and disseminating information in the wake of natural hazards and disasters, which can aid audiences and policy makers to figure out the causes and consequences of disaster (Miller & Goidel, 2009). Any misrepresentation of events has dire consequences in DRR policies. Opinion based on the misrepresentation of media may influence domestic and international public and policy makers. Such policy impacts on short-term and long-term planning and functioning of local and international institutions may seriously influence a community's ability to deal with DRR and environmental issues. Gaps and misrepresentation in domestic and international media coverage may seriously challenge the credibility and legitimacy of addressing the disasters as well as climate change adaption policies, green revolution, and other environmental movements. The study of Miles and Morse (2007) reveals that there were fewer voices paying attention to the importance of ecosystems services and its role in mitigating natural hazards in future during the media coverage of Hurricanes Katrina and Rita. For these reasons, it is pertinent that all stakeholders join a common forum to develop a clear-cut understanding of the complex dynamics working among media discourse, DRR policies, climate change policies,

environmental strategies and practices. It may affect the local as well as global environment movements. In some ways, the media's potential is yet untapped; it can be better used for DRR, impending climatic changes and other environmental issues at a time when new media is also used extensively for information sharing and reporting.

2.19 Summary

Review of previous literature shows that despite the fact that many studies have been conducted related to media and the coverage of climate change, no study has been specifically designed to present a gender based review of the current and potential role of media in climate change and natural hazards with reference to developing countries in general and Pakistan in particular. The coverage of media reflects the perceived notion of climate change, which people consider to be gender neutral despite the fact that it is gender specific. Studies have also been formulated upon international perimeters and do not focus on Pakistan which is why the current study is even the most important. It combines three aspects which have been separately but not together, namely, gender, climate change, natural hazards and media coverage.

During disasters, the media keeps people informed and motivates them to help the affectees. As mentioned by Olsen, Carstensen, & Høyen, (2003), media coverage of disasters have lasting impact and matters a lot in terms of motivating the audience and their responses and it has a strong appeal if the framing is innovative. An important function that the media can carry out with reference to effectiveness is coverage of relief activities, which can be said to motivate people. However, media's stereotypical portrayal of victims deforms the image of disaster-stricken community in the eyes of domestic and international audience and can generate negative attitudes among the other stakeholders. Furthermore,

inadequate media reports create confusion among the victims and international public in general about the situation in disasters. Media needs to be careful and sensitive about the socio-cultural perspectives of the people. As mentioned earlier, in Katrina's aftermath, African Americans were consistently shown as looters whereas white people involved in exactly the same activities were described as searching for supplies in repeated photographs in media. As a result of stereotypical media portrayals and decisions of higher-ups, black victims were seen and treated as unworthy victims (Moeller, 2010). The media coverage was not very much different in disasters in Pakistan and needs to be addressed.

There are many studies regarding gender representation in media. There is less coverage about gender and where there is coverage that can be marked as stereotypical representation. My own on research on visual representation of gender in flood coverage of Pakistani print media concludes that gender-oriented flood coverage in print media seemed to take a reductionist approach while confining the representation of women to gender-specific roles. In this context, it is pertinent to note that most of the gender-sensitive coverage displayed has been stereotypical in showing women as helpless victims of flood. Media coverage of disasters, however, contains not only stories of sorrow and misfortune but also stories of survivorship and bravery, although such stories are very few in numbers. Media needs to give coverage a way that can motivate others to address the catastrophic situation with bravery and enthusiasm.

With regard to media's role in education, media need to educate people about how to face climate change and natural hazards. Media needs to educate women about how to face disasters and/or giving a voice to women. This highlights the importance that there is a need to overhaul the social awareness regarding women's position as well as the content that the media presents to the public.

Chapter 3 : Design of the Study

3.1 Introduction

This chapter deals with the method and procedures employed to carry out the present study. It presents the research design, operational definition of the variables, research method, identification of the population, sampling plan, and development of the instruments, piloting, validity and reliability testing of the instruments, survey package distribution and collection, administration of the questionnaire, focus groups and experts' interviews. This is followed by discussion of descriptive analyzes and techniques applied to the collected data.

In order to solicit women's perceptions about the role of media in creating awareness about climate change, natural hazards and DRR, quantitative and qualitative methodologies were employed to collect the data. Quantitative data was collected by distributing 384 paper-based questionnaires to literate women with tertiary education and 350 questionnaires to semi-literate women, whose responses were filled out by me and my team members with their consent. The structured questionnaire was developed by taking into account the types of questions that were used in previous studies and items necessary to describe and interrogate the perception of literate and semi-literate women about climate change, natural hazards and the role of media and other information sources in this regard.

In the next stage, focus groups with participants and in-depth interviews with experts were conducted to collect qualitative data. Sixteen community focus groups were conducted in total, four in each of the four provinces of Pakistan. Eight community focus groups involved illiterate or semi-literate Pakistani women and eight university-based focus groups involved educated women. Each focus group was composed of six to eight women.

In-depth interviews of ten experts in one or more of the relevant research areas were also conducted.

In the present study, media is a collective term used to describe the channels used in the mass communication process and has been operationalized as newspapers, radio, televisions and the Internet. In the project, non-media channels or interpersonal communication channels have been also examined that includes telephone, family, friends, neighbors, and colleagues/so-workers.

3.2   Research Design

Research design is defined as an approach to integrate various elements of a research project in a consistent and coherent fashion in order to address a predefined set of study questions (Trochim & Land, 1982). Since there were various options for conducting research, this chapter seeks to justify the choice of research methodology employed during the research.

3.3   Triangulation

In the social sciences, the term "triangulation" was coined by D. T. Campbell and Fiske (1959), who used it to describe "multiple operationism". They contended that validation necessitates employing more than one method so that it can be ensured that variance is not related to the method but to that of the trait under investigation. Therefore, when there is correlation between two methods, it reinforces the fact that the results are valid and are not merely methodically proper (Bouchard, 1976, p. 268). Denzin (2009) terms triangulation as being "between (or across) methods" and it is the method that is now most commonly used. This kind of triangulation is used when two or more methods are utilized to correspond to each other and yield the same data. Qualitative research methods

respond to "why?" and "what does this mean?" questions, while quantitative methodologies explore numerical concerns such as "how many?" and "how often?" (Green, 2013). The present study has employed this "between/across" method in the shape of quantitative/qualitative methods, and the data was gathered through multiple formats including survey, focus groups, and in-depth interviews.

As far as framework for the qualitative research is concerned, I am taking a feminist approach. Feminist researchers have over the years proven that certain structural attributes, such as location, age, ethnicity, class etc. can affect research and convolute the research process (Alasuutari, Bickman, & Brannen, 2008). Many feminists have been apprehensive about using positivist frameworks and were hesitant to fully embrace the quantitative method because such a framework may be deficient in capturing women's experiences and the routine of their lives. Consequently, qualitative methods were considered to be more female-friendly. However, a number of feminists criticized employing traditional qualitative methods. As a result, many feminists have shunned specific methodological approaches. The most appropriate course was considered to employ research methods which allowed particular research questions to be properly answered and feminist concerns to be addressed (Brannen, 1992; Chafetz, 2004; Kelly, Burton, & Regan, 1994; Maynard & Purvis, 1994). In this study, I employed a methodology which could be termed feminist as the voices of the participants were given prominence and respect. Open-ended questions allowed the participants to direct the narrative of the focus group.

Focus groups have been taken up as an appropriate method by both post-modernist and feminist researchers (Madriz, 2000; Oleson, 2000; Wilkinson, 2004). Madriz argues that "the focus group is a collectivist rather than an individualistic research method that focuses on multivocality of participants' attitudes, experiences and beliefs" (Madriz, 2000,

p. 836). Although, focus groups are not a "solution" for highlighting the views of oppressed or minority groups, they can, when used sensitively, help to facilitate listening to their narratives (Alasuutari et al., 2008). Experts' interviews were also conducted to learn the viewpoints of those who are at the helm of affairs.

3.4   Quantitative Method

A quantitative methodology was chosen to collect numerical data in order to be able describe the "trends, attitudes, and opinions of a population" (Creswell, 2014). Surveys are the most popular form of quantitative research in the social sciences and the questionnaire is a relatively economical and fast way to collect large amounts of standardized information. There are many advantages to survey research. It is valuable in describing the characteristics of a large population., Rea and Parker (2012) and Dillman (2011) report that an advantage of using a survey method is the ability to reach a large number of respondents with little effort and resources. Surveys, especially those which are self-administered, are relatively inexpensive as they can be distributed from a distance using mail, email, or telephone. A comprehensive survey design addresses four main components: target population, sampling, survey instrument, and data collection (Fowler, 2014). The sections below address each of these four components of the present study.

3.4.1   Target population.

The initial step of identifying who to study is the task of defining the target population, that is, "which persons, which places, and which times" (Light, Singer, & Willett, 1990, p. 44). For the present research project, literate and semi-literate women from all four provinces of Pakistan were the target population. Since climatic variability affects rural women more acutely than urban women, it was necessary to distribute questionnaires

to semi-literate women in rural areas, despite the extra resources required in their distribution. As media consumption and sources of information vary between rural and urban women, due to their different educational background and socio-economic status, we were interested to know both the opinion of literate women, most of whom are residing in the cities, and the opinion of the semi-literate women, most of whom are living in rural areas of Pakistan. The sampling procedure for the literate women is given below.

3.4.2   Sampling procedure for literate women.

A multistage sampling procedure was employed to select the sample for the study. In the first stage, four public sector general education universities were selected, keeping in view their geographical location for the maximum representation of the population of Pakistan. Pakistan has four provinces, namely Khyber Pakhtunkhwa (KP), Baluchistan, Sindh and Punjab. Hence, the sample of the study includes the following public sector universities:

1) University of Peshawar, Peshawar in the province of Khyber Pakhtunkhwa

2) University of Karachi, Karachi in the province of Sindh

3) University of the Punjab, Lahore in the province of Punjab

4) University of Baluchistan, Baluchistan in the province of Baluchistan

The total number of questionnaires distributed in all the universities were four hundred i.e. one hundred questionnaires were distributed in each university. Three hundred sixty-eight questionnaires were collected back. Of these thirty-two questionnaires were not included as these were almost blank, and in some questionnaires, only a few items received responses from the students.

All the universities were contacted through their Vice Chancellors, Heads and Chairpersons of the concerned departments for permission to conduct the survey in those departments. In the second stage, the departments from each university were selected non-randomly according to the area of the study. The University of Peshawar has a Center for Disaster Preparedness and Management; as one of the areas of the present study is DRR, it made sense to include the students of the center in the survey. There are four broader aspects of the present study: gender, media, climate change and DRR. Keeping these variables in view, I preferred to collect data from university departments related to gender, media and environmental studies. The list of the departments where questionnaires were distributed is given below:

University of Punjab, Lahore

- Institute of Communication Studies

- Department of Gender Studies

- College of Earth & Environmental Sciences

University of Karachi, Karachi

- Department of Mass Communication

- Center of Excellence for Women's Studies

- Institute of Environmental Studies

University of Baluchistan, Quetta

- Media and Journalism Department

- Gender Development Studies Department

- Department of Environmental Sciences

University of Peshawar, Peshawar

- Department of Journalism

- Institute of Social Work, Sociology & Gender Studies (ISSG)

- Center for Disaster Preparedness and Management

The female students were selected randomly from each department, with a list of the students provided by each selected department. The total numbers of questionnaires distributed in each department were thirty-five to forty. I was allowed personally to conduct the survey in some of the classes, employing random sampling. Literate women were the study sample so all the female students attending class at the time of the administration of the survey were included in the population of the study and then randomly selected female students were given the questionnaire to fill out.

3.4.3 Sampling procedure for semi-literate women.

The data was collected in 2011, when the aftermath of the 2010 and the 2011 floods was quite fresh in people's memories. Those people who had been displaced were still living in tents or had recently gone back to their houses after partially reconstructing them. Those who were living in makeshift tents belonged to the poorest faction of the society and did not have enough resources to go back. Some of the affectees from and Naseerabad, Baluchistan and Qamber ShahdadKot, Sindh who were living in the makeshift tents said that they did not want to go back to their homes because of the advantages of city life. Men could go to the nearby market to find the work, and had become the daily wage earners who did not want to leave city life.

The other section of the group was poor but they had their own houses and land; they went back to their dilapidated houses as the flood water receded. They started reconstruction by borrowing money from relatives, friends or even money-lenders. They

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wanted to live in their houses and start their lives again. Both these groups belong to the poor segment of the society but the flood had different impacts on them, and women of the two groups had different access to the media due to their somewhat different socio-economic position. To keep these things in consideration, I conducted four focus groups with the flood-affected women who were living in makeshift tents, as their access to media was different than those who went back to their houses. I administered 150 questionnaires to Sindhi women from ShahdadKot and Baluchi women from Naseerabad who were living in the makeshift tents. The other 200 questionnaires were distributed to the women from Charsadda, Khyber Pakhtunkhwa (KP) and Jhang, Punjab, who were living in their houses after the flood water receded. Non-random sampling was employed to collect the data from the affectees. The rationale of applying non-random sampling is the availability of female respondents for conducting survey and focus groups. Although most of the residents returned to their houses, many houses still had no residents due to their dilapidated condition. According to the random sampling, "nth" number is applied to select a house for conducting a survey that was difficult to apply due to the non-availability of the residents. I distributed the questionnaire to semi-literate women available in the area of study by employing convenience sampling (non-random). Convenience sampling is a type of non-probability sampling technique where the units that are selected for inclusion in the sample are the easiest to access. There were not many women affectees living in makeshift tents so all the female population living in tents was the sample of the study and they were selected non-randomly through convenience sampling. In both the cases of selecting the respondents, my bias was less involved in the choice and the availability of the research subjects was the most decisive factor in the selection criteria.

3.4.4 Survey instrument design.

As already noted, the quantitative data was collected by means of a written questionnaire for the current study. It consisted of 47 items in total. Some of the items were closed-ended, in which participants were asked to tick one option out of a list. In other items, participants were asked to choose more than one from a list of several options, either to tick one option or all that apply. Each item has a write-in option next to the "other" option in the questionnaire to offer the subjects an opportunity to share their own views and to communicate their own opinions about the issues under discussion. This approach follows Creswell (2014)' s suggestion that two types of questions should be integrated for extracting data.

3.4.5 Piloting the instrument.

A pilot study was conducted in an attempt to determine whether the questions chosen would achieve the desired effects of measurement. Dillman (2011) indicates that piloting always plays an important role in questionnaire design. Piloting and evaluation of the content and format of the questionnaire is an essential step to identifying any problematic issues in the questionnaire. The piloting process enables the researcher to determine whether he/she is asking the right questions in the most effective way and whether the participants are able to answer the questions properly or not.

In order to test the questionnaire for both validity and reliability, a pilot study was conducted in early February 2011, to authenticate the usability, validity and reliability of the questionnaire. The demographic characteristics of the respondents of the pilot study were comparable to the total population of literate women in this study. It was piloted with 15 students in the Faculty of Behavioral and Social Sciences at the University of the Punjab to

identify the clarity of the questionnaire's contents. The questionnaire was distributed to the participants after explaining to them the purpose of the study, and they were told that they would be the part of the original study. The participants were allowed to take as much time as they needed to complete the questionnaire and to return it along with their comments and feedback. From their responses, unclear questions were identified and corrected. Changes were made in the questionnaire according to the participants' comments and feedback. This questionnaire was again tested for face validity before distribution to the sample of the study.

3.4.6   Validity of the instrument.

A number of measures were taken to ensure the validity of the instrument, which is defined as, "The degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure" (Sudman & Bradburn, 1982). The idea of validity in a questionnaire design refers to the steps taken by the researcher to ensure clarity, wording, and arrangement of the questions.

M. L. Smith and Glass (1987, p. 107) consider face validity to be one measure of the validity of the survey instrument. Face validity is an estimate of "the degree to which a measure is clearly and unambiguously tapping the construct it purports to assess". Thus, face validity refers to the "obviousness" of a test. It is the degree to which the purpose of the test is apparent to those taking it (Bornstein, 2004). When the purpose is clear to even naïve respondents, such questionnaire possess high face validity and if the purpose is unclear such questionnaire have low face validity (Nevo, 1985). When the purpose of the test seems clear, respondents are less apprehensive and more motivated to proceed to complete the questionnaire, even when some of the test items are highly challenging

(Messick, 1995; Nevo, 1985). To establish face validity, another group of 10 post-graduate students who study at the University of the Punjab were provided with the instrument for giving comments on the clarity of items in it.

Content validity is achieved by submitting the questionnaire to experts in the field to examine and evaluate the content and the format of the questionnaire before the final version was approved and sent out to the participants and respondents. To establish content validity, another group of five researchers from various countries were provided with the instrument so as to ensure the clarity of items. As I am a part of Media Climate, a network comprised of researchers from twenty countries, I made a request to them to validate my questionnaire. Content validity was also achieved by submitting the questionnaire to experts in the field for examination and evaluation of the content and format of the questionnaire before the final version was approved and sent out to the participants and respondents. All questions and responses in this survey were reviewed by experts who are well versed with gender, media, climate change and natural hazards.

3.4.7 Survey distribution and collection.

Although travel could be hazardous, I myself administered the questionnaires in the universities of Karachi, Baluchistan, Peshawar and Punjab. I covered long distances and spent a great deal of time travelling from one city to the other. It took two days to reach the University of Peshawar by car. I preferred to travel by air to Karachi and Quetta due to the long distances and the chaotic political and social situation. On my arrival in each place, students were asked to sit in a separate room at an assigned date and time. Questionnaires were distributed to the respondents. Written as well as verbal instructions were given to the participants and after clarifying queries (if any) respondents were asked to complete their

responses. After receiving completed questionnaires, serial numbers were assigned to these questionnaires which had been completed in all respects and had the information required for the research.

3.5   Qualitative Method

Surveys become more significant when supported by critical qualitative information. Triangulation, in this respect, can lead to a prominent role for qualitative evidence (just as it also should assure a continuing role for quantitative data). Sometimes, employment of the multi-method approach leads to unprecedented, unexpected and unforeseen results, or overlooked contextual factors may be highlighted. In order to gain qualitative insight, data was collected through focus groups and experts' interviews.

Qualitative inquires bring a different lens towards validity than that brought to traditional quantitative studies. In quantitative research, investigators are most concerned about the specific inferences made from test scores on psychometric instruments (i.e., the construct, criterion, and content validity of interpretations of scores) and the internal and external validity of experimental and quasi-experimental designs (Campbell & Stanley, 1966). In contrast, qualitative researchers use a lens not based on scores, instruments, or research design but a lens established using the views of people who conduct, participate in, or read and review a study.

One lens to determine the credibility of a study is the particular lens of the researcher. Researchers determine how long to remain in the field, whether the data are saturated to establish good themes or categories, and how the analysis of the data evolves into a persuasive narrative. Patton (1980) describes this process as one where qualitative analysts return to their data "over and over again to see if the constructs, categories,

explanations, and interpretations make sense" (p. 339). Altheide and Johnson (1994) refer to it as "validity-as-reflexive-accounting" (p. 489) where researchers, the topic, and the sense-making process interact. I have tried my level best as a researcher to present the data as it has a sense instead of pick up the quotes from focus groups and experts' interviews.

3.5.1 Focus groups.

A focus group is a kind of group interviewing where people share ideas in a comfortable environment. Focus groups were conducted in order to understand the perception of universities' female faculty members and of the women from disaster-hit areas about the role of media in addressing climate change, natural hazards and DRR. The issues and problems of climate change and natural hazards are entirely different for rural and urban women. Intergovernmental Panel on climate Change (IPCC) has acknowledged differential impact of climate change in this rural and urban divide by addressing the issues separately in its newly released fifth report in May 2014. Besides this, the 2010 and the 2011 floods in Pakistan impacted the rural and urban women differently.

The study involves rural and urban women to develop the idea of how they are getting information from various sources of information about climate change, natural hazards and DRR. As a form of group interview that capitalizes on communication between research participants in order to generate data, this method was particularly useful for exploring women's knowledge and experiences. It can be used to examine not only what women think about climate change and natural hazards, but how and why they think that way and how much the media influences their perception about climate change, natural hazards and their own risk reduction strategies. I found the focus group methodology more convenient for learning the subjects' opinion about gender-sensitive issues. A priority for

the feminist focus group researcher is how to make participants' voices heard without being exploited or distorted, and to take account of "unrealized agendas" of class, race and sexuality (Oleson, 2000). Focus groups were conducted with both literate and semi-literate women.

3.5.2 Focus groups with literate women.

It was pertinent to know the opinion of the faculty members of the universities as not only do they have educated opinions but they also transfer this knowledge to their students directly or indirectly. Eight university focus groups were conducted with faculty members of four universities of Pakistan, two from each province. The focus groups were conducted in the same universities where the surveys with the female students were conducted. University faculty was smaller as compared to university female students. Feminist paradigms entail "inclusiveness" and to maintain it the survey was conducted with the students so that the representative data could be collected, while focus groups were conducted with the faculty members. Each focus group was composed of six to eight faculty members. Being myself a faculty member in the University of Punjab, I was able to listen to the peer groups and get information about how the universities' faculty members were using media and constructing meaning out of it about the environmental issues that can be gauged from their opinion.

Literate women are exposed to electronic media and print media whereas the semi-literate women cannot read print material and online media; thus they are exposed only to electronic media for the information that helps shape their perceptions about climate change and natural hazards. The rationale of selecting female faculty members for focus groups was to acquire the views of participants who have exposure to print, electronic and new

media. Focus groups were conducted at a time when there was a great deal of information regarding natural hazards and DRR as Pakistan was facing the aftermath of the 2010 and 2011 floods.

3.5.3   Focus groups with semi-literate women.

Eight focus groups of semi -literate women in the four provinces of Pakistan were also conducted. The participants were women who had been affected by disasters such as floods, glacier melting and cyclones that hit various parts of Pakistan in 2010 and 2011. One focus groups was conducted in Swat and one in Peshawar, where women faced flash floods in 2010; one of the focus groups was conducted in the Hunza region, where in May 2010 people faced a crisis when the melting of glacier created an artificial "AttaAbad lake"; one focus group was conducted in Baluchistan where a tropic cyclone named "Phet" with heavy rain falls brought about structural disasters in the first week of June 2010; and the other focus group was conducted with the flood-affected women from Nasserabad, Baluchistan. The last two focus groups with semi-literate women were conducted in the northern part of Punjab that was also one of the most affected areas by the enormous flood in 2010. All these disaster-affected areas are rural in nature where the majority of the women are either illiterate or semi-literate. Altogether, the women in these far-flung areas of Pakistan have less opportunity to join in open communication and discussion or present their opinion openly.

Focus groups were conducted with the women who belonged to disaster-struck areas. These women were directly experiencing the role of the media and other information sources during the floods. They had witnessed the role played by the media. Some of the women even had the opportunity to interact with media personnel during the flood

coverage. The rationale behind conducting focus groups in disaster-hit areas is that it encouraged contributions from women who most of the time feel they have nothing to say if asked individually, but these women became actively engaged in a discussion generated by other group members. A focus group is considered a way of lessening the impact of the researcher and permits minority groups to develop and elaborate their perspective, in a "safe" environment (Alasuutari et al., 2008). The focus group also made the discussion easier for shyer participants. As the present study addressed sensitive issues such as rape cases, harassment of women and increased physical violence by male family members during disasters, the synergy of the group made it easier for women to speak and to "keep the anger going" allowing each participant to reinforce others' vented feelings of frustration and rage (Kitzinger, 1994, p. 170). During the focus groups, provision of mutual support was also ensured to the women participants so that they could express feelings that were common to their group but which they may have considered deviant from the mainstream culture. As sexual harassment and violence from male members of the family are very sensitive issues, women are often reluctant to speak about these issues. It is pertinent to establish trust while conducting focus groups, as women only speak frankly and openly if they trust the person who is exploring their views, beliefs and attitudes.

3.5.4 Gaining trust while conducting focus groups.

It is very important to gain trust when dealing with a focus group. Trust is essential for qualitative research, especially when participants selected for the focus group are based on various factors, such as age, race, profession and previous congenial terms with the researcher. The importance of trust can be illustrated from my own experience. When I started conducting focus group with the women living in flood-affected areas, I found that they were quite suspicious of me because they deemed me an outsider and their previous

experience with outsiders, especially people related to media, had been quite negative. The media personnel were trying to extract information from them using methods which the women thought were not only insensitive but also inappropriate. According to Oakley (1981), there is a tendency to frame a binary opposition between the researcher as an "insider" or an "outsider" to the research and to one's research subjects; when the researcher identifies himself/herself with the research subjects and treats them on an equal basis, then the charge of unethical or exploitative research is mitigated. I had asked some local people to accompany me so the women were more open to trust me. However, the women in these makeshift tents showed willingness to share their experience; they were irritated by the consent form which was my university's requirement. They had to give me their oral consent, but as I was reading the form out to them they became more apprehensive, since they thought that it was something which could be legally binding and risky. Consequently, I used various strategies to establish trust between myself and the participants of my rural flood-affected focus groups.

I contacted the local people of the areas, who arranged these focus groups for me. These people had influence and respect among the affectees and they were considered to be the leaders. In Karachi, the person who introduced me to the affectees living in shelters was a school teacher. He had built a school in one of the tents and was teaching the children of flood affectees. He was known to all the people living in shelters and they were happy that he was teaching their children. He introduced me and told them the purpose of my visit and of conducting focus groups. After introducing me, he left. I read the consent form and obtained oral consent from all the participants of the focus group. I remained in touch via mobile phones, with some of the affectee women who were living in tents, after my field research visits. Perhaps most important in terms of establishing trust, I demonstrated a long-

term commitment to the people in the study through my ongoing efforts to stay in touch until my return visit to New Zealand. I kept in touch with the teacher, my contact person, through e-mail even after coming back to New Zealand and I kept enquiring about the women living in the makeshift tents. He told me that most of the flood affectees were still in the camps despite a passage of two years.

Before proceeding to collect any data involving women, it was important to consider potential ethical concerns. A statement at the top of the survey instrument was added to inform respondents about the purpose of the study, how the data will be stored without identifiers, and where they might direct questions. The anonymity and confidentiality of the data was maintained.

The data collected through the questionnaires was reported anonymously in the research and was used as supplementary data to answer the research questions. The data collected through focus groups and in-depth interviews were quoted ad verbatim in research findings; however, participants were not reported by name and they were quoted in the research anonymously. This was an anonymous survey and I was unaware of the responses individual participants may have included during the administration of the questionnaire. Access to consent forms given by respondents was restricted to the principal investigator and the researcher stored by the principal investigator in a locked cabinet. Questionnaires were numbered 1-100. The assigned numbers were not linked to the participants. The literate participants were requested to provide their written consent to participate. The illiterate women participants were able to give informed but not written consent. The illiterate women were unable to provide written consent for the questionnaire or focus group. However, it was ensured that uneducated participants in the focus groups give their verbal consent before commencement of the focus group (which was audiotaped).

It was clearly mentioned in the consent form that participants understands that they were free to withdraw their participation before and during the focus group but they cannot withdraw their participation after the focus group has been completed. They understood that they cannot withdraw their participation after completing the questionnaire as it was anonymous.

3.6 Interviews with Experts

In-depth interviews with 10 experts in one or more of these research areas were also conducted about the role of media in climate change, natural hazards and DRR. Kvale (1983, p. 174) defines the qualitative research interview as "an interview whose purpose is to gather descriptions of the life-world of interviewees with respect to interpretation of the meaning of the described phenomena". Interviews were selected as the means of data collection from the experts because of two primary considerations. First, they were well informed and confident enough to share their perceptions and opinions of what they thought about the role of media regarding climate change, natural hazards and DRR. Secondly, the in-depth interview method can facilitate comparability by ensuring that all questions are answered by each respondent (Bailey, 1994). The interviewees were as follows:

- Javed Malik, Secretary Ministry of National Disaster Management, Government of Pakistan

- Syed Mujtiba Hussain, Deputy Secretary, Ministry of Climate Change, Pakistan

- Ghazala Raza, Senior Program Officer, Ministry of National Disaster Management, Government of Pakistan

- Dr. Pervaiz Amir, One of the task force members who helped in the formulation of the first Pakistan's National Climate Change Policy

- Mahmood Akhtar Cheema, Country Representative, IUCN Pakistan

- Ulrik Rohr, a women activist representing international organization working for gender and climate change

- Jan Muhammad, a journalist from Sindh

- Aslam Dogar, a journalists from Punjab

- Shazada Irfan, a journalist from Punjab

Out of the ten mentioned above, seven interviews were conducted at the venue of COP 17 with the Pakistani delegation. I was interested to get the views of people who are at the helm of policies regarding gender, climate change and DRR. I decided to attend COP17 for the data collection as it is otherwise very hard to get appointments from people who are top leadership positions, due to their hectic office schedule. COP 17 provided me with the opportunity to have direct access to them at a time when they were willing to discuss climate change and the related issues and to share their opinion on these issues with the world community. Besides this, I was also there as a participant, which helped to establish a non-hierarchical relationship between me and the interviewees. Pakistani policy makers consider themselves to be from another class, so they might not have been as cooperative and open to giving me interview in Pakistan as I found them in COP 17. While giving me interviews, they considered me on an equal level and in some cases, it was other way round. They were not considering themselves as research subjects. A Pakistani shared nationality was an asset and became a common basis. The women activist, Ulrik Rohr, who was from gendercc (an international organization working for gender and climate change) was not Pakistani but was still quite cooperative.

All the interviews and focus group sessions were audio-recorded. All the focus groups with the semi-literate women were in their local language but were translated later

into English. All the focus groups with the members of the university faculty were in the English language due to their academic qualifications (the language of instruction is English in all the Pakistani universities). Likewise, the expert interviews were held in the English language due to the participants' academic qualifications, as well as their representation at a world forum where the official language was English. Conducting the interviews in English also allows the use of direct quotes in the thesis. The interviews thus provided accurate and unbiased data that may be a permanent record for use during data interpretation.

The survey respondents and focus group participants were those who were experiencing or facing the impacts of climate change and natural hazards. Experts' interviews were conducted to learn the viewpoints of those who are at the helm of affairs. There are many evidences in the thesis where they were either questioning or confirming each other's viewpoints.

3.7   Data Analysis

Data analysis was conducted with the use of the Statistical Package for the Social Sciences (SPSS) version 20.0. Descriptive statistics such as frequency counts and percentages were used to summarize the data. The data will be presented based on frequencies of responses in the form of percentages in next chapters; where needed the data will also presented in tables and bar graphs. Furthermore, qualitative data which was gathered from the open-ended questions at the end of most of the items of the questionnaire was analyzed. The qualitative data collected through focus groups and interviews was also analyzed.

As feminism address the vulnerability of women in the existing patriarchal system, the present study explores how climate change and natural hazards are widening the

existing inequalities. The project highlights the gender inequalities and inequities in Pakistan with reference to climate change, natural hazards and DRR by using the microscopic lens of women's perceptions. Feminism asks to give value to women's voice and their experience. Direct voice of the women was given importance in the data interpretation.

The entire thesis is focused on addressing gender issues and giving a voice to women. I have attempted to assess the perception of women about role of media in addressing the problems these women face due to climate change and natural hazards and bring it to the attention of mainstream discourse in academia. It is also an attempt to explore their problems as they opened up about their lives, and entrusted me with their personal stories and experiences. During my research, I observed that these women have very rich ideas to share, and were pleased about the opportunity to express these in a respectful and trustworthy environment. Numerous illiterate and semi-literate women displayed pleasure at being given the environment to have a say; an opportunity that is rarely provided to many of them in the context of climate change and DRR discussions. I believe this work will be of benefit to them and their generations to come. No doubt, the thesis is a feminist piece of research.

3.8   Summary

The perception of women about climate change, impacts of climate change and natural hazards was studied in relation to the women's media use. The women were asked about their sources of information for climate change, natural hazards and DRR, as well as the media's role in creating awareness and education about the said phenomena. This chapter has explained the methods and procedures used in this study. Data has been

collected through both quantitative and qualitative methods and both of these methods combine to make the "across method" which has been employed in this study. Confirmation and completeness of data are the two main purposes for triangulation (Bekhet & Zauszniewski, 2012; C. Houghton, Casey, Shaw, & Murphy, 2013; Knafl & Breitmayer, 1991; Shih, 1998; Speziale, Streubert, & Carpenter, 2011), where confirmation is a way of comparing and also analyzing data which has been obtained from different sources so that the convergence of data can be confirmed. Triangulation resulting in confirmation results in greater confidence in the research credibility and can enhance the findings, especially when data obtained from various sources and methods is similar (Ashley & Boyd, 2006; C. O. Boyd, 1993; Breitmayer, Ayres, & Knafl, 1993).

Completeness of data is also another benefit of triangulation, which leads to a more panoramic and contextual background of the phenomena at hand. Data completeness relies primarily on obtaining multiple perspectives from different sources so that a holistic picture of the issue can be presented with the varied dimensions revealed (Ashley & Boyd, 2006; Shih, 1998). The study's results have been derived from quantitative and qualitative data obtained from the survey instrument, focus groups and interviews to achieve completeness of the data so as to get a more holistic and contextual picture of media's role in creating awareness amongst women about climate change, natural hazards and DRR. Results from the data analysis are presented in the next chapters.

Chapter 4 : Gender, Climate Change, and Natural Hazards

4.1   Introduction

This chapter will discuss two important questions linked to gender and climate change: 1) In what ways does climate change affect women differently than men? 2) What is the perception of women about the media coverage of gender with regard to climate change and natural hazards?

To answer these questions, women's voices were gathered through qualitative data; however, anonymous quantitative data helped to collect the responses of the respondents regarding sensitive issues such as harassment of women, rape and domestic violence. Pakistani women were reluctant to talk openly on such cultural sensitive issues; however, they were willing to give their opinion on such issues anonymously. Climate change is no doubt a worldwide phenomenon that affects people of all walks of life and from both genders; however, we tend to overlook the gender differences when discussing climate change and natural hazards. Women are affected differently than men by climate change and disasters. The media focuses on climate change in general and disasters in particular but does not specify the problems faced by women due to these climatic events. In the media coverage of disasters, women are portrayed stereotypically. They are presented as being helpless victims who are solely dependent on their male family members for support and sustenance. There is a dire need to not only present them as victims of calamity but to highlight how they can strive to deal with such issues.

Coping with climate change and natural hazards can only take place if the awareness and help provided to women is in keeping with the social mores of the society in which these women live. Therefore, it is pertinent to understand the status of women in Pakistani

society. Pakistani women are divided on multiple bases; there are clear divisions between women depending on whether they are from an urban or rural background, are literate or semi-literate, or belong to a certain class, geographical location and even social milieu. Due to these differences, women are treated differently. For instance, women from urban backgrounds have some degree of independence as compared to women living in rural areas. There are also clear social and ideological differences between women from the different Pakistani provinces. For instance, Imtiaz Gul in his book "The Most Dangerous Place" commented that the northwest region of Pakistan is an extremely conservative society. You hardly see women outside alone, and they hardly have any role-except for cooking and cleaning the house, and that's about it (Gul, 2010). This quote confirms that there are definite social taboos surrounding females in the northwest areas of Pakistan. Unfortunately, this region is also one that has been most severely affected by floods. Therefore, in this situation women suffer disproportionally due to the socio-psychological barriers that they have to face in everyday life. For instance, a participant from Peshawar University commented:

> *It should also be noted that in areas such as Khyber Pakhtunkhwa where*
> *women are not allowed to venture out of their houses alone, the women are*
> *even hesitant in the face of rescue missions.*

It is important to note that the word used is "hesitant", implying that even if the women do succeed in being rescued invisible barriers have been ingrained on their minds. A holistic approach needs to be adopted in order to understand the problems (of Pakistani women) as well as the possible solutions arising from the spatial-ethnic divisions present in the diverse geographical locations of Pakistan. Keeping in mind these divisions and the need for an inclusive approach, I have strived to include different social groups of Pakistani women. As

mentioned in Chapter 3, the research sample comprises women from all the four provinces; it includes urban and rural women with different educational backgrounds.

One conclusive finding irrespective of class and monetary status is that women bear the brunt of climate change and disasters because they have to rely upon natural resources not only for their survival but also because of the gender-specific division of labor. On a more individualistic level, the most adversely affected females are those who live in rural areas or urban areas with poor infrastructure, as they are rendered more vulnerable due to their circumstances. Flooding, drought and unpredictable weather patterns create hardship for women, as not only do they have to look after their families but they are also responsible for carrying out menial tasks such as fetching water, firewood etc. This problem is common to most third world countries, as most women in such countries have to carry out their responsibilities under great hardship. During the Pakistani floods, one of the interviewees observed the following:

> *Their men may have lost the fishing equipment necessary to earn a living,*
> *their children may have died and their homes and belongings were washed*
> *away but at the end of each day, it was the wives and mothers who had to*
> *cook for whoever survived in the family.*

This statement makes it starkly clear that women are expected to perform their daily tasks irrespective of the conditions. They may be physically or mentally damaged, but they are not allowed any respite and are required to fulfill their duties properly. Emphasis needs to be placed on not only changing mindsets but also equipping women with the requisite tools to overcome such problems.

In order to begin the process of environmental management, the most important step is to ascertain the degree of awareness about climate change. The majority of the survey

respondents and focus group participants in this study were aware of climate change. They also realized that climate change is not a gender-neutral phenomenon and it tends to affect female members more adversely than male members of a society. Likewise, natural hazards impact women more severely than men. The present chapter reveals how climate change and natural hazards impact women differently and what women themselves think about this impact. It relies mostly on qualitative data gathered from focus groups, as many of the issues raised are either too sensitive or too normalized to be successfully tracked as survey data.

4.2   Vulnerability of Women Resulting from Climate Change and Natural Hazards

Generally speaking, women are more vulnerable due to lack of human rights, socio-economic status, land ownership, adequate housing, protection from violence, education opportunities and healthcare, including, most importantly, sexual and reproductive care (Cannon, 2002; Islam, 2009). For instance, climate change and natural hazards create a plethora of unhygienic and unsanitary conditions, thus creating health problems for women. As Mahmood Akhtar Cheema, Country representative of IUCN, commented:

Climate change is affecting the role and responsibilities of people and affecting gender in many different ways. 70% of rural women are involved in agriculture. Climate change is affecting their livelihood as it is impacting agricultural production. There is rising temperature, less vegetative cover and less availability of water due to climate change. Women are water fetchers in many areas of Pakistan and now women have to go far to get water and it takes more time to fetch water. It is also affecting their health.

Thus, it can be said that climate change only serves to aggravate the problems already faced by women, and to do so in a cyclical way. Since rising temperature leads to drought, this leads to less vegetation and diminished means of livelihood. This in turn means that there is less money to be spent on health. Worsening health means that the rural women will be unable to fetch water from an increasing distance, thereby starting the cycle anew.

Javed Malik, Secretary of Ministry of Climate Change, confirms that "the degree of vulnerability due to climate change varies between men and women and it needs to be addressed." The interviewee, a government representative, was not only aware of the gendered impact of climate change but also knew the importance of taking gender into consideration when addressing the issues. Ulrike Rohr, the director of gendercc and advocate of climate gender justice, whom I interviewed at COP 17, believes that:

> *Climate change impacts women differently due to the difference based on roles and responsibilities of society. The power relation in people's minds is the root cause of the differential impact of climate change on gender. Gender identity and perspectives are involved in addressing climate change. Women are more skeptical about the impact of climate change.*

Thus, the problems caused by climate change are not only linked to physical problems but also exacerbate problems arising from the sub-cultural mores of Pakistani society. Pakistani women are aware of climate change but their apprehension of such changes and capacity to respond with resilience is limited and narrow.

Another aspect that we tend to neglect when looking at gender and climate change is that women occupy a socially lower status and are given lower priority than men when it comes to coping with climate change. Women in rural areas, for instance, are prone to give

the better and cooler sleeping area to the male members of their family. For instance, a participant from Baluchistan remarked:

> *I sleep inside and let my husband sleep outside under the open sky on the available charpoy (string bed) that we have. It is hotter inside my house, at night, than outside but I let him sleep in the cooler area because he is the one who I should prioritize over myself.*

It is very important to note that the participant does not give the better sleeping space to her husband under duress; rather, she has been socially conditioned to prioritize her husband over herself. Consequently, women suffer more due to intense heat caused by climate change. Therefore, women have to face problems which are not only created by external influences but which are self-imposed as well.

Cultural taboos need not only to be addressed but also mitigated and in certain circumstances eradicated in order to ensure the safety of women. Not only are they more burdened during natural hazards due to the disruption of their menial tasks, but also their survival is also deeply affected. For instance, on being asked whether disasters have a varying impact on women, Javed Malik said:

> *Many factors make women's position more vulnerable during disasters. For example, swimming for women is a taboo in our culture and it has a dire effect on women's safety during floods. Where a man can easily swim to safety, the women face societal and psychological pressures, which do not allow them to swim to safety despite the most severe circumstances.*

Syed Mujtiba Hussain, from the Ministry of Climate Change, also commented:

Men have an easy way of getting out in the wake of any disasters; however, 70% of the rural population comprises women and in the event of floods and other disasters, the dependence of women on men for rescue makes the rescuing process even more difficult.

In Pakistani society, where certain invisible parameters surround female behavior and it has been ingrained into the female populace that staying within these parameters is the only way to survive, this situation is exacerbated during emergency situations such as flooding and other disasters. The social conditioning of women makes them feel more uncertain and insecure when away from their family and community environment. Women in rural areas need to be educated about their own safety to believe that, if the male members of their families are absent, they can save themselves instead of waiting for their male relatives to turn up. Most developing cultures operate as "shame cultures" and place great emphasis on honor, maintenance of privacy and abstinence from contact with strangers even in the wake of the most severe environmental catastrophes. Not only is the culturally ingrained dependence of women a hurdle in rescue missions, but this also holds for their psychological barriers, as a participant from Peshawar university pointed out:

In areas such as Khyber Pakhtunkhwa, where women are not allowed to venture out of their houses alone, women are even hesitant to break social convention during rescue missions. In some cases, women did not allow rescuers to touch them physically; consequently, they drowned.

This remark highlights the fact that women face a range of taboos which directly impact their chances of survival. The only redress is to help women reorient themselves in such a way that they realize that it is acceptable to forego such taboos in the face of imminent danger.

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As with coping with extreme climatic changes, another important feature that needs to be examined is that women neglect their nutrition in order to provide for their families. In most third world countries, women suffer from insufficient calorie intake, and climatic changes such as flooding serve to aggravate this situation. Similarly, other research participants have observed women's health problems during floods. One of the faculty members of Karachi University served as a volunteer along with other doctors in a medical camp established in the flood-hit area of Badin, Sindh during the 2010 flood. He had direct experience of working with affectees. He shared his observations during focus group discussion:

> *Most of the health problems among affectee women were due to their malnutrition. Women and children were more prone to suffer from epidemic diseases. The majority of the visitors in the health clinics established for flood affectees were women and children.*

Another focus group participant from Karachi University also conceded that the malnutrition of women is enhanced in the wake of climate change and disasters.

Malnutrition is just one aspect of climate change. Women are expected to undertake all responsibilities pertaining to preventive measures, evacuation and housing. They not only have to look after themselves but also their children. This leads to burdens that impact women's health. This point of view was corroborated by a Sindhi journalist, who commented:

> *Women are more affected because they have to do everything. For instance, if a child is crying, the mother not only has to look after household chores but also has to soothe the crying child. Another important aspect is malnutrition; women suffer from malnutrition to a greater extent due to the*

inherent desire to sacrifice at the expense of their own health. While a man only has to face a one-dimensional effect, the impacts on women are manifold.

In everyday life, it is the established role of women to be active and to be the primary caregivers. Household chores are a woman's obligation and constitute a sphere in which women are expected to handle things on their own without male intervention. The females are not only beset by adverse conditions, but they are also expected to provide a congenial atmosphere in their homes. Certainly, this role is overburdened in a crisis and women become even more essential in dealing with disaster.

Not only are women affected due to their roles and responsibilities, but they also tend to sacrifice their own needs when faced with the needs of the men in their families. A focus group participant from Peshawar University in the Department of Psychology commented:

It is important to note that the psychological and physiological needs of women are different from those of men, especially when it comes to the dictates of modesty. For instance, some IDPs were pregnant and had problems related to their condition.

This participant emphasizes that female affectees need to be handled differently from male affectees. Men do not have to face social mores related to modesty, but females are expected to conform to these unwritten rules. Stereotypes related to women result in their hesitancy to seek medical treatment for physical and psychological problems.

Reproductive health is often overlooked in crises. According to RHRC (Reproductive Health Response in Crises Consortium), in a country like Pakistan with a

high maternal mortality rate, where 320 women die per 100,000 live births, it is essential that all displaced women and girls have access to appropriate services such as the Minimal Initial Service Package (MISP), an international standard of care in emergencies (RHRC). MISP ensures pregnant women and girls have access to emergency obstetric care. Unfortunately, despite all international standards, Pakistani women often cannot get appropriate care for addressing their health issues during crisis. Another participant from Peshawar University added:

> *In many medical camps established in disaster-hit areas, only male doctors were available, as female doctors were not inclined to go to the affected areas. Consequently, the affected women were reluctant to discuss their health problems, especially reproductive health issues with male doctors.*

A majority of the flood-affected women in all four provinces said that medical centers were established near their camps, but that they were insufficient in addressing their medical needs. For example, many of the doctors working in these camps were male and the affectee women were not comfortable discussing their private "female-health issues". One of the participants from Punjab said:

> *I was three months pregnant when the flood destroyed our house and we moved into tents. I had a problem with my pregnancy but there was no female doctor available for consultations in the camp area. Thus unfortunately I had a miscarriage.*

Medicine and medical personnel are already scarce in rural areas and this condition worsens during floods and other circumstances. During flooding, not only does the daily scarcity of medicine pose an issue, but also routes and supply chains are also greatly affected. Another

woman from Sindh mentioned her concerns about the medical services provided in the camp:

> *The medical clinic only had a few types of medication. Doctors had to give the same medicine to everyone in spite of treating different diseases.*

Another participant noted the scarcity of medication:

> *Most of the time there was no medicine available. We do not know where the medicine went as on media we heard that a lot of medicine was coming for flood affectees. Perhaps, it was only hearsay as there was no actualization of these claims. Also, since there is no system to check for corruption the medicines may have been stolen.*

Pakistani government corruption has become endemic and people are disappointed, as no mechanism has been developed to curb the corruption. People have little trust in government bodies, so the affectees believed that the medical supplies could not reach them properly and they were left to suffer both from endemic corruption as well as from epidemic diseases. Not only do the affectees have to deal with loss of livelihood and houses, but they also have to ward off infectious diseases such a polio, cholera, diarrhea etc. due to the unsanitary conditions of relief camps (Siva, 2010a, 2010b; Warraich, Zaidi, & Patel, 2011).

Most rural areas in Pakistan place great emphasis on the segregation of the sexes. Women usually attend female-only gatherings under stringent regulations pertaining to purdah. However, in the wake of disasters, these measures can be overlooked. An affectee from Baluchistan said:

> *My son had diarrhea and I took him to visit the medical camp; there was a long queue of men sitting and waiting for their turn. I did not feel*

comfortable sitting with them but I had to do put up with it, as this was the

only available option for me. I would never have sat with unfamiliar men

but to save my son's life I had to tolerate it.

This reflects women's concerns about the medical facilities available during the disasters. Where the women from Punjab were concerned about the non-availability of medicines and proper health care, the women from Baluchistan were more worried about observing purdah during disasters. These cultural norms are broken as women strive to work or venture out alongside men in order to obtain food items. The patriarchal order is also weakened, as the male members are no longer in a position to enforce their male-dominated roles. Food supplies in such circumstances are scarce; therefore, women also have to venture out of their homes in order to obtain foodstuffs. Thus, they have to move out of their comfort zone. One of the focus group participants from Sindh said:

Women have to stand in line to get food, water etc. not their male

counterparts in spite of the fact that they have been warned by the male

members of their family not to go anywhere alone and if she does venture

out alone, [to consider] what impact this creates.

So the psychological effect for a woman takes place on another level as well; not only does she has to worry about providing her family with adequate supplies but a sense of fear has been ingrained in her with reference to venturing out alone without any male family member. During disasters, security in general and the safety of women in particular becomes a sizeable challenge.

4.3 Women and Safety Issues

Mistreatment of women in any form – whether sexual abuse, rape or violence – is unfortunately rampant in Pakistani society, and natural hazards exacerbate the problem. Women living in relief camps are more vulnerable to sexual assault as the camps are designed simply to provide food and shelter. Little thought has been given to creating safe spaces for women or providing a protective environment. Sometimes, rescue workers can become a part of the main problem, which is the vulnerability of women. Many women are exploited when such calamities occur and, ironically, rescue missions can become a means of exploitation, as contended by a participant from Peshawar University:

Unfortunately, rescue missions have also become a means of exploiting women. Women in floods were harassed more by officials and aid workers during aid distribution in camps. There are many media reports where saviors became the exploiters. In 2005 earthquake, there were many incidents of women trafficking besides sexual harassment.

People involved in rescues should be selected carefully so that they can aid women based on trust. One unpleasant encounter with a rescue worker can create insecurity and reluctance to engage with any rescue attempt. Such incidents make women feel more insecure during disasters. UNEP pointed out in a report seconded by INTERPOL[9] and non-governmental organizations that during disasters, women are more prone to being forced into trafficking due to the disruption of the communal setup and protective boundaries provided by families (UNEP/GRID-Arendale). Therefore, women face gender-specific problems that cannot be categorized with other male-related issues.

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[9] The International Criminal Police Organization is an intergovernmental organization facilitating international police cooperation.

Domestic violence is a mundane reality for some rural women, followed by sexual harassment during disasters and in some cases even rape. Disasters do not exist in isolation from the social and cultural constructs that marginalize women and place them at risk of violence. In fact, there is evidence that violence against women increases in the wake of colossal disasters and the increased risk is associated with gender inequality and the limited representation of women in disaster responses (Enarson, 2000; Oxfam, 2005a, 2005b). To explore the perception of the literate and semi-literate women regarding domestic violence, harassment and rape, the sample group of 378 literate and semi-literate women was asked which of the occurrences below they believed to be relevant.

Perception of Women about Domestic Violence, Harassment and Rape during Disasters
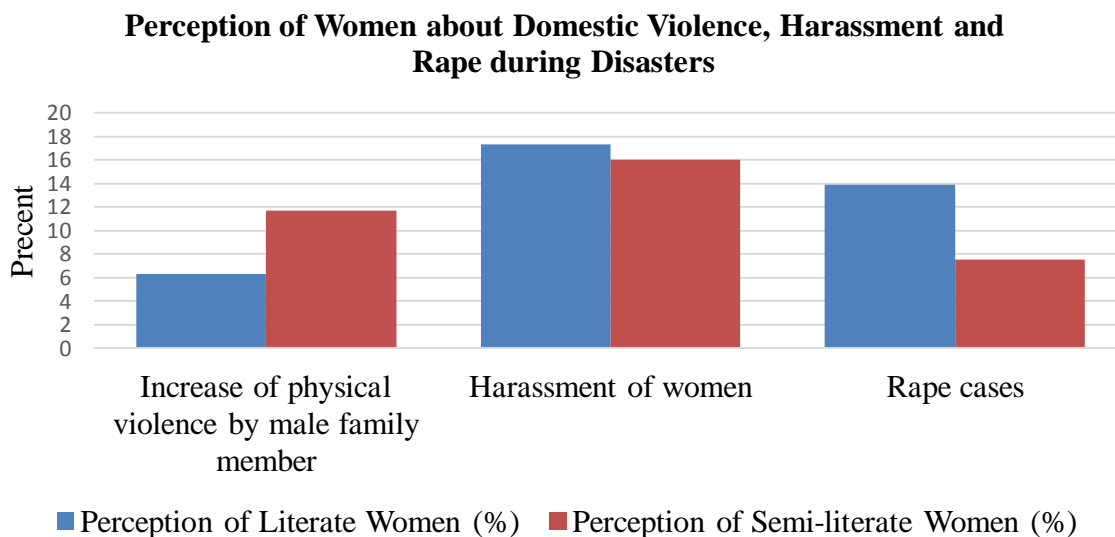
Figure 4-1 : Perception of women about domestic violence, harassment and rape during disasters

Physical violence by male family members received a quite disparate response between the two groups, with percentages of 6.3 % and 11.7% for literate and semi-literate women respectively. One of the reasons could be that in rural areas physical beating by males is prevalent, whereas amongst the urban educated middle class it is somewhat lower.

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The majority of rural semi-literate women admitted that floods played a role in the increase of physical beatings by male members of the family. Natural hazards render the male members of society frustrated (as they struggle to rebuild houses, gain jobs etc.), which they vent on their female counterparts. On inquiry, one of the women showed her legs, which were scarred from beating. She said:

> *My husband beat me earlier also but now he beats me more because there is nothing to feed the children. I ask him to bring food and he starts beating me.*

Another woman even justified the beatings by saying:

> *There is no job for them. They go daily and come back without earning anything. When they are frustrated, what will they do except to beat us?*

Majority of the semi-literate participants of focus groups were justifying beating by their male family members. This finding is similar to a study conducted by Kishore and Subaiya in 2008. According to them, Demographic and Health Surveys date collected on attitude about intimate partner violence from more than 50 countries reveal that large percentage of men and women in many countries reports that wife beating is justified in various situations. This shows that these women consider beating the norm. One of the reasons of accepting beating as a norm is lack of awareness about women rights. Pakistani rural women are not aware of their rights due to low literacy rate, whereas the literate women are more aware of their rights. This finding supports that of other studies, which show women's increased insecurity in disasters in other parts of the world such as the Murray-Darling Basin areas of Australia (Alston, Whittenbury, & Haynes, 2010), in the Pacific (Alston & Vize, 2010), and Bangladesh (Alston, 2014; Alston et al., 2011). Females are further victimized when their male counterparts have not been counseled, especially in conditions

which breed stress such as in times of disaster and natural hazard. Evidence provided by various studies (Alston, 2012b; Alston & Kent, 2008) indicate that men's mental health may suffer during prolonged periods of drought. Men feel unable to bring the situation under control; as a result, they resort to violence against women. Therefore, violence against women, especially sexual violence, increases in periods of unrest or difficult situations. This indicates a direct relationship between climatic change, disasters and vulnerability (Hannan, 2002).

As shown in Figure 4.1, harassment of women was scored at 17.3% and 16% with literate and semi-literate women respectively, indicating not much of a difference between the two groups. A reason for this could be that women, whether literate or semi-literate, are harassed to some extent in their everyday life, irrespective of climate change and natural hazards. Though these numbers may seem insignificant, when they are placed against the backdrop of aggression against women, a dire situation is revealed, which is worsened by the impunity enjoyed by the aggressors. Such harassment occurs even without disasters and disasters only serve to exacerbate the situation. One of the focus group participants from University of Karachi said:

> *Female harassment increases due to disasters, as those women whose male [family] members have been affected are left alone and vulnerable; consequently, there are more incidents of sexual and physical harassment. The main reason for the increase in sexual harassment is that when the male members of the family are either dead or displaced from their female relations due to floods and so on, the female members are left alone and vulnerable.*

The history of disasters in Pakistan includes many examples where harassment of women increased during disasters. For example, many media reports after the earthquakes that took place in the northern areas of Pakistan in 2005 mentioned that there were numerous incidents in which women were left alone due to the male members of the family dying and were forced into prostitution or hard menial labor.

Natural hazards and disasters can result in the death of men, thus leaving their women defenseless against sexual abuse or rape. One of the findings worth mentioning regards rape cases. 13.9% of the literate urban women said that there are rapes during natural hazards. They made this point with relative ease, as they were living in urban houses and were not affectees of natural hazards, so it was easy for them to describe rape being done to others. However, rural affected women simply denied it and only a few women agreed that there were rape cases during the floods. Focus group participants refuted questions pertaining to rape or sexual assaults right away, as the culture dictates that such instances are not be discussed. One of the participants from Khyber Pakhtunkhwa simply rejected the premise, saying:

There was no sexual harassment during the flood.

There are many studies that show the incidents of sexual harassment increase during disasters, but when the focus group participants of the present study were asked directly about sexual harassment, they were reluctant to share any information. Women may be sexually harassed, but they do not like to report it. Contrary to this, many studies found that women who had to travel long distances to collect water as well as those who had to seek privacy due to lack of latrine access were subjected to rape and violent attack by men (Reddy & Snehalatha, 2011; Tandon, 2007a). During disasters, such everyday facilities become more difficult to access. In the aftermath of the Haiti earthquake, *The Independent*

newspaper similarly reported occurrence of rape and sexual abuse of women and girls (Nguyen, 2010).

It was revealed that many of the affectees did feel insecure after disasters and one can read between the lines when one of the participants who were living in a makeshift tent said:

> *I have five children, two boys and three girls. The boys are living with me here in camp but I have to send my daughters to my brother's house, as it is not safe for them to live here with others.*

Another woman who was living in one of the relief camp tents was reduced to tears as she remarked:

> *I have sent my daughters away to live with relatives whose homes are safe from floods. I am always worried about them and have some opportunity to talk to them by borrowing someone's mobile phone for a while.*

As can be seen from the comment above, the women have to sacrifice even the sanctity of the familial bond for the sake of safety. Another point to note is that the women mentioned sending their daughters away and not their sons, which highlights the vulnerability of the females in such situations. Boys are not considered vulnerable, whereas daughters are. One of the focus group participants from Baluchistan who was living in the tents along the Superhighway road of Karachi[10] said:

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[10] One of the biggest metropolitan city of Pakistan

I was not feeling safe in my house from feudal lords and from their workers. The workers of Vedhara[11] harass us and we can do nothing, as we are poor. Here I feel safe.

This could be the case, as landlords and feudal lords consider the people living on their land or working for them as their personal serfs who are little better than animals. They can do whatever they want with the poor women.

This is an important point from two perspectives. The first is that since women are more vulnerable during natural hazards but may not want to acknowledge it, subtle approaches need to be adopted to educate them on how to protect themselves during such incidents. The other conclusion that can be drawn is that women express traumatic denial during such situations. They may not want to acknowledge that along with losing loved ones, livelihood, and financial stability in the wake of natural hazards, they will also have to cope with problems pertaining to protecting themselves against potential attacks. Another extenuating factor is that due to the associated social stigma, very few women will admit that they have been assaulted. Following the 2004 Indian Ocean tsunami, there were numerous media accounts of violence against women and sexual exploitation of girls (Enarson, Fothergill, & Peek, 2007). Therefore, the government and other authorities do understand the magnitude of the need to protect women from violence in times of disaster or natural hazards. Dr. Pervaiz Amir, a Harvard graduate, and one of the task force members who helped in the formulation of the first Pakistan's National Climate Change Policy suggested:

Females need to realize also how vulnerable they can actually be in such situations so that they can take such measures, which minimize their

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[11] *Vedhara* means feudlord

danger while assuring that they can confidently avert such situations. They

need to be taught how to tap their inner potential in order to become

productive and progressive members of society. They also need to be given

proper training on how to overcome adverse situations in the face of

disasters and climate change.

As per my cultural knowledge, due to the shame-induced silence around such attacks, majority of the women do not even share such sexual assaults or eve teasing to their family to avoid any further conflict in the time of disaster. They have awareness that such attacks can and do occur; therefore they, and possibly any helpful authorities, do see the need to equip women to protect themselves. There is a dire need to educate and empower rural women, so that they are prepared for the possibility that they may need to defend themselves from attacks.

4.4   Summary

The mistreatment and disempowerment of women is a tremendous economic cost to any society. Knowing that climate change impacts the globally connected world, we see that these costs become exponential. In some areas of Pakistan, the human right to freedom from physical and sexual violence is non-existent; in fact, many women and men accept abuse as the norm (Abramsky, 2014; World Health Organization 2009). This chapter has described how in times of disaster and natural hazards, women face additional vulnerability to physical and sexual abuse from their partners, as well as from unscrupulous aid workers who might take advantage of their lack of resources and defenseless situation.

This chapter has also highlighted the importance of recognizing gender as a vital consideration in climate change and natural hazards. It has demonstrated that a tremendous

resource which could lead to disaster mitigation, management, and rehabilitation is being squandered by omitting the voice of women from the climate change and disaster conversation. Women are not only coping with the vulnerability caused by climate change and disasters, but they also have a very clear perception about climate change, and the socio-economic and environmental impacts of climate change and natural hazards. The following chapter will discuss and emphasize the importance and relevance of women's perceptions in this regard.

Chapter 5 : Socio-economic and Environmental Impacts of Climate Change and Natural Hazards

5.1   Introduction

Pakistan is an agrarian society, so the potential for it to suffer adverse impacts from climate change and natural hazards is very great. Not only has climate change led to unpredictable flooding but it is also having a detrimental effect on rainfall and monsoon patterns. This is potentially devastating to food and crop production, which is the mainstay of the Pakistani economy. Since 2010 and 2011, Pakistan has witnessed a number of natural hazards. The magnitude of these disasters has meant that not only has the environment been severely affected, but so has the socio-economic milieu of the people at large. These unpredictable and extreme weather conditions have created a situation in which climate change and natural hazards cannot be overlooked.

As discussed in Chapter 4, women are being disproportionately affected by severe weather conditions and environmental changes such as extremely high temperatures and heat waves, which lead to droughts or conversely floods. They are faced with multifarious dilemmas ranging from inadequate water to health concerns. All of these adverse impacts from climate change have affected women either directly or indirectly because they are responsible for maintaining the routines of their household in the face of natural hazards and also because they are charged with ensuring the health of their children and other household members. As a result, they are very active in discussing climate change and natural hazards as well as their effects. An important part of climate change and DRR involves changes that need to take place at the grassroots level, since it is individuals, not policy makers, who are responsible for making the choice to use energy efficiently, utilize

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low carbon emission transportation, adopt preventative measures, and so on. Individuals need to think about the concept and be able to relate to and understand the terms; only then can behavioral change follow (Hughes, 2006). For change to be possible, it is important to start by understanding how individuals, – in this case women – perceive the concept of climate change and natural hazards.

People base their views of climate change on their own experience of their daily routines. This, in turn, affects the formulation of scientific modeling studies which deal with the perception and understanding of climate change on a regional level (Finucane, 2009; Krupnik & Jolly, 2002). Not only scientific models but also the modeling of locally specific analysis is based on the responses of specific individuals and communities (Reid & Vogel, 2006; Tschakert, 2007). If we look into the perception studies regarding environmental issues such as global warming and climate change, we find that surveys conducted during the 1970s show that the public was starting to pay attention to environmental issues on the global level (Dunlap, 1991). Interest in global warming was sparked during the early 1980s and this interest has rapidly grown over the years into a universal concern. However, as far as climate change is concerned, there is still a relative dearth of awareness. This may be connected to the fact that climate change has only recently become an issue of public discussion; consequently, a few surveys are now being conducted to better understand perceptions of this issue. With respect to South Asian countries, however, there is scant research regarding the public's perception about climate change. There is thus a need to focus on this area, as policymaking and data collection are contingent on ascertaining the public's perception about climate change. Before policies tailored to address this issue can be entrenched, scientists and policy makers need to be able to gauge the public's response,

as this indicates the effectiveness of as well as tolerance for the impact of particular measures.

The perception of Pakistani women regarding climate change is of significant value for policy makers throughout the South Asian region. In the data collected for this thesis, I looked at: firstly, women's perceptions of climate change and, secondly, how and to what extent they understand its impact. The research also seeks to address the socio-economic impacts of natural hazards. The data gathered shows that Pakistani women are aware of some of the issues relating to climate change and natural hazards as well as the protective measures they can employ to offset its impact. There is a paradigm shift from vulnerability to survivor status due to awareness and the protective role played by women on the domestic front. Nonetheless, women need to be made even more aware of the issues due to the rapidly changing topography and climatology of the Pakistani region.

This chapter presents information gathered in questionnaires, focus groups and expert interviews. It aims to analyze the women's responses in order to understand the breadth of their perceptions and their level of knowledge regarding the adverse effects under conditions of climate change and increasing natural hazards.

5.2   Perception of Women about Climate Change

This section discusses the question of how Pakistani women, both semi-literate and literate living in rural as well as urban areas, perceive climate change, in what ways and to what extent. The findings show that Pakistani women are indeed seeing changes in the climate of Pakistan, include changing weather patterns such as increased duration and degree of heat in the summer, warmer winter temperatures and an increase in the frequency of natural hazards. Importantly, the women surveyed have been experiencing climate

change not as a distant phenomenon but as a daily reality. From 2010 to 2013, moderate to severe flooding caused by intense rains affected various areas of Pakistan. This has led to intense debates about climate change on various platforms. Another very relevant aspect of climate change is the impact of warming. The winters, or relatively cooler months, have started heating up and the summer season, which was already hot, has increased in its intensity of sweltering heat. Additionally, the energy crisis in Pakistan, with power outages 12-20 hours per day, has increased the misery of the masses. During the data collection process, participants responded with alacrity to questions about climate change, as they had observed and experienced these environmental changes personally.

In the focus groups of literate as well as semi-literate women, the majority of the participants said that they had witnessed serious changes in climate, with most of them complaining about the intense heat and longer duration of the summers. One of the elderly participants from Punjab said:

I have not seen such intense heat (Gharmi) in my childhood. We used to live without fans, right under the trees. We enjoyed our sleep at night as the nights used to be cooler than they are now.

Another participant added:

Gradually there has been an increase in the temperature. It is hotter than it was in previous years.

It was not clear at the first point of inquiry, however, whether they perceived climate change as a phenomenon or were simply remarking upon what they perceived to be changing weather patterns. A climate change expert, Mr. Pervaiz Amir, noted in an interview:

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As far as the perception of people about climate change is concerned, people may not know clearly about climate change but they know about weather patterns change as they are experiencing it in their everyday life.

When asked whether women perceive climate change or only weather patterns, a government official from Ministry of Climate Change, Pakistan said with assurance:

Climate change is only a change of weather patterns for them.

However, our quantitative data reveals that the majority of the literate and semi-literate women was well aware of the phenomenon of climate change and was able to link it to certain contributing factors. This indicates a departure from the sparse information that policy makers have about women's knowledge of climate change.

It should also be kept in mind that the empirical data collected for this research project was tailored to the literacy rates of the participating subjects. It was revealed during the pretesting of the questionnaire that the semi-literate women have a very clear concept of pollution causing climate change, but they may not understand certain scientific terms and concepts such as the ozone hole, carbon emissions and the hazards of nuclear power. Therefore, in the questionnaire for semi-literate women, the term *carbon fuel emission* was replaced by "pollution", though scientifically carbon emission cannot be used interchangeably with pollution. Therefore, the parameters of the research terms were adjusted in order to target the subjects at hand.

5.3   Perception of Women about Factors Contributing to Climate Change

This section presents quantitative data regarding how Pakistani women perceive climate change and what connections they make to possible causes such as industry, deforestation, car use, energy production and use of farming chemicals. It also reveals

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aspects of their individual and collective experiences through qualitative data collection, which provides insights into their perceived impact of climate change and natural hazards.

Table 5-1 : Perception of Women about Factors Contributing to Climate Change

Factors Contributing to Climate Change	Literate Women's Perception (%)	Semi-literate Women's Perception (%)
Industry	45.6	21.3
Ozone hole	44.3	-
Carbon emissions	38.5	-
Pollution	-	19.1
Loss of rain forests	32.8	54.3
Use of chemicals in farming	22.4	12.8
Coal and oil power plants	22.1	9.6
Car use	19.5	43.6
Nuclear power plants	14.3	-
Not sure	1.3	8.5

n= 338

5.3.1 Industry.

With reference to the causes of climate change, there were stark differences amongst the literate and semiliterate respondents. They were presented with options listing possible causes of climate change and asked to choose as many as they believed were responsible. Table 5.1 reveals that 45.6% of the literate women and 21.3% of the semi-literate

respondents considered industry to be the primary cause of climate change. The semi-literate women did not know much about how industry works and the harmful chemicals emitted from factory production, even though quite a few of them worked in factories. This is because there are few awareness initiatives in the media or elsewhere with reference to how industry affects climate change. On the other hand, literate women linked climate change to industry to a greater degree. This discrepancy is likely to be explained by the role of formal education and literacy in providing opportunity for women to learn about the adverse effects of industry and effluent matter.

5.3.2 Deforestation.

According to the data, while nearly half of the literate women considered industry to play a major role in causing climate change, over half of the semi-literate women considered loss of rain forests to be the principle factor, while only a third of the literate respondents chose this option. A possible reason for this is that semi-literate women are involved in planting or obtaining produce from trees everyday so they are aware that the loss of trees affects the climate, whereas literate women would not have this experience. The annual rate of deforestation in Pakistan ranges from 4 to 6 percent (Saeed, 2013) and is caused in part by the rural people, who bring about desertification, i.e. cutting of trees, as a necessity, since they do not have any other heat source in winter. A semi-literate participant from Khyber Pakthun mentioned:

> *We have to use Diyyar wood in our region as heating fuel because there is*
>
> *no other option. We know that it is bad for the environment and this wood*
>
> *is very expensive but if we do not burn it, we will freeze in the winter.*

It shows that semi-literate women cut down the trees but at the same time are aware that it has environmental consequences. The literate women may have some awareness of the causal relationship between loss of rainforests and climate change because the media have propagated this for quite some time now. The government as well as public entities has been airing documentaries, news items, press releases by the Ministry of Forestry, etc. on local news channels. NGOs add to increasing public awareness by placing banners and distributing pamphlets. New media also propagates constant reminders and advertisements pertaining to forest loss and its environmental consequences. Even multinational corporations are involved, such as PepsiCo,[12] which recently ran an awareness campaign in Lahore[13] entitled "Go Green – Grow Green" that focused on planting trees in various parts of Lahore. Such campaigns not only emphasize the importance of trees but also highlight the fact that loss of trees can have adverse effects. Similarly, the city of Lahore's Waste Management department encourages green activities such as recycling and dustbin day, along with running public campaigns about tree planting and environmentally friendly waste management. Earth day and dengue day campaigns also create awareness among the masses about the causes of climate change and how they can help save the earth through their individual choices.

Such intensive public education campaigns also explain why a third of the literate women ticked deforestation as a contributing factor to climate change. It is also the case that literate people living in urban areas enjoy the scant greenery offered to them in open areas such as that surrounding the Lahore canal, so they are willing to take certain steps to prevent and minimize deforestation. A research participant from Punjab University commented:

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[12] PepsiCo (Parent company of Pepsi, Frito-Lay and Tropicana)

[13] One of the biggest city of Pakistan in the province of Punjab

When the canal road (in Lahore, Punjab) was being built and government was cutting the trees around the canal, there was a big protest. Deforestation had been causing dust storms; on the other hand, there was also a campaign based on planting trees.

As can be seen from the comment above, people are not only aware of the importance of trees but are ready to actively participate in anti-deforestation activities. They have a very clear understanding that deforestation causes dust storms and pollution.

5.3.3   Car use.

Another important finding regarding the perception of climate change causes is the use of cars. 43.6% of the semi-literate respondents considered car use as the second most important factor contributing to climate change. Although the respondents were semi-literate women who probably do not know about carbon fuel emissions, they did realize that cars affect the environment. The effect of cars is visual as, for anyone travelling by road, the emissions from cars can be seen in the form of smoke coming out of the exhaust pipe. Compared with nearly half of the semi-literate respondents, barely one-fifth of the literate women attributed climate change to car use. A reason for this could be that most urban literate women own cars themselves. As such, they are not willing to delve into the negative impacts of personally owned cars, whereas semi-literate women, who do not own cars, are quicker to acknowledge the relationship between car use and climate change.

5.3.4   Use of chemicals in farming.

Another notable finding is that only 12.8% of the semi-literate respondents linked climate change to the use of chemicals in farming. Since many of the semi-literate women live in rural farming areas, one might think they would be more aware of how fertilizer and

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related chemicals affect the earth. However, they did not know about or perhaps want to acknowledge the harmful effects of fertilizers. The global chemical corporations that make and sell fertilizers most likely play a role in hindering the dissemination of information regarding the negative effects of use of chemicals in farming. It is not in their interest for farmers in developing countries to be concerned about using such products in their farming practices, so there are unlikely to be any awareness programs relating to this issue. There were only a few semiliterate women who could make the link between fertilizers and climate change. On the other hand, 22.4% of their literate urban counterparts, who do not come into contact with farming chemicals, realize that such chemicals negatively affect the environment, pointing once again to the role of education and literacy in increasing awareness. One of the semi-literate focus group participants from Punjab said:

> *Our health is affected by eating the food that is chemically sprayed and grown by using fertilizers. But how it can affect the climate, I cannot understand.*

This lack of awareness could be attributed to the same cause as mentioned above, namely that there are fewer awareness-raising programs about how farming chemicals affect climate change. Chemical pollution has direct adverse effects on ecosystems, which results in a threat to biodiversity. Fertilizers emit nitrogen compounds into rivers, which can cause eutrophication of seawater, both coastal and surface. If the problem is not solved it further causes a state of complete oxygen depletion (anoxia) which in turn causes fish deaths and ruins the balance og the ecosystem. Chemical fertilizers also cause salinization, which leads to degradation of the land, thus decreasing the potential of agricultural production. Chemicals can also affect wildlife adversely. It is significant to mention here that the rural class needs to be given information about the harmful nature of farming chemicals that they

come into contact with on a daily basis, at least as far as their effects on the climate are concerned.

The majority of the semi-literate focus group participants living in rural areas were aware of the reasons for the use of chemicals. One of the participants from Sindh said:

We know the use of chemical is dangerous but we need to save our crops by spraying chemicals.

Another woman added:

These are poisons but we need a larger crop, in less time, and we use fertilizers to do this.

Rural inhabitants know about the effects of chemicals on health, but financial concerns often take precedence. Given their use of fertilizers, farmers would be the ones best able to mitigate the harmful effects of such chemicals if they received proper education and training. Managing the risks of chemicals is interconnected with many other issues, including wastes and pollution, global warming, resource depletion, agriculture, biotechnology, loss of biodiversity, poverty and women's rights. It is pertinent to mention that curricula in Pakistani schools do provide education about pollution and its causes, especially those related to deforestation. However, the detrimental effects of fertilizers and other chemicals are not addressed properly. Academic institutions, rarely, if ever pay attention to the security and safety of the chemical industry. Both students and teachers tend to disregard the ongoing environmental condition. This can be overcome by including life issues pertaining to the use of chemicals in the curriculum of universities (Jaspal & Haider, 2014).

Pakistani farmers may be aware of the fact that using chemicals to increase production is harmful for their health and even the environment (Savci, 2012), but they are not aware of or trained about the alternatives, such as organic farming. That being said, Pakistani farmers used to grow crops without great reliance on fertilizers and pesticides in the past. Therefore, the farmers would not have to learn a new skill but would rather rethink and adapt their old techniques. Some women in the semi-literate focus groups were aware of this, such as the participant from Charsadda, Peshawar who said:

> *Our ancestors had better health and longer lives, as they were not eating the poisonous food that is grown with the help of chemicals. The food was good and they had healthy lives.*

She further explained vey proudly:

> *My grandmother never got sick in her life of 100 years. They never used chemicals on their crops and had a healthy life and longer lifetime.*

Organic farming methods could be reintroduced with the proper training and a focus on marketing, so that it would be an appealing choice for the farmers. Currently, non-organic farming appears more lucrative to the farmers because a greater amount of money is amassed in a shorter timeframe. There is a need to train farmers to understand the detrimental impact of nonorganic farming and the beneficial effects of organic farming. It may also be useful to compare the financial benefits of organic farming with non-organic farming. In spite of the appearance that using chemicals is more lucrative, it may lead to lower returns in the longer term, not to mention the cost of the chemicals compared to the return.

5.3.5   Use of coal-burning and nuclear power plants.

Table 5.1 shows that 9.6% of the semi-literate respondents considered coal and power plants to be linked to climate change as against 22.1% of the literate respondents. The main reason for this difference could be that semi-literate women do not know about the existence of coal and oil power plants as a source of energy generation, let alone how they affect the environment. Interestingly, the proportion of literate respondents who considered such plants to cause climate change is nearly equal to the proportion of those who listed fertilizers as a factor. A reason for this could be that the literate women were more aware of the fact that electricity is generated by the use of coal-burning power plants. In spite of being aware of the existence of nuclear power plants, not many of the literate women linked these to climate change, suggesting that they are not aware of how nuclear power generation affects the environment. Many people have heard of the destruction caused when such plants malfunction; they are aware of incidents such as that which occurred in Chernobyl, Russia, resulting in leaked radiation that caused deformities and diseases in the people. However, there seems to be little information provided regarding the environmental impacts.

The results of the present study concur with data collected by Bord, Fisher, and O'Connor (1998), who studied the perceptions of people regarding global warming. They focused on areas such as industry, depletion of the ozone layer, destruction of tropical forests and the impacts of individual car use. They found that these factors were the most commonly perceived causes of climate change. Other areas such as ozone depletion, chemical usage and generation of nuclear products were perceived to have the least effect as contributing factors to global warming. In our study, the literate women prioritized ozone

depletion as the second most important contributing factor, followed by carbon emission as the third.

5.4   Human Contributors to Climate Change

There are many studies that indicate humans play a role in triggering climate change; this is called anthropogenic climate change. Industrialization and modernization are considered to be the main causes of anthropogenic climate change. People's attitudes towards the environment, as demonstrated in their everyday life choices, also play a role in climate change. In order to explore the anthropogenic viewpoint, literate and semi-literate women were asked about who they perceived to be responsible for climate change, with the options divided between "rich" and "poor" countries (as code for more versus less industrialized nations), as well as "others" and "myself" . The results are shown in Figure 5.1:

Human Contributors to Climate Change
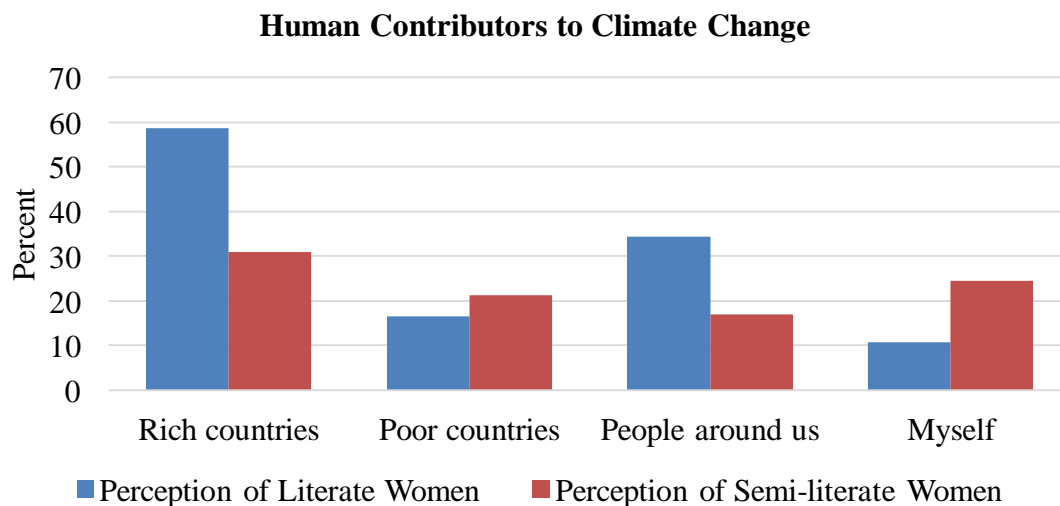
Figure 5-1 : Bar graph of human contributors to climate change

Figure 5.1 confirms that most educated people in Pakistan are aware of the role of developed countries in ozone depletion and environmental change due to industrialization.

Since third-world countries are not fully industrialized, they have not been and are not contributing greatly to the depletion of the ozone layer. Both literate and semi-literate respondents considered developed countries to be the main contributors towards climate change. This suggests that even though the semi-literate women may not have scientific or political knowledge, they are still conscious of the concept that developed nations are causing climate change. A small percentage of both sets of respondents attributed climate change to poor countries. Well over half of the literate respondents considered rich countries to be the main cause of climate change. Jan Muhammad, a journalist from Sindh, commented:

> *Developed countries have exploited the ozone for a long time. On the other hand, third world countries are not properly industrialized; thus, they are not depleting the ozone at such a high level. Thus, developed countries are responsible for such after-effects and should be the ones to cope with their increased carbon fuel emissions and the side effect.*

There is a clear indication here of placing blame on particular nation-states instead of on individual choices and actions. However, when asked about the human contribution to climate change at an individual level, the data given in Figure 5.1 shows that there is an 18% difference between literate and semi-literate women equating climate with the actions of other countries. Literate women are more aware of the climate change factors that can be attributed to nation-states, but on the individual level they equate climate change with the actions of other countries rather than their own. A plausible explanation for this could be that literate women are more aware of how developed countries are contributing to pollution via carbon fuel combustion and other such activities. Semi-literate women are not aware of such phenomena.

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Conversely, 5% more of the semi-literate women equated climate change with the actions of poor countries than did the literate women. This suggests that semi-literate people accept the responsibility of their nation-state for climate change and link it with their own individual actions. This suggests a blatant difference in the thought processes of the literate and semi-literate people. Semi-literate people may have a narrower awareness of climate change factors, but they also own up to their responsibility amongst these factors. Figure 5.1 shows that 14% more of the semi-literate women accepted personal responsibility for climate change compared to the literate women, of whom only 11% considered themselves contributors to climate change, whilst 25% of the semi-literate women perceived their actions as contributing to climate change. It seems that the literate people are less willing to consider their role when it comes to climate change. It is very important to analyze this attitude in order to change behaviors and bring about greater awareness of environment-related issues. Since the elite and middle class use the greatest amount of energy in Pakistan, there is a need to inculcate a sense of responsibility among these people. Issues can only be overcome if there is a sense of responsibility and realization.

5.5   Environmental and Social Impacts

Even though climate change is only one dimension of the global processes that are involved in the future of food security, the adverse impacts of climate change on agro-ecological potential, water resources and health will certainly fuel resource conflicts and international food crises. These changes may have more profoundly negative effects on vulnerable people and places than the direct consequences of climate change on household resources and production (Bohle, Downing, & Watts, 1994). Having considered perceptions of the general causes of climate change, it is important to note which specific impacts on the environment women equate with climate change. In order to ascertain this, the literate and

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semi-literate respondents were given seven different geothermal occurrences, which they were asked to associate with climate change: increase and decrease in environmental temperature, floods, water shortages and droughts, heat waves and rising sea levels. The aim of this section is to understand if or to what extent the women perceive the geothermal events as being direct impacts of climate change.

Perception of Women about Environmental Impact of Climate Change
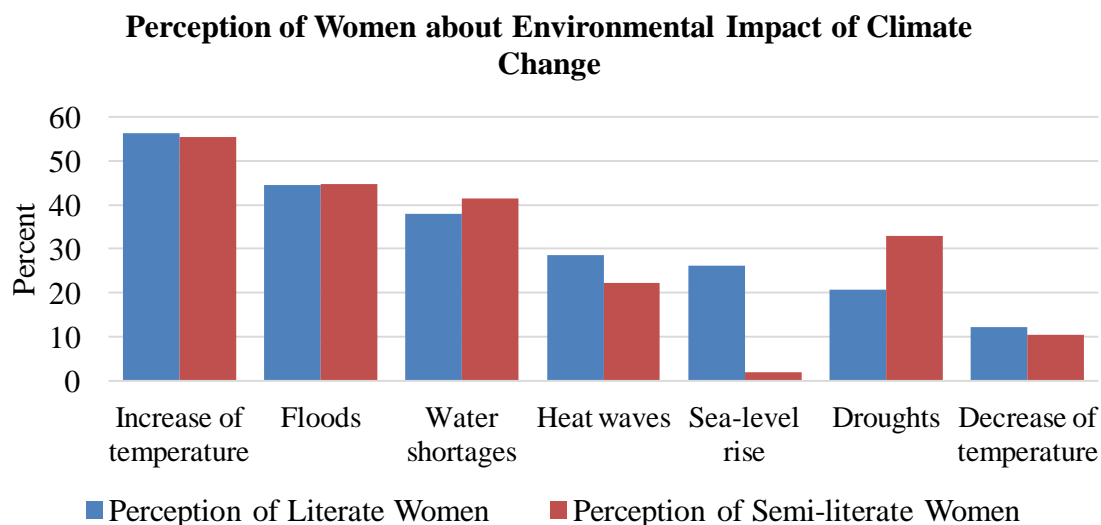
Figure 5-2 : Perception of Women about the Environmental Impact of Climate Change

The data shows that generally both literate and semi-literate women were aware that climate change results in a variance of geothermal events from the norm. The data also demonstrates that these phenomena affect the population as a whole, irrespective of literacy level or rural or urban location.

5.5.1 Increase of temperature.

Pakistan has been experiencing extremely high temperatures over the last few years. On 26 May 2010, Mohenjo-Daro Sindh recorded a daytime temperature of 53.5 ℃ (128.3 ℉). Not only was this an aberrantly high temperature for this area of Pakistan, but it was also the highest temperature ever recorded on the Asian continent, and fourth highest

temperature ever recorded worldwide (Masters, 2010). This exponential increase in temperature is not only limited to the province of Sindh. One of the experts remarked:

> *20 cities of Pakistan broke temperature records in very recent years. There has been a temperature rise and Pakistan has experienced an above-average temperature rise in recent years.*

5.5.2 Flash floods.

Connected to the increasing temperature is the melting of glaciers and subsequent flooding in the northwestern part of the country, Secretary of Climate Change Mr Javed Malik, recounted in his interview about the formation of Attabad Lake:

> *On 4th July 2010, Attabad landslide blocked the Hunza Valley, generating a lake. It is a clear indication of climate change and Pakistan is one of the most vulnerable countries in the world because of climate change. Individual farmers lost their agriculture and means of livelihood. Their houses went underwater in the 28 km long lake.*

Floods have been occurring more frequently in Pakistan over the past number of years; consequently, many people perceive that climate change is causing floods. Since the floods have largely affected rural areas as compared to urban areas, this may explain why 33% of semi-literate women considered floods to be a by-product of climate change, as they have experienced it directly. One of the participants from Punjab claimed:

> *Now we have floods every year rather than a couple years. There is more flooding than there was before.*

It is likely that the reason that only 20.7% of literate women connect floods with climate change is that they have not personally experienced them. They may have only heard about

them in the media or from relatives. While extreme floods as a side effect of global climate change affect many parts of the country, other parts face an acute shortage of water during most months.

5.5.3 Water shortages and drought.

Modeling of future water availability predicts that wet regions will become wetter and dry regions will become drier, leading to an increased likelihood of seasonal droughts and floods in regions where such vulnerability is already high (Kumar, Lawrence, Dirmeyer, & Sheffield, 2014; Min, Zhang, Zwiers, & Hegerl, 2011). Changes in the rainfall patterns in Pakistan have caused both excesses of water and shortages of water. A climate change expert said:

> *The country has excess of water due to flooding and at other points in time*
> *we face shortage of water due to drought. We are expecting 40% reduction*
> *in water in the coming years. Due to climate change, Pakistan is losing its*
> *food basket. Climate change is having a severe impact on the health of*
> *people.*

Another expert interviewee shared the same concerns:

> *Climate change has brought severe drought in some areas of Pakistan and*
> *has had impact on agricultural productivity.*

The perception that climate change is affecting water flows is prevalent not only in Pakistan but also in other South Asian countries. There is a decrease in winter, pre-monsoon and post-monsoon rainfall in Nepal, as supported by meteorological data (Gentle & Maraseni, 2012a). It has been noted for example, that in Nepal drinking water levels in springs and wells are decreasing. The drought followed by limited winter rain/snowfall has diminished

the forests and also impacted the availability of grazing plants to feed livestock (Gentle & Maraseni, 2012a). Water shortages are affecting the livestock as well as the farming industries in Pakistan too. Without water to irrigate, farmland is gradually losing its productivity, resulting in less food for humans as well as animals. There are many media reports about the scarcity of water in Pakistan. Arshad Khan, an officer at the Punjab irrigation department, stated in the media:

> *The water flow in the rivers is approximately 35% below what it should be*
>
> *for this time of the year and this shortage may rise to as high as 45% in the*
>
> *coming months just as the sowing season start. (Rana, June 6, 2012)*

Figure 5.2 shows a variation in the responses between literate and semi-literate women with respect to water shortages and droughts. One third of the semi-literate women linked climate change to droughts as opposed to one fifth of the literate women. One of the participants in the Baluchistan area said:

> *Because of water shortage, we have to go very far in order to get water to*
>
> *drink, wash clothes and other necessary uses.*

Rural women have to travel further to get access to water and are spending more time and energy in the collection of water. Besides this, women face hostility from family and neighbors due to limited water. They have less time for household duties or for participation in activities outside of the home (Angula, 2010; Tandon, 2007a). This suggests that the illiterate and poorer women of society are affected to a greater extent by the droughts and water shortages

5.5.4 Heat waves.

The number of urban literate women who attributed heat waves to climate change was greater than those of rural semi-literate women. A cause for this could be that semi-literate women live in abject poverty; consequently, they have fewer resources to cope with heat waves, but at the same time they have become used to such phenomena and have adapted themselves to living without cooling appliances or even electricity. Most of the urban literate women have resources to minimize the effect of heat as they have access to air conditioners and other ambient cooling devices. Thus, they are not conditioned to endure heat and notice heat waves more. Similarly, the more literate women attributed a decrease in temperature to climate change; a reason for this again is that rural semi-literate people are more hardened to temperature changes than their urban literate counterparts. As a semi-literate participant from Punjab remarked:

> *Whether we have an increase in temperature or not does not really matter because there is a great number of power cuts in our area. It has gotten hotter now but we are used to this heat. We have to work in the fields under scorching heat.*

With regard to impact of climate change on decreases in temperature, only 12.3% of the literate and 10.6% of the semi-literate women made this connection. It is important to note, however, that more literate and semi-literate women highlighted the relationship between climate change and increases in temperature than climate change and decreases in temperature. This could be due to the fact that an increase in temperature is more uncomfortable, but also that climate change is connected in people's consciousness with processes of (global) warming.

5.5.5 Rising sea levels.

The rise of the sea level and glacier melting are serious concerns for all Pakistani people. According to the International Centre for Integrated Mountain Development (ICIMOD), there are potentially 52 vulnerable glacier sites in Pakistan and smaller valley glaciers are retreating by up to 30 to 60 meters each decade. Pakistan is also in the Himalaya-Hindu-Kush region, where people are affected by glacier melting: "Climate change-related melting of glaciers could seriously affect half a billion people in the Himalaya-Hindu-Kush region and a quarter of a billion people in China who depend on glacial melt for their water supplies" (Intergovernmental Panel on Climate Change, 10.4.2.1). An expert also remarked:

> *The coastal cities of Pakistan like Thatta and Badin may not exist in the near future due to sea rise as a result of climate change. Similarly, our glaciers are melting very rapidly. 60 % of total water resources come from these glaciers.*

Our research shows that 26.1% of literate women are aware of the relationship between climate change and rising sea levels. By contrast, only 2.1% of the semi-literate rural women were aware that rising sea levels can be a result of climate change. This may be because these rural women live away from the sea so they are not able to observe sea level rises. No one (except perhaps for residents of small islands) can "observe" a rise in sea level, even though one to two inches is enough to have very drastic effects on the environment and human habitation. Literate women have exposure to various media and means of communication in order to gather information about the sea level rise and its connection to climate change. This also explains why literate women are more aware of glaciers and how their melting leads to rising sea levels. The glacier melting is also an

unobservable phenomenon (one cannot exactly see large blocks of ice melt), so- as opposed to flooding and temperature increases – both rising sea levels and melting glaciers are not phenomena that can be tracked through direct experience. Scientific data, and its dissemination through the media, are required to understand these occurrences. It is possible that the semi-literate women do not even know what glaciers are, not to mention how they might affect sea levels. These women are living in areas where they experience flooding due to increased water flow in their local rivers, but they may not understand that this is caused by melting glaciers.

5.6   Socio-Economic Impacts

Women are observing and experiencing the effects of climate change on their external environment through various geothermal events, but at the same time they are also facing the socio-economic impacts of climate in their day-to-day lives at home. It is very important to look at the socio-economic impacts in order to ascertain how much women are affected by such situations, particularly because such impacts on women tend to be overlooked. Women's socio-economic roles are usually taken for granted even in situations of extreme difficulty and disaster, in spite of the fact that they have to not only address the consequences of flooding but also ensure adequate sanitary conditions and nutritional support for their families. Another egregious problem that they face is related to their own nutrition. Women sacrifice their own health for their household members in the face of floods and other climate change-related incidents. This has ensured that they are most acutely aware of the impacts of climatic changes.

The following section firstly presents data about Pakistani women's perception of the socio-economic impacts of climate change in Figure 5.3, and secondly explores the

nuances of the data for each indicator, supported by the qualitative information gathered in focus groups and expert interviews. The women were given a choice of nine impact indicators, including health problems, death, unemployment, loss of livestock (animals), food shortage, forced migration, damage to local and national economy, and an increase in terrorism, and asked to relate them to their experiences of climate change.

Perception of Women about Socio-economic Impacts of Climate Change
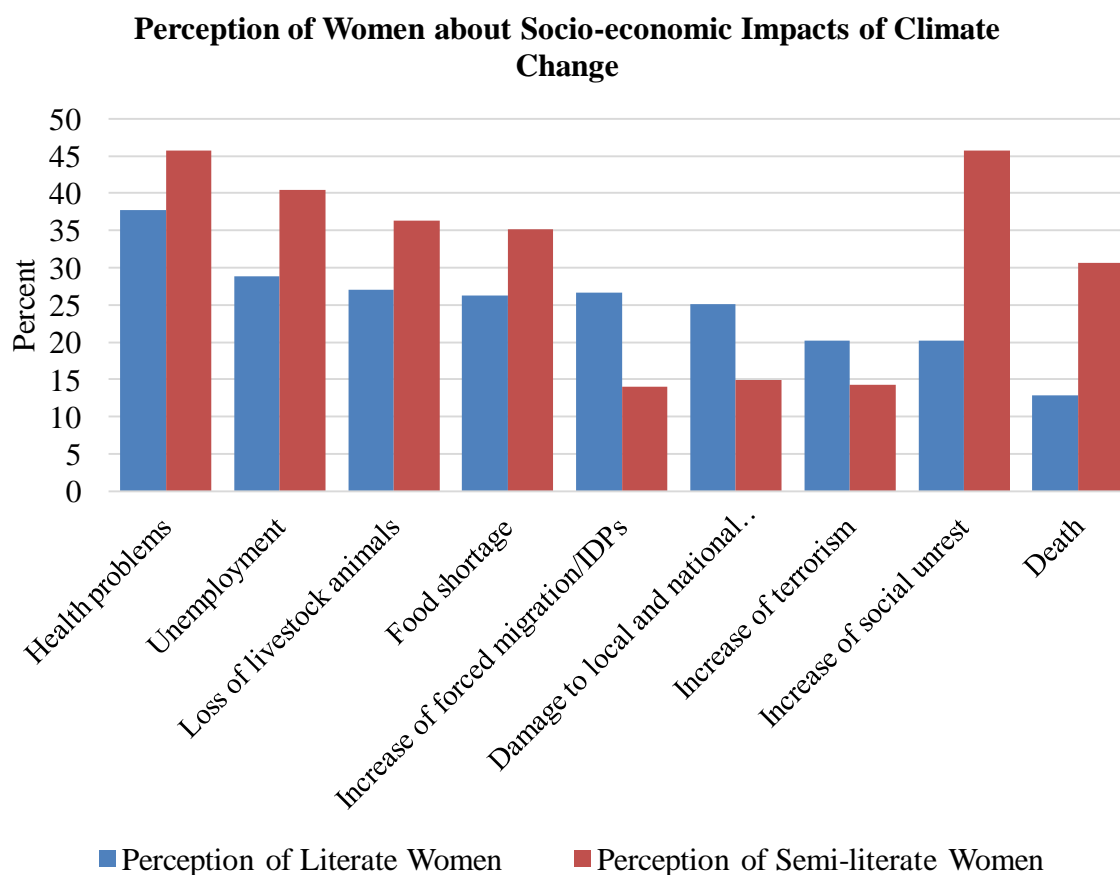
Figure 5-3 : Perception of women about socio-economic impacts of climate change

5.6.1 Health problems and death.

Figure 5.3 indicates that both literate and semi-literate respondents considered health problems to be the most important effect of climate change. This means that respondents are easily able to link health with climate change. The basic reason for this is that disease

strikes people from all categories, whether literate, semi-literate, well-off or poor. An example of this is the recent outbreak of dengue fever in Pakistan. The data for this study was collected during an epidemic of deadly dengue fever. So, whether I talked to either literate or semi-literate women or interviewed the experts, everyone was concerned about dengue fever. One of the semi-literate women from Punjab mentioned:

> *We were experiencing mosquito bites every summer and sometimes our children had malaria due to mosquitoes, but we were not frightened. Now we fear for our lives because of the dengue fever caused by mosquitoes due to changes in weather. We cannot sleep properly due to fear as many people are dying because of the dengue fever.*

It seems that climate change might be one of the reasons in the increasing frequency of dengue outbreaks. The research indicates that higher environmental temperatures and excess ground water increase the reproduction rate of carrier insects and shorten the pathogenic incubation period in humans. One expert during interview remarked:

> *Recently, Punjab, one of the provinces of Pakistan is passing through an epidemic disease of dengue fever and mosquitoes cause this disease. The birth and propagation of these mosquitoes is due to extended high temperature.*

The Deputy Secretary at the Ministry of Climate Change Pakistan also recognized the connection:

> *Recently, Punjab is under a severe endemic dread of dengue fever. This epidemic has a link with climate change. Recently, the hot months have*

been prolonged and there was a wide spread of this disease by a mosquito

which flourishes in fresh water.

An increase in other waterborne diseases such as cholera and shellfish poisoning are also related to the geothermal effects of climate change (Altizer, Ostfeld, Johnson, Kutz, & Harvell, 2013).

Another hazardous impact of climate change is that the increase of ultraviolet radiation alters the human system in such a way that it becomes more vulnerable to contagious diseases. Vulnerability and loss of immunity are not the only by-product; malnutrition may also be a secondary outcome and contributing factor as climate change leads to loss of food crops (Patz, Epstein, Burke, & Balbus, 1996). Diseases exacerbated by climate change thus not only cause death, but also take a financial and social toll. One of the participants from Punjab shared her hardships:

I was working in the field on daily wages but last summer due to intense

heat, I fell ill and was not able to go to work. I had no money to go to the

doctor so this summer I did not go for work.

Another participant from Baluchistan said:

My husband had a heart attack last summer due to intense heat and now he

is not going to work. It is very hard for me to run the household. We are

dying because of this heat.

Another woman further added:

More people now have heart attacks due to this intense heat.

Therefore, it is not only the discomfort and environmental effects of the increase in temperature that is of concern but also how this leads to a variety of health and financial

problems. Although both literate and semi-literate respondents recognized the health impact of climate change, the literate women weighed it somewhat less heavily than the semi-literate women, at 37.5 % as against 45.7%. The higher percentage of the semi-literate women concerned about the impacts of climate change on their health may be because most rural areas have fewer health facilities and the poor semi-literate women may not have enough money to purchase food, let alone to pay for a medical consultation. Poor health also impacts a person's ability to work and leads to unemployment, which is difficult to absorb for subsistence families. This will be discussed in the next section.

5.6.2   Unemployment.

Women are aware of the fact that unemployment is also an effect of climate change. 28.9% of the literate and 40.4% of the semi-literate respondents considered unemployment to be one of the possible outcomes. The 10% discrepancy can be explained by the fact that the semi-literate women had first-hand experience of unemployment in the wake of natural hazards caused by climate change. During the 2010 and the 2011 floods, a great deal of farming land was destroyed, thus causing widespread loss of livelihood. The same applies to those who do not own land, but work for daily wages on others' land. If there is no crop, then there is no work available for these poor people.

5.6.3   Damage to local and national economy.

Unemployment is part of larger patterns of damage to the economy. As one of the government officials commented on the relationship between the economy and climate change:

The economy is greatly affected by climate change as flooding and other

natural hazards wreak two types of economic destruction. On a

macrocosmic level, the infrastructure of towns and cities is destroyed. Therefore, the government has to spend money on rebuilding and cannot focus on generating or replacing jobs. On a microcosmic level, jobs are lost in local businesses due to the destruction of local factories. The owners themselves lose their livelihood along with the workers. Therefore, climate change affects both the literate and the semi-literate with respect to unemployment. When semi-literate people cannot find jobs in their own villages (as a result of the weakened infrastructure caused by flooding or other natural hazards) they migrate to larger cities, thus putting a strain on the infrastructure of these cities and affecting literate people who are living in urban areas indirectly.

Subsistence wage earners are more are more easily excluded from the workforce and therefore face additional risks to their livelihood. An additional burden from climate change falls on those already living in acute poverty in Pakistan, Nepal and other less developed countries. Gentle and Maraseni (2012b), in their study of remote and rural areas of Nepal, found that climate change is affecting the livelihood of the Nepalese, who as a result are facing resource degradation, food scarcity, lack of basic services and increased social inequalities. This situation is similar to that of rural Pakistan.

Whether from first-hand experience or study, women are able to understand how climate change affects the economy. While semi-literate women experience such effects most forcefully as unemployment, literate women are better able to appreciate the effects from a macro-economic perspective. Unsurprisingly, 25.1% of literate women as compared to 14.9% of semi-literate women considered climate change to affect the local and regional economy. This can be compared to the 40.4% of semi-literate women who considered

climate change to cause unemployment, which registers the same issues but on a micro-economic or personal level. This 40.4% indicates economic uncertainty arising from climate change to be the greatest concern for semi-literate women because unemployment is a very personal reality for them. Even in normal situations they often face unemployment, and when a climate-related disaster occurs, unemployment increases to a great extent.

5.6.4   Loss of livestock animals.

Subsistence agriculture and animal husbandry are the main sources of livelihood in the rural areas of Pakistan (Khurshid & Saboor, 2013). It is the responsibility of the women to look after the animals, so by rearing animals they have a sense of contributing something to the family income. They are thus empowered by their rearing of animals like cows, goats, sheep and chickens. That is why more semi-literate rural women (36.3%) registered loss of livestock animals as a serious outcome of climate change. Urban literate women were less concerned by this (27%). However, this percentage shows that literate women are also aware of how animal loss is detrimental to the country and its economy. Pakistan is an agricultural country that relies on not only its crops but also its livestock for income. Buffalo are considered to be the black gold of Pakistan due to their role in the national economy by producing milk, meat and draught power (Bilal, Suleman, & Raziq, 2006). As such, animal loss in the form of livestock greatly affects quite a number of people. As one of the participants from Baluchistan said:

> *Whether it is human beings or animals, this high temperature is intolerable*
>
> *for them and they are dying. This change in climate is affecting all of us.*

5.6.5 Food shortages.

As far as food shortages are concerned, the semi-literate respondents living in rural areas have direct knowledge of agriculture and per hectare production, and are thus able to observe the decreasing availability and increasing prices of food. 35.1% of these respondents noted food shortages as an impact of climate change, as opposed to 26.2% of the literate respondents. The urban literate women mostly belong to the middle class and are thus insulated from acute food shortages due to their purchasing power. Consequently, women from rural areas face food shortages more directly, whereas literate women may have read or heard about food shortages but do not actually face them to a large extent. However, when food prices for basic agricultural goods like fruit, vegetables and meat increase, this impacts on the literate women's everyday lives and leads them to the awareness that intense weather reduces agricultural productivity and causes economic strictures. One of the expert interviewees said:

Due to climate change, Pakistan is losing its agricultural production.

When was asked about the impact of climate change, another expert expressed the same concern:

Climate change has brought severe drought in some areas of Pakistan and

has impacted agricultural productivity.

According to Akter (2009), disasters caused by climate change expose populations to greater poverty by threatening their livelihoods both temporarily and permanently. Akhter also comments that the effects of these disasters, including food shortage, lead to the physical displacement of people through climate change migration.

5.6.6 Migration.

The literate respondents in our sample were female university students and faculty members who not only read newspaper reports but also observed the influx of people into the cities from rural areas. They were thus well aware of the relationship between climate change and displaced persons. The majority of the semi-literate women could not relate their forced migration to climate change directly, but related it instead to the loss of livelihood. Thus, only 14% of the semi-literate women as compared to 26.7% of the literate women considered the migration of people to be an outcome of climatic catastrophe. However, an increase of internally displaced people (IDPs) was acknowledged by both factions, even though more literate respondents attributed it to climate change than did the semi-literate respondents. It can be inferred that literate people have access to more sources of information than semi-literate people and are consequently more informed about what IDPs are and how climate change increases the number of IDPs. This occurs not only in Pakistan but in neighboring countries as well. For instance, a study conducted in Nepal revealed that there is an increasing tendency for Nepalese families to make a seasonal migration to India, with children and women accompanying the male members of the family to find work. The main cause of this is climate vulnerability in the rural agriculture-based society of Nepal (Gentle & Maraseni, 2012a). The other reason for the literate respondents' greater appreciation of migration may be that the influx or people from rural areas to cities is affecting the urban dwellers and increasing their fear of terrorism, as shown in Figure 5.4.

An important reason for the lower percentage of semi-literate woman who equate IDPs/forced migration, damage to local and national economy, and increase in unrest with climate change could be the social organization in rural areas. A rural village has an

integrated community atmosphere that can be considered almost cocoon-like. The women are closely protected, at times to the extent of being too protected. This perhaps causes them to be sheltered from awareness of events of national importance such as migration at a macro level. Another major reason is that many rural women are not literate enough to read the daily newspaper so they cannot access this information on their own. At the micro level, however, these women know that their crops have been spoiled by changing weather, leaving them in acute debt. This means that the male members of their family must move to the city to earn their livelihood. As one of the semi-literate women from rural Punjab said:

> *Due to intense heat, our whole crops spoiled and my husband is working in*
>
> *the nearby city to earn something to buy food for our children.*

There is little question that these women perceive that climate change causes loss of livestock animals, decreased agricultural production, unemployment as well as migration to urban areas and the migratory action of IDPs. Consequently, they have a strong sense that the economy is severely affected.

5.6.7   Increase of terrorism.

As far as an increase of terrorism due to climate change is concerned, 20.2% of the urban literate and 14.3% of the rural semiliterate women considered climate change to play a role in increasing terrorism. The reason for this could be that most of the literate respondents living in urban areas had experienced at least the threats of bomb blasts, which mostly occur in cities rather than villages. It is worth mentioning that when the same semi-literate rural women were asked about the increase of social unrest in relation to climate change, a large percentage of them (45.7%) considered climate change as one of the causes of increased social unrest. We can thus infer that these women have a clear perception of

the difference between terrorism and social unrest. In both cases, however, climate change increasingly undermines human security by reducing access to, and the quality of, natural resources that are important to sustain their livelihoods. In certain circumstances these direct and indirect impacts of climate change on human security may in turn increase the risk of violent conflict (Barnett & Adger, 2007).

5.7   Socio-Economic Impacts of Natural Hazards

Natural hazards are extraordinary environmental occurrences such as floods and droughts. The data in Figure 4.5 below was generated by asking the women to indicate which of the socio-economic impacts listed they felt resulted from natural hazards and disasters. Both the literate and semi-literate respondents are facing the aftermath of disasters and their personal experiences have made them consider the impacts of climate change and natural hazards. For example, many rural flood affectees are still living in makeshift tents. Those who have returned to their damaged houses are still facing psychological distress and physical hardships. Those living in urban areas, who were not directly affected by flooding, nonetheless feel the impact of the loss of valuable food crops through price hikes in food items. These factors have allowed the respondents to offer a clear perception of how floods and other natural hazards negatively impact the economy as well as the society.

Perception of Women about Socio-economic Impact of Natural Hazards

■ Perception of Literate Women ■ Perception of Semi-literate Women
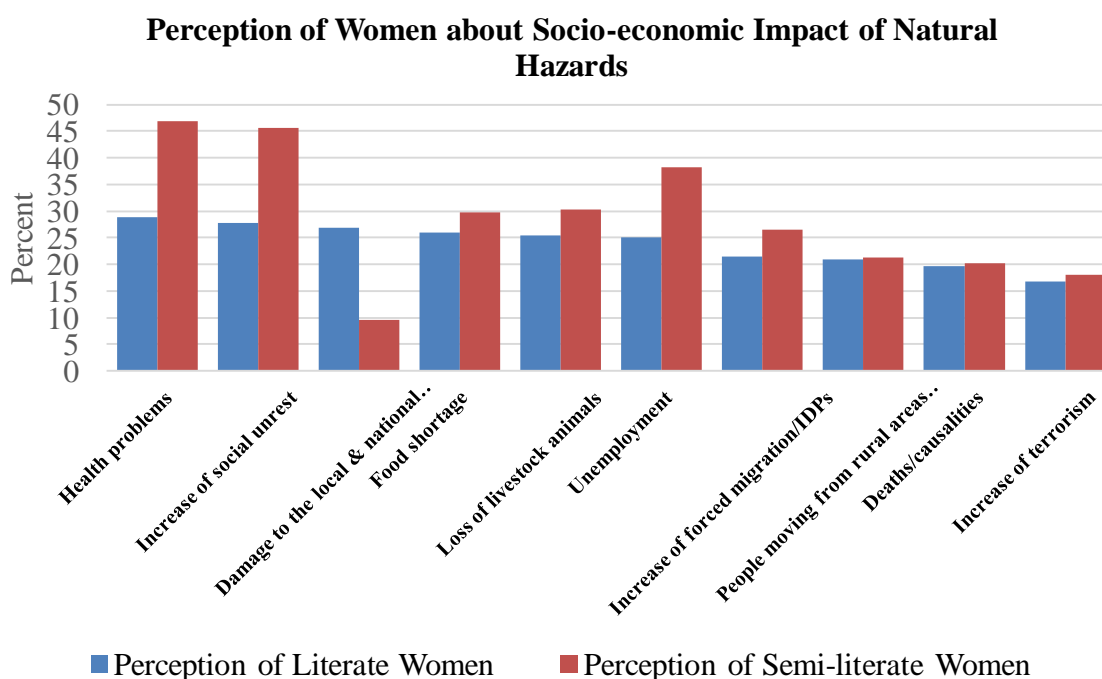
Figure 5-4 : Perception of women about socio-economic impact of natural hazards

This section discusses and explores the women's perception of the impacts of natural hazards on the socio-economic indicators of health, death, social unrest and terrorism, damage to local and national economy, unemployment, forced migration and movement from rural to urban areas, as well as food-related impacts such as loss of livestock animals and food shortages.

5.7.1 Impact of natural hazards on health problems and death rates.

Health problems, as already mentioned, affect everybody, whether they are literate or semiliterate; thus, it was ranked as the foremost impact of natural hazards. Most of the literate respondents had not directly experienced natural hazards, but the media has greatly helped in creating social awareness about their impacts in other regions. Most TV channels aired special segments and made appeals for medical and food aid for the disaster-hit areas in Pakistan during the 2010 and the 2011 floods. Additionally, a number of national and

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international NGOs presented appeals for food and medical supplies. There were also numerous reports in the media that showed the chaos, loss of life and unrest faced by the affectees of the disasters.

Health concerns present a major difficulty for women. A female senior program officer at Ministry of Climate Change stated:

> *I would like to share with you my practical experience as I personally visited the far-flung areas of Pakistan. In most of the areas, women had inadequate health facilities. I visited the areas where Attabad Lake was formed due to glacier melting; I found women's health facilities are a very big challenge as it is hard to get medical facilities because the newly developed lake has delinked the people from the hospitals.*

She also mentioned the health facilities in one of the most highly affected provinces of Pakistan during the flood in 2010, saying:

> *During the flood of 2010, Sindh was affected but the areas were not disconnected or disjointed as was the case in Attabad Lake and there is greater access to health facilities. However, they have other issues regarding the non–availability of medicine, shortage of staff etc. in hospitals and health care centers.*

Another participant added:

> *The flood has been over since many months, there is more than three feet of stagnant water in the area, and nothing has been done for its drainage. Our children are falling ill due to the stagnant water.*

The women living in flood-hit areas revealed that their concerns about health (46.8%) far outstripped the concerns of the literate women (28.8%).

5.7.2   Natural hazards creating social unrest and terrorism.

The top two issues of concern for the respondents, namely health problems and an increase in social unrest, are closely linked. Everyone is either directly or indirectly affected by social unrest. The number of women who noted social unrest as an outcome of natural hazards was 27.8% of the literate respondents and 45.7 % of the semi-literate respondents. The 20% gap between the two groups may be due to the fact that semi-literate women have been experiencing social unrest in the guise of farmer protests related to load shedding and power outages. Natural hazards also create social unrest due to the unavailability of food and the loss of life. Images of this unrest are broadcast by the media on a continuous basis.

When it comes to climate change, literate urban women perceive it to cause increased social unrest (see Figure 4.5), while 45.7% of the semi-literate rural women associated natural hazards directly with calamities such as flash floods, the results of which many have directly experienced. For example, many of the rural semi-literate women have been displaced from their homes and are living in unhygienic temporary housing without much available medical facilities. The affectees would like to go back to their houses and to settle back into their routine life, but they are unable to do so because of the wreckage of their homes. One of the participants living in makeshift tents in Karachi said:

> *We are not beggars. Stale food is being served to us here and our children*
> *are falling ill due to this food. I do not want to live here. I need only a tent*
> *and a month's rations or so and I will go back to my village. I know no one*

will come to help us there but I will be in my village. I will wait for the water to evaporate, as the government will not come to drain it.

Another woman living in makeshift tents added:

Floods pushed us to come here. We are the victims of a natural calamity. We have not come here for enjoyment. We are living in a hell and the government is regarding us as an unwanted responsibility.

Even though the above quotes indicate a high level of resentment towards the government, only 16.8% of the literate women and 18.1% if the semiliterate women connected increased terrorism with natural hazards. Terrorism itself is politically motivated and not many women, whether literate or semi-literate, know how terrorism is related to natural hazards.

All of the instances of social unrest are aggravated when there is an economic strain such as a natural hazard which causes turmoil in the economy and a scarcity of jobs. Semi-literate women have to face such instances on a daily basis because there are insufficient opportunities for men in rural areas to obtain jobs.

5.7.3   Natural hazards causing unemployment.

The literate and semi-literate respondents ranked unemployment differently: 38.3% of the semi-literate and 25.1% of the literate women noted it as an outcome of natural hazards. Again, personal experience matters, and natural hazards like floods affect the rural areas the most as these areas are directly hit, creating unemployment. The semi-literate women spoke openly about these effects in the focus groups. One of the participants from Baluchistan said: I lost my crop during the flood; that was my source of food and income for the coming year. I am worried about the coming year, as I cannot plant crops for the coming season, as there is stagnant water in the croplands.

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One of the participants, who was an affectee from the 2010 flood, added:

I had some saving and thought to plant my crop but all my dreams and hopes have been shattered. I needed money for everyday spending. Saving helped me to survive for a short period. It took a long time for the floodwater to recede and when land became available, I had no money to invest in planting crops.

Another participant said:

We have some agriculture land where we grow food for ourselves, for the whole year. Now we cannot grow anything there as even now, despite there being no floodwater, the land is in really bad shape for cultivation. Now my husband sells fruit in the nearby town and then we can buy some food for the family.

In sum, the flash floods ruined the crops, covered the land in stagnant water and made it un-cultivatable. This created unemployment and forced people to go to nearby cities for their livelihood. As a cause of this unemployment, people additionally suffer displacement and marginality. As a participant from Punjab succinctly remarked:

My farm is flooded now and we are out of work. This is a double tragedy for us.

5.8 Summary

From the data and discussion provided above, it can be easily said that majority of survey respondents and focus group participants are well aware of climate change, especially as a cause of rising temperatures. Not only do they know about climate change, but they are also able to establish a link between climate change and various

environmental/socio-economic impacts. This is a clear indication that women have significant knowledge about the causes and effects associated with climate change and natural hazards, as they have direct experience of many of these. Semi-literate rural women have a direct connection with forests and use of chemicals in farming, so they can play an effective role in the mitigation of climate change if they are properly educated. For instance, women can be trained to fortify their houses in such a way that they will not be severely affected by floods and excessive rain.

On the other hand, literate women, who are largely urban middle-class, have the means to acquire water during a drought or water shortage. Likewise, literate urban women are heavy consumers of industrial products and car use is a part of their daily life. They can help alleviate the negative impact of climate change by switching to public transport, budgeting energy use and minimizing their purchase of industrial goods. The media can be an effective tool in this regard. The use of media will be discussed and analyzed in the next chapter.

Chapter 6 : Media, Climate Change, and Natural Hazards

6.1   Introduction

When investigating perceptions of climate change and natural hazards, it is important to note how people obtain information – in other words, which sources of information they use, and how they navigate amongst the sources of information. This chapter will describe how Pakistani women obtain information about natural hazards and climate change from the media. It will additionally discuss their media usage patterns and their opinions on the trustworthiness and effectiveness of the Pakistani media in times of natural hazards and regarding climate change in general.

Media is used by people from all walks of life, whether literate or semi-literate. The main reason for this is that media provides not only information but also entertainment. Media usage, types of device and ownership/access varies to some extent by education and socio-economic level in Pakistan. In the present chapter, I will present and discuss the findings of our study regarding both media and non-media sources of information. I have included non-media sources as a point of reference to support the data provided about media usage. The focus of the present chapter is to gauge the usage, effectiveness and trust of various media sources regarding information about climate change and natural hazards. This in turn will help to determine how media, as a source of information, is playing a role in women's perception of climate change and natural hazards. Hence, this chapter addresses the question: To what extent do women trust the various media sources for information regarding climate change and natural hazards? The trust placed in a media source is directly linked to the effectiveness of that source as an educational tool regarding climate change and as an information source during times of natural hazards.

To provide a context for answering this question, the first section will present and discuss the data collected about the percentages of women who own/have access to media dissemination devices such as mobile phones, televisions, the Internet, newspapers, and radios.

6.2 Ownership of Media Dissemination Devices

It is important to look at ownership of/access to media dissemination devices so as to understand which of the owned/accessible media are used most often by women. This will in turn play a part in determining how trustworthy and thus effective these media sources are perceived to be by the literate urban and semi-literate rural women.

The ownership of various media dissemination devices among literate and semi-literate women is shown in the Table 6.1. Access to the Internet and newspapers was not part of the list of options for the semi-literate respondents because they are not viable media dissemination devices for this group. Firstly, the Internet is not available for the most part in remote rural areas. Secondly, these women lack the technical knowledge required to use the Internet even if it were available. Additionally, most women living in rural areas do not have a high enough literacy level to read information on the Internet or to peruse a newspaper.

Table 6-1 : Media Device Ownership among Literate and Semi-literate Women

Media	Ownership among literate women (%)	Ownership among semi-literate women (%)
Mobile phone	77.3	61.7
Television	64.7	64.9
Computer/Internet	64.7	-
Newspaper	50.8	-
Radio	42.7	45.7

n= 341

As Table 6.1 demonstrates, television is an information source which is owned/ accessible in almost equal proportion by both the literate and semi-literate women and in both urban and rural settings. This shows that television has entered into most Pakistani homes as a popular media source. The reason for this may be that there are no monthly charges for television or subscription fees in Pakistan. Additionally, television is a multipurpose source; it provides information and entertainment. It is a visual information source; thus, the visual element attracts a broader range of viewers. It has penetrated into both rural and urban areas among various socio-economic groups. Since television sets are expensive, they are normally considered a family device. Other than this, the data reveals that more women own or have access to a television than to a radio.

As with television, mobile phones are also becoming a popular commodity. In Pakistan, mobile phones are an emerging technology. According to the Pakistan

Telecommunication Authority, the nation's cellular mobile tele-density in 2013[14] was about 68.6%. The data compiled in Table 6.1 shows that mobile phone ownership among rural semi-literate women is slightly lower than that for urban literate women. As opposed to television, a mobile phone is considered affordable and thus the majority of urban literate women possess their own mobile phone. Our qualitative data reveals that amongst rural semi-literate women mobile phone ownership/access tends to be a familial concern rather than an individual one, as this focus group participant highlights:

Yes, I have a mobile phone, my husband's.

As not all of the rural population, especially the women, has mobile phones, they tend to regard their husband's/family's mobile phone as their own. Nevertheless, they are aware of the difference between individual and familial ownership. Some of the participants explained during the focus group that their husbands or male family members will sometimes buy a mobile phone for their exclusive personal use.

Likewise, the Internet is a quite recent phenomenon in Pakistan but its penetration has been quite rapid among the literate women; 68.7% of the sample had computer/Internet access. The newspaper industry has a history that stretches back to even before Pakistan became an independent nation-state; however, newspapers are used less frequently than the Internet among literate respondents. In summary, our data collection shows that the majority of the urban and rural populations have access to information from the media through television, radio, newspapers, Internet and mobile phone.

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[14]Data retrieved from the official website of Pakistan Telecommunication Authority (PTA)

6.3 Frequency of Media Usage

Better education about climate change and, importantly, crisis communication can be facilitated by using a range of available media and technological resources to spread critical information effectively during disasters (Murad, 2010). With this in mind, the literate and semi-literate women were asked about the frequency and extent of their engagement with various media:

- the time spent per week watching television

- the time spent each day watching television

- the time spent per week listening to the radio

- the time spent each day listening to the radio

6.3.1 Television viewing among literate and semi-literate women.

Literate and semi-literate women were asked how often they watched television during a week in an effort to gauge the frequency of television viewership among Pakistani women. The following figure presents a summary of their responses.

Television Viewing per Week among Literate and Semi-literate Women
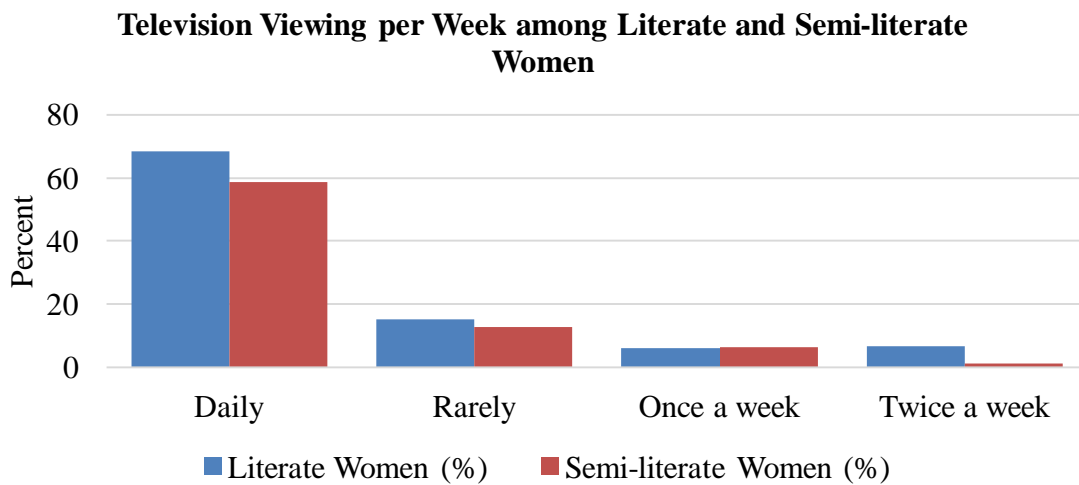
Figure 6-1 : Television viewing per week among literate and semi-literate women

The data collected shows that 68% of the literate and 58.5% of the semi-literate respondents watch television daily. Only 15.2% of the literate respondents and 12.8% of the semi-literate respondents indicated that they seldom watch television. These percentages are nearly equivalent to the number of women who own/have access to a television and points to the fact that most women who own or have access to a television, irrespective of literacy level, are prone to watch television on a daily basis. This may be due to the fact that television is an accessible and easy to use information source and often an entertaining one. Thus, it may be inferred that the behavioral aspects of watching television are the same regardless of literacy level.

Television is widely regarded as a learning resource (Chu & Schramm, 2004; Gee, 1990). Given that more than half of the respondents watch television on a daily basis, television can be a powerful tool for inculcating awareness about climate change and natural hazards. Television, undoubtedly, is a ubiquitous and influential medium for viewers in a country like Pakistan (Murthy & Longwell, 2012). Amongst those respondents

who watch television every day, further information was sought about the extent of their viewing:

Television Viewing per Day among Literate and Semi-literate Women
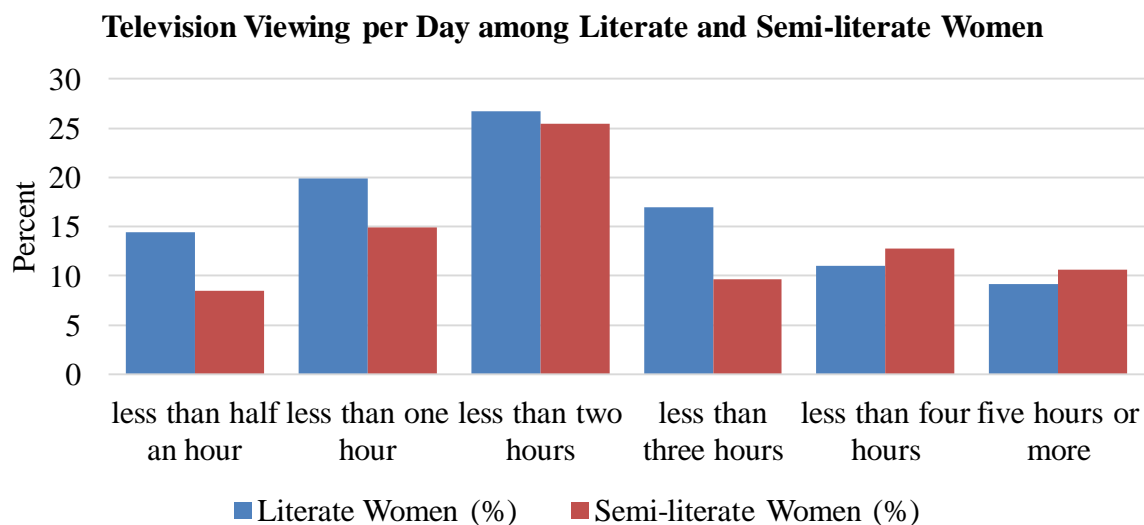
Figure 6-2 : Television viewing per day among literate and semi-literate women

The majority of the respondents view television for less than two hours a day (25.5% for semi-literate respondents and 26.7% for literate respondents). The nearly equal amount of time for both groups may be due to electricity shortages, which affect both rural and urban areas equally. When asked about time spent watching television, one of the semi-literate women said:

> *I watch television only a certain numbers of hours as there is no electricity available throughout the day for many hours so I keep watching the television when electricity comes and stop watching when there is no electricity.*

In focus group discussions, the majority of the semi-literate women said that they prefer to watch entertainment channels rather than news bulletins. On enquiring why they do not prefer to watch news bulletins, the majority agreed with the participant who said:

> *News always focuses on sensational things, causalities, fights, so we do not*
>
> *like to watch the news.*

One of the semi-literate women pointed out, however, that it was not possible to avoid the news:

> *But we have to watch the news as there is a competition among channels*
>
> *about breaking news and they show you the news during your*
>
> *entertainment programs of drama, music and other programs.*

Another woman added:

> *We have to watch news bulletins when our male family members are at*
>
> *home. When they are watching news we do not get any chance to watch our*
>
> *favorite programs.*

This demonstrates that even if it is not their preference, semi-literate women watch news as well as their preferred entertainment programs.

Our quantitative data reveals that 62.3% and 58.3% of literate and semi-literate women respectively receive information about climate change and natural hazards from the television news. One of the faculty members from University of Peshawar said:

> *It is an age of television. People watch television and radio listenership has*
>
> *decreased. Geo television network is comparatively more reliable than*
>
> *other television channels.*

Cable television has achieved great penetration in Pakistani homes and women at home keep themselves busy by watching entertainment programs. This may place some hurdles in the way of promulgating information about climate change and natural hazards via television. However, our data reveals that most of the women surveyed have access to

sources of information which could provide education about climate change and natural hazards. The next section looks more in-depth at the data regarding radio listenership as a source of information and dissemination among Pakistani women.

6.3.2   Radio listenership among literate and semi-literate women.

Radio Listenership per Week among Literate and Semi-literate Women
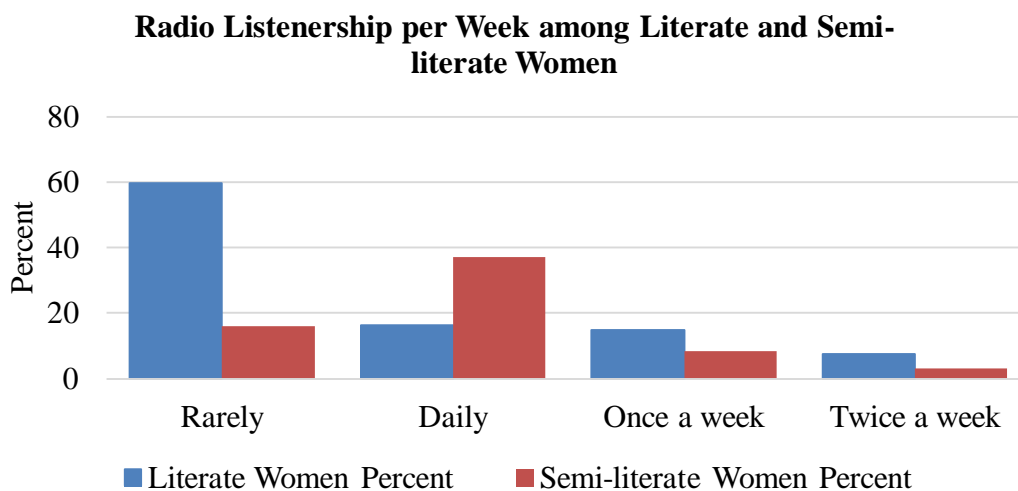
Figure 6-3 : Radio listenership per week among literate and semi-literate women

As shown in the above Figure, 59.7% of urban literate women rarely listen to the radio, whereas 37.2% of the rural semi-literate women listen to radio on a daily basis. Only 16.0% of the semi-literate women said that they rarely listen to the radio. These numbers confirm that rural women listen to radio more frequently than urban women. The reason for this variation is a cultural difference between the urban and rural areas. The rural areas of Pakistan have a culture of listening to the radio because men and women working in fields use transistor radios, which do not require electricity. They also tend to access radio via their battery-run mobile phones, which can be recharged when electricity is available. Furthermore, a person can do physical work while listening to the radio, as it does not require sitting in a fixed location and applying one's visual attention to the media source. A

subtle trend of listening to the radio freely during the leisure hours of the afternoon was also noticed. One of the participants from Punjab said:

> *While I am working with my husband in the fields, our radio keeps on all the time and I am getting information from it throughout the day. I listen to music but there are also very good programs about agriculture and we listen to those programs with keen interest.*

The above quote contextualizes and explains one of the reasons that radio listenership is a source of media dissemination in rural areas of Pakistan. Additionally, a radio is a relatively inexpensive device, which is easy to carry. This makes it an affordable and practical option for poor rural women. Another dimension of radio listenership that we studied was the amount of time allocated to listening to the radio as part of the respondents' daily routine.

Radio Listenership per Day among Literate and Semi-literate Women
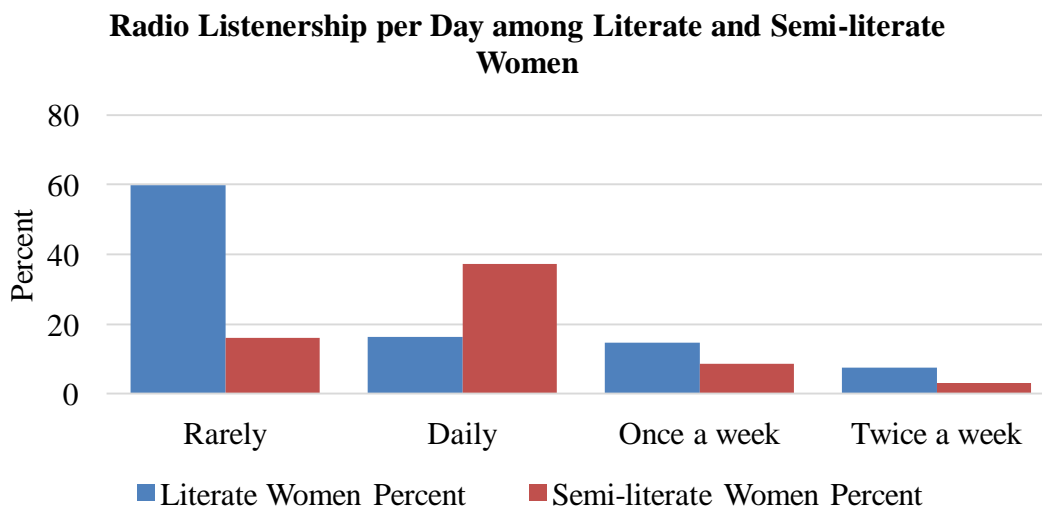
Figure 6-4 : Radio Listenership per day among literate and semi-literate women

Figure 6.4 shows that 67% of the literate women listen to the radio for less than one hour per day and a significant number (43.2%) listen to the radio for less than half an hour per day. Comparatively, 43.6% of the semi-literate women listen to the radio for more than

one hour per day, with 24.4% of them listening to the radio for between two and five hours plus each day.

This practice has not been adversely affected by new media devices; in fact, some of the semi-literate respondents mentioned:

> *Ever since we have mobile phones, we listen to the radio on our mobile*
> *phones.*

As the above quote clarifies, radio is now available through mobile phones, so people need not own a radio itself. This explains the gap in the data collected (see Table 6.1) between women's ownership of/access to mobile phones and their access to radios, which is far lower than the high recorded usage of radio among the semi-literate rural women. Nonetheless, the data reveals that more women own/access television than radio as a source of information and entertainment.

This section has confirmed that the majority of Pakistani women, both literate and semi-literate in urban and rural areas, have access to various forms of media, and make the greatest use of television, mobile phones, and radio to receive information and entertainment. The next section discusses the issue of trust: do Pakistani women have more faith in the validity and reliability of information from the media, or from non-media sources when it comes to climate change and natural hazards.

6.4   Media and Non-Media Sources of Information about Climate Change and Natural Hazards

In order to compare the amount of trust that Pakistani women place in various sources of information regarding climate change and natural hazards, we asked our sample groups of literate and semi-literate women which sources of information they use most

frequently to receive news or information in general. The questionnaire gave the literate women a choice amongst television, the Internet, radio, newspapers (printed and online), and non-media sources such as books, mobile phones, family, friends, neighbors, coworkers, or government and local authorities. The questionnaire for semi-literate women eliminated the options of the Internet, newspapers and books because, as previously mentioned, these women face literacy and technology-education related barriers to accessing these media sources. The following table provides an overview of the results.

Table 6-2 : Sources of Information about Climate Change and Natural Hazards for Literate and Semi-literate women

Sources	Literate women get info about Climate Change (%)	Semi-literate women get info about Climate Change (%)	Literate women get info about Natural Hazards (%)	Semi-literate women get info about Natural Hazards (%)
Television	62.3	60.6	58.3	62.8
Internet	46.3	-	41.4	-
Newspapers	26.4	-	28.5	-
Family, friends, neighbors or coworkers	24.3	35.1	23.8	43.6
Radio	13.1	34	13.1	43.6
Mobile Phone	13.5	18.8	16.8	63.8
Government	3.1	14.9	3.9	10.6
Local authorities	3.1	10.6	2.9	12.8

n=342

6.4.1 Television.

Table 6.2 showed that television is the most popular and accessible media source among both rural and urban women in Pakistan. This is not globally unusual as studies have shown that television is an important medium for communicating information about climate change to populations in other countries. For example, in Spain, research demonstrated that 83.3% of the population receive information about climate change from television (cited in León & Erviti, 2013). Table 6.2 confirms that both the literate and semi-literate Pakistani women consider television to be their chief source of information about climate change and natural hazards, with similar percentages for both sets of respondents. 62.3% of the literate and 60.6% of the semi-literate women received information about climate change from television. Similarly, 58.3% of the literate and 62.8% of the semi-literate women received information about natural hazards from television. Focus groups participants further confirmed the importance of television. As a participant from University of the Punjab, Lahore commented:

> *The involvement of the media in such circumstances (floods) is undeniable. Television is continuously presenting programs on the latest occurrences of floods as it gives information about the problems faced by remote areas when such a calamity occurs.*

Another faculty member from the same university added:

> *It was the television news that told us about the floods in Khyber Pakhtunkhwa. As the flood water increased, it seemed that channels also flooded us with news, in an occasionally dramatized manner.*

One of the major reasons for this perception of being "flooded" could be that television news regularly interrupts scheduled entertainment programs to announce breaking news such as disasters. Thus, even if the public is not specifically looking for information related to natural hazards, they are incidentally made aware of it due to these breaking news segments. The breaking news media phenomenon is very prevalent in developing as well as developed countries. As mentioned by Weber and Stern (2011), American news media tends to frame stories dramatically and to report breaking news stories in preference to slow-onset stories or chronic phenomena. In Pakistan, such television news bulletins were considered by the women to be their main source of information about climate change and natural hazards.

According to our questionnaire, the literate and semi-literate women were also asked what programs they received their information from when watching television. 58.3% of the literate respondents mentioned the television news as the most important source of receiving information about climate change. In the case of natural hazards, 62.3% of the literate respondents received information from the television news. The semi-literate respondents who received information about climate change and natural hazards from television represented 60.6 % and 62.8%, respectively. This corresponds with regional studies from other countries. Happer, Philo, and Froggatt (2012) and Ofcom (2007)found that the television news (usually the BBC) was referred to as the dominant source of climate change information, whilst radio, books and newspapers were mentioned as lesser sources. Likewise, the majority of our focus group participants agreed that they came to know about impending floods through television. One of the participants from Baluchistan said:

> *We were watching in television news about floods in other parts of the country, and then we watched as the flood hit areas near us. When the*

flood came towards us we all sat in front of the television and attentively

listened to the news after every minute. But it was not easy to leave our

houses and we were praying that we would be saved.

Many studies explain that evacuating a population is not an easy process and many socio-economic and psychological factors need to be taken into account. A population's previous experience of disasters plays a pivotal role in their decision whether to evacuate their homes or not. The trust in and beliefs about the effectiveness of government and other rescue agencies are also important factors when people must decide to leave their homes in the wake of a disaster. The quote above from a resident of Baluchistan reveals that people received notice of the floods from television reports, but were not ready to leave their homes only on that basis. However, in another case, television played a role in the decision of a family to evacuate before the flood engulfed their house. One of the affectees from Sindh explained:

I watched on the television about the flood in other places around so I

persuaded my husband to leave before the flood hit our house. Television

helped me in saving my life and my valuables.

In this instance, television was able to inform one woman about the floods and therefore save the lives and economic goods of an entire family. According to Krosnick and Kinder (1990), accurate or not, media reports influence people's thoughts and feelings, and in some cases their actions. This leads to the conclusion that women can be instrumental in facing such calamities. Another inference that can be drawn from the statement is that this woman equated her successful departure from the house before the flood with the influence of the media, but she did not take into account her own role. Either she was unaware of what an

important role she had played or she thought that her role was negligible. Women need to be educated about the pivotal role they can play in mitigating the effect of such disasters.

6.4.2 Radio.

As mentioned in Table 6.1, the ownership of a radio is 42.7% and 45.7% in literate and semi-literate women, respectively. As far as the ownership of radio is concerned there is no drastic difference between literate and semi-literate women, but the listenership presents a considerable difference. Our quantitative data reveals that the majority of literate respondents (60%) listen to radio rarely whereas only 16% listen to radio daily. However, radio listenership was greater among the semi-literate respondents, with 37% listening to radio daily. Our data reveals that the percentage of literate respondents who received information about both climate change and natural hazards from radio was only 13%, whereas the semi-literate respondents who received information pertaining to climate change and natural hazards represented 34% and 44% respectively. From this information we can infer that ownership of a medium does not guarantee that it is necessarily used. The semi-literate respondents allocated more time to radio listening and thus received more of their information from that source. This data also shows how receptive Pakistani women are to being informed about natural hazards. The radio listenership among semi-literate respondents increased during times of disaster as they required more information to make informed decisions about what actions they might take if affected. But when there was no emergency, perceived or otherwise, the listenership declined.

One of the semi-literate elderly participants from Sindh commented about her radio usage:

> *Yes, women also listen to radio along with men because in our village, we*
>
> *place the radio at some central place inside the house or outside the house*
>
> *where all men and women listen radio together.*

She further added:

> *We listen to news at 8pm and 10pm. We also listen to BBC.*

This woman was the eldest participant in our sample group. In rural Pakistani culture, a woman is freed from gender-mixing restrictions when she passes the age of fertility, so this participant was able to converse and visit with male members of the community. Although this woman comes from a far-flung, less developed area of Pakistan, her focus-group response shows that she was garnering information from the local as well as international media. Another participant, who was in her 40s added:

> *We listen to BBC and we place less trust in Pakistani channels. BBC gives*
>
> *us a true picture of what is going on.*

In the design of this study, age was not considered a variable. However, our focus group participants revealed that a women's age is a significant factor that impacts on her interest in and ability to access media information. This may also be reflected in the data about the women's choice of television programs. As mentioned earlier, the younger women were more interested in entertainment programs. A 20 year-old participant from Khyber Pakhtunkhwa commented:

> *I only listen to FM radio for music. I did not get any information about*
>
> *climate change from the radio.*

This may indicate that younger women in their years are more interested in using the radio for entertainment, whereas older women are more inclined to be interested in information

about national events and news programs. This would then be an important factor in motivating them to access the latest news information from the radio in preference to entertainment programs. We cannot discount the fact that young women have some access to sources of information; the question is whether they choose to access the media sources for information about climate change and natural hazards or not. The focus groups revealed that it was predominantly the younger women who tended to access the radio through their mobile phones.

Pakistan has an extended family system, wherein members are culturally expected to help other family members. In the 2010 floods, there were 29 severely affected districts[15] in the four provinces of Pakistan; within the districts, some areas of higher elevation were safe from the flood waters. The focus groups revealed that the pattern of extended family support stretched to information sharing. This is demonstrated in a quote from one of the flood affectees from Punjab:

> *My brother lives in Sargodha[16]; there was flood too but his house was not*
>
> *hit by flood. He was watching flood news on television, listening about it on*
>
> *the radio and informing me about flood news on our mobile about what*
>
> *government is planning to help the flood affectees.*

This also demonstrates that when people are facing natural hazards, they understand the importance of obtaining information on their own behalf as well as on behalf of their extended families.

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[15] The Government of Pakistan and the World Bank identified four affected provinces (Balochistan, Khyber Pakhtunkhwa, Punjab, Sindh) with 29 districts designated as "severely" flood-affected.

[16] Sargodha is 5th largest city of Punjab that was also hit by flood 2010

Radio and television are vital tools in relaying weather warnings to the public. In years past, radio was the medium which tended to be the first to transmit disaster-related information and warnings (Norberg, 1996). Now television has become the primary source of information. This is true in most countries. According to a survey conducted amongst US residents, the public's most frequently cited primary news source is television (Pew, 2011). Similarly, in another study conducted by Huebner (2012), the public's information about climate change was shown to come largely from television, print media, the Internet and only then from radio.

6.4.3 Newspapers.

The quantitative data from the study (see Table 6.2) reveals that 26.4% of the literate women receive information about climate change from newspapers, while 28.5% use newspapers to get information about natural hazards. In Pakistan, the non-availability of electricity from 10 to 14 hours daily creates problems pertaining to the availability of the Internet. On the other hand, newspapers are delivered daily, and media owners ensure they are able to provide current information in spite of challenges such as the availability of electricity (otherwise, they would not be able to stay in business). Additionally, female university students and staff have the option of reading printed newspapers in their university library.

As discussed in Section 6.4, the questionnaire for semi-literate women did not include the options of the Internet, newspapers and books as possible information sources about climate change and natural hazards. These information sources are not readily accessible to the rural semi-literate respondents and, even if they were, they are not viable options due to the women's low literacy level and lack of technical savvy. This means that

the semi-literate women place greater reliance on information sources such as friends, family, neighbors and coworkers. The next section describes how women develop their understanding and make decisions about climate change and natural hazards through these other sources.

6.4.4   Family, friends, neighbors and coworkers.

The semi-literate respondents listed television (see Table 6.2) as their primary source of information about climate change and natural hazards. Their second major source was family, friends, neighbors or coworkers. 35.1% of the semi-literate women claimed they get information about climate change and 43.6% about natural hazards from family, friends and neighbors. Table 6.2 reveals that only 24.3% of literate urban women receive information about climate change, and 23.2% receive information about natural hazards, from family, friends, neighbors or coworkers. It is their fourth source of information after television, the Internet and newspapers.

Besides the accessibility issues associated with the Internet and newspapers for semi-literate women, another major reason for this difference is that the rural areas have retained a culture of traditional joint family systems, while families in urban areas are gradually replacing the joint family system with a nuclear family system (Bott & Spillius, 2014). Rural family systems entail mutual caregiving and everyday interaction among people, which facilitates a two-step and multi-step flow of information. The two-step flow by Lazarsfeld, Berelson and Gaudet was originally commented the flow of information or ideas is initiated through radios which then proceeds to print and from there to opinion leaders, the public is the last rung of the ladder as they are less proactive elements of the flow of information (Katz, 1957). According to the multi-step flow theory, opinion leaders

become the bridge between the media's actual message and the audience's response to the message. These terms are used in the scholarly literature to describe predictable interpersonal diffusion patterns whereby communities access information from mass media (Berelson, Lazarsfeld, & McPhee, 1986; Katz & Lazarsfeld, 2006; Lazarsfeld, Berelson, & Gaudet, 1948; Merton, 1948; Weimann, 1982). The two-step and multistep flow theories posit that opinion leaders who are heavy media users garner information from television and other sources; these opinion leaders then transmit their knowledge to a network of acquaintances. In rural areas time is allotted for conversation, which means that interpersonal communication, following a two-step and multi-step pattern, is a great source of information. There are only a minority of residents in rural areas who are able to understand the media content, not only due to literacy issues but also general education levels. The more educated opinion-leaders thus pass on information to others in their community. One of the Sindhi flood affected women stated:

> *Sometimes, the latest information reaches to us through the discussion of the male members of the family as they watch news bulletin regularly and also get information from other men sitting together or chatting during every day encounter. Through my husband, I came to know that flood was coming towards our areas.*

This quote shows that women have access to the latest occurrences and are able to gain information through indirect sources, such as word of mouth, as well as direct sources such as radio and television.

The research revealed another source of information available to women from rural areas which we did not consider, namely the local mosque. For example, one of the focus group participants from Punjab was asked how she learned about the floods:

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There was announcement repeatedly from mosques to go to safe and high

place as flood was heading towards our area. On hearing this, we started

to move our animals and valuables to nearby high place.

In rural areas, the Imam masjid[17] has more credibility than media sources and politicians. Because of this trust, people are ready to listen and take action when the Imam makes important announcements. Focus groups showed that, in addition to friends, family, neighbors and coworkers, the leaders of the mosque, as well as community opinion leaders, are very important credible sources of information among semi-literate rural women. For them, it is of the highest importance that these leaders disseminate information correctly to the public during disasters.

Our sample of urban literate women paints a different picture. Most of them live isolated from their neighbors and community. Furthermore, many educated women work outside the home and therefore they have less time or opportunity to converse with their family, friends and neighbors. Also, they have less need to rely on these indirect information sources since there is greater availability of media devices in urban areas and, because they are literate, they can access media directly.

6.4.5   Government and local political authorities.

It is natural that citizens look to their government and local political authorities for assistance during times of crisis, such as climate change and natural hazards. If the government and local political authorities want to help, however, they must be seen as a credible authority figure. This is the only way that they will be able to sway the public toward taking the positive steps that they suggest. If the sense of trust between the

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[17]   Religious leader or custodian of the mosque

government and the people is strong enough and the channels of communication open enough, then climate change and natural hazards can be addressed on a mutually beneficial basis. The most important aspect of being seen as a credible, trustworthy information source is to provide timely and useful information during times of natural hazards. Then the population can take preventive measures and make positive individual decisions when faced with a natural hazard.

Table 6.2 shows that 3.1 % of the literate respondents and 14.9 % of the semi-literate respondents were of the view that the government provided useful climate change information. Likewise, 3.9 % of literate and 10.6 % semi-literate women were of the opinion that the government provided useful information about natural hazards. In both cases, especially with the literate respondents, the opinion of the government as an information source was far from laudatory. It is worth noting that, according to the literate respondents, the government played only a very negligible role in disseminating information. The difference between the higher percentage of semi-literate respondents and the low recognition rate of literate respondents could be due to the fact that semi-literate people tend to view authority figures with awe and automatically to equate authority figures with the need to take action. The literate women, however, are more skeptical about the role of the government. A reason for this could be that literate women have a wider array of information sources and by comparison they find the government's information lacking. Local political authorities, as government representatives, were seen as equally lacking. Our data reveals that the percentage of literate respondents who received information about both climate change and natural hazards from local authorities was only 3.1 % and 2.9 %, respectively, whereas the semi-literate respondents turned to local authorities for information pertaining to climate change and natural hazards at 10.6 % and 12.8 %

respectively. Boin and McConnell (2007) explains that in general citizens expect the government and its local authorities to help eliminate the immediate threat, take preventive measures, provide explanations and in the case of natural hazards to initiate rebuilding procedures. In order to be seen as credible and effective the government policy-makers need to create policies that address prevention as well as disaster management in order to save lives and livelihoods in even the most extreme circumstances. They also need to provide helpful and accurate information in a timely manner in order to gain the trust of the people.

6.5   Trust in Information Sources about Climate Change and Natural Hazards

As the previous section has demonstrated, women get information about climate change and natural hazards from various sources. Table 6.3 presents the data collected from the urban literate and rural semi-literate sample groups with regard to which sources they trust the most for information about climate change and natural hazards. Both groups were given four different information sources as questionnaire options and asked to choose which one they trusted the most. The semi-literate women were not given the option of scientists, since, as previously elucidated, they have neither the access to nor the education level for understanding scientific information.

Table 6-3 : Trustworthiness of Information Sources about Climate Change and Natural

Hazards as Perceived by Literate and Semi-literate Pakistani Women

Sources	Trust by literate women for climate change (%)	Trust by semi-literate women for climate change (%)	Trust by literate women for natural hazards (%)	Trust by semi-literate for natural hazards (%)
Media	60.1	58.5	61.5	62.8
Scientists	52.4	-	51.7	-
Family, friends, neighbors or coworkers	11.3	37.2	14.7	36.2
Government	7.9	18.1	9.7	13.8
Local authorities	4.7	14.9	5.8	11.7

n= 318

6.5.1   Trust placed in the media.

Looking at the statistics given above, we see that media sources were the most trusted for information about climate change and natural hazards among Pakistani women. 60.1% of the literate and 58.5% of the semi-literate respondents considered media sources trustworthy with reference to climate change, and 61.5% of the literate and 62.8% of the semi-literate respondents regarded the media as a trustworthy source of information during occurrences of natural hazards. This is an interesting result, since Shuckburgh, Robison, and Pidgeon (2012) report that in the UK the media is not considered a trustworthy source of information about climate change. The differing attitude among the Pakistani population is described by a participant from Peshawar University:

> *Media coverage is present and is creating awareness, conveying information etc. It has also created motivation to help. The general public is busy in their mundane routine chores and, although they might receive information by word of mouth, they do not necessarily trust such information. However, media is a trusted source which is able to grasp the public's attention.*

A reason for this trust could be the graphic or visual element of media sources (other than radio). Media is able to present a visual image along with the information. This serves not only to gain the public's attention, but also emphasizes the credibility of the information. When we see something with our own eyes, we tend to trust it. This is explained by a Peshawar University participant:

> *When we see for ourselves the problems as portrayed by media, we are convinced to help the people in affected areas.*

Trust is created through the visual evidence provided by the media, which in turn leads to the effectiveness of the media in motivating people to help in areas struck by disasters. We see that the media is seen as a trustworthy source of information for climate change not only by affectees but also among those that may be in a position to offer aid.

There is a great deal of research available in developed countries regarding the credibility of media in covering climate change. The majority of studies conclude that the media is biased even in the pretext of balance (Maxwell T. Boykoff, 2008a; Maxwell T. Boykoff & Boykoff, 2004). The trust or mistrust of people in the media affects their attitudes and behaviors (Whitmarsh, 2009). It is hard to understand the impacts of climate change without personal experience, however, so people often rely on those perceived as experts to increase their understanding and answer their questions about climate change.

This is especially evident among the literate women in our study. Most of this sample group were living in metropolitan cities of Pakistan and had not experienced any of the disasters discussed in the study themselves. They learned about the floods, glacier melting, and cyclones in Pakistan from the media. The mass media facilitates accessibility as it presents information and opinions in language and graphics that are easy to understand and are also emotionally gripping. Since disasters are something that most people do not experience on a daily basis, this in turn may serve to heighten the effect of media coverage. As Soroka (2002) claims, however, environmental issues also hold the potential for sensationalism, which presents a prime opportunity for media companies to increase their viewership. It is possible that this sensationalist aspect of the media also acts to attract attention and create a sense of concern about climate change and natural hazards among the public.

6.5.2 Trust placed in scientists.

Even though the media was the most trusted source of information, scientists were the second most highly trusted information source among literate women. 52.4% indicated that they perceived scientists to be a trustworthy source of information regarding climate change and 51.7% regarding natural hazards. The difference in trust between information coming from scientists and that provided by the media was only 7%.

Media coverage of anthropogenic climate change is not a simple collection of news articles and clips produced by journalists and producers; rather, media coverage signifies key frames derived through complex and non-linear relationships between scientists, policy actors and public that is often mediated by journalists' news stories (Maxwell T Boykoff, 2007). In an interview, journalist Robert Cowen said:

An obligation of the scientist is to interact with the public and to have a seat at the policy table. It has come front and center in scientists' education and professional life, even if they don't like to admit it.

Moreover, New York Times Science Editor Cornelia Dean said in an interview:

The scientific community needs to speak out more. It needs to speak out more. It needs to acknowledge that scientists have an affirmative obligation as citizens take part in the public debate in the country, and on the whole they have not done that (Maxwell T Boykoff, 2007 page 484).

As Cornelia mentioned, scientists evade direct contact with the public for sharing their findings. Most of the time media disseminate the scientific findings to the larger community. People trust scientists because they have an innate authority and proof. Science, in fact, holds appeal for the policy makers; the policy makers rely on it because they consider it to be founded on the collective knowledge, experiments, studies and even wisdom of all the scientists who are related to a specific issue.

6.5.3 Trust placed in family, friends, neighbors or coworkers.

There was a great difference in the percentage of trust placed in family, friends, neighbors or coworkers between literate and semi-literate women, i.e. 11.3% and 37.2% respectively with reference to climate change, and 14.7% and 36.2% by respectively regarding natural hazards. The main reason for the difference in these percentages is due to the differing family infrastructure in urban and rural areas, as well as the fact that literate women have a wide array of media sources available to them. Due to the diversity of sources they can access, literate women place their trust in better researched sources than in word of mouth. Thus, although word of mouth disseminates a great deal of information

amongst the urban population as well, it is not necessarily trusted by literate women. However, the semi-literate women placed trust more in family, friends, and neighbors for reasons discussed above.

6.5.4   Trust placed in government and local political authorities.

7.9% of the literate and 18.1% the semi-literate respondents trusted the information provided by government and local political authorities regarding climate change. A similar distribution of perceived trustworthiness was recorded in regards to information about natural hazards (9.7% of the literate and 13.8% of the semi-literate respondents). This low level of trust could be due to the fact that the government does not regularly provide much information or education about climate change and its impacts. Seeger (2006) emphasizes that public officials must develop a pre-crisis "we" feeling and rapport with populations at risk of natural hazards in order to have credibility with them during a disaster.

Our research shows that the Pakistani government needs not only to regain the trust of the public, but also to continually reinforce this trust by disseminating credible and useful information on a regular basis. One of the focus group participants from Baluchistan said:

> *Governmental officials came to order to evacuate the houses as there was a forecast about the flood water reaching in a couple of days but we did not trust them. We were hoping the flood water would be averted and their forecast would prove wrong but it would not happen. We were unable to take our animals out and animals are the most costly thing that we had and we could not save them.*

Focus groups also indicated that previous actions of government officials during disasters have tainted the public's perception of the government's trustworthiness. A focus group participant from Punjab University commented:

> *It is important to provide the public with information about how financial support can reach the victims because the public does not trust government channels. The main reason for this is the behavior of government officials, such as the fact that MNAs[18] and MPAs[19] instead of distributing to people had the trucks unloaded at their godown[20].*

The above quotes show that the Pakistani government is not considered to be an effective or trustworthy source of support by the respondents. Since the public does not place much trust in the government or local political authorities as a source of organization or information, that trust is naturally shifted to other sources, especially the media.

In summary, the results of our quantitative and qualitative data collection show that women place more trust in media sources than non-media sources. Further, there is a relationship between perceived trustworthiness and effectiveness; the more that people trust an information source, the more they will listen to and act upon its advice. Since the media is accessed and trusted by more Pakistani women, the question arises of whether it is also perceived to be an effective source of advice during natural hazards. In Pakistan, there were numerous natural hazards in 2010, for example, flash floods, the Phet cyclone, and glacial melting creating Attabad Lake. Floods also occurred in 2011, 2012, 2013 and 2014.

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[18] MNAs (Member National Assembly)

[19] MPAs (Member Provisional Assembly)

[20] A place for storage of goods

The data and discussion mentioned above reveal that many rural women based their decisions for action during these disasters on the information provided by the various sources discussed here. Both the rural and urban women will have observed the effectiveness of these various information sources in helping affectees to preserve their lives and livelihoods. The following section presents and discusses the data that was collected about the perceived effectiveness of information sources in recently occurring natural hazards.

6.6   Effectiveness of Information Sources regarding Natural Hazards

The natural hazards in the four consecutive years from 2010 to 2013 provided an opportunity to test the perceived effectiveness of various information sources by Pakistani women. Effectiveness is determined by a source's ability to provide useful, accurate and timely information, which allows the women to make prudent decisions and take actions to preserve the lives and livelihoods of their family and community. These disasters preceding the research period made it possible to observe and discover if there is a relationship between trust and the perceived effectiveness of the information sources. As seen in Table 6.3, the media was the most trusted source of information about climate change and natural hazards. The government/local authorities were the least trusted source. The following table presents the data collected regarding the women's perception of the effectiveness of various information sources during these natural hazards.

Table 6-4 : Perceived Effectiveness of Information Sources during Natural Hazards for Literate and Semi-literate Pakistani Women

Effectiveness of Sources in Recent Natural Hazards	Literate Women (%)	Semi-literate Women (%)
Television	62	58.5
Newspapers	27.7	-
Radio	12.3	36.2
Family, friends, neighbors or coworkers	8.1	33
Government	5	11.7
Local authorities	4.7	16

6.6.1 Effectiveness of media.

Both literate and semi-literate women, upon reflecting on the floods of 2010-2013, were of the view that media had been an effective source of information. 62% of the urban-literate respondents and 58.5% of the semi-literate respondents were of the view that television had been an effective media source. Radio was thought to be an effective media source by 12.3% of the literate respondents and 36.2% of the semi-literate respondents. Government and local political authorities were rated as less trustworthy and considered to be dependable by only a small percentage of the population, and hence this decreased their effectiveness. The foremost reason for this is likely to be that the government and local political authorities seldom provide information about current natural hazards or even

weather updates to the semi-literate rural population that they serve. We could say that they do not share information directly at a grassroots level.

It is through the media (television, radio, newspapers, Internet) that the general public learns about impending weather and climate-related hazards. The mass destruction caused by a disaster gets the exclusive attention of the media as it has inherent public appeal. An expert from Punjab University noted:

> *Television was continuously, 24/7, presenting information about the floods. It was providing information about the problems faced in remote areas when such a big disaster occurred.*

In this way, media is central to disseminating information needed on an urgent basis. The participants of the focus groups claimed that the media was also effective in garnering support for relief activities during floods because the visual images and engaging presentation motivated people to help. This was especially true for young people due to the involvement of celebrities, whose media presence drove many young people to volunteer for relief activities during the floods (Redcross.org.ph, 2016). A very important dynamic with reference to motivation and effectiveness of media is the youth factor. The youth of any nation often work as a stimulus for change (Lakin & Mahoney, 2006) and even with respect to addressing climate change and natural hazards they can play a pivotal role. Media has the potential to motivate youth, as they are energetic and are also the heaviest users of media. Another participant from Peshawar University added:

> *Similarly, the people should be motivated and youth efforts should be encouraged and provided coverage, such as in the recent flood when the media was pivotal in motivating youth from the engineering university to go the flood-affected areas.*

The respondents were of the opinion that media attention given to any issue also compels NGOs, philanthropists and policy makers to address that issue. A participant from the psychology department of Peshawar University commented:

An important function that the media can carry out with reference to effectiveness is coverage of relief activities, which can be said to motivate people. The media does highlight such problems, and programs were aired about NGOs' efforts and the relief provided by self-motivated people.

Another aspect of media motivation is connected to celebrity appeals. Media such as television, radio and newspapers frequently gave information about celebrities who were involved in relief efforts, such as Hadiqa Kiyani and Shahzad Roy (both singers who are well-known amongst Pakistani youth) as well as numerous other celebrities during the 2005 earthquake. A participant from Punjab University commented:

The flood relief efforts such as those carried out by the singer Fakhra-e-Alam were shown on television motivated me to help the affectees.

Angelina Jolie, a Hollywood actress, used her office of goodwill ambassador for the UN to appeal to the international community to extend aid to the flood victims of northwestern Pakistan. Prior to her appeal, the flow of aid money had stalled and Pakistani officials expressed hope that her two-day visit would convince foreign countries and individuals to open their wallets.

Once people are made aware of natural hazards and motivated to help, this has an impact, not only for relief activities but also for policy-making. According to Soroka (2002), media works as a stimulus both for the public and policy makers' agendas. In Soroka s' study, a gradual rise in the attention that the media gives to a disaster was shown

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to be proportional to an increase in assistance from the public and in influence on government policy-making agendas. Likewise, our research shows that the media can help to smooth communication and generate dialogue between the general population, disaster affectees, and the government. Therefore, the media can play a role not only by motivating viewers/users to offer aid, but also in bringing about fundamentally positive changes in government policies. Policy makers feel pressure to pick issues highlighted in the media.

The focus group participants were of the opinion that local media was more effective during the recent floods than mainstream media. They perceived that local media had ready and rapid access to the natural hazard and therefore could report the event immediately. The respondents considered that the proximity of local media to the actual disaster was an important aspect of its effectiveness. This is not unusual as Pew 2011 reports that most Americans have a preference for watching their local television news rather than any other information source (Rosenstiel, Mitchell, Purcell, & Rainie, 2011). The data collected here suggests that the same holds true for Pakistan. A local journalist from Sindh, Jan Mohammed, commented:

> *Mainstream media conveys such phenomena too late. It should also be kept in mind that local media doesn't have great resources but can convey such news earlier. For instance, the flood in Badin, Sindh was covered two days and maybe three days earlier than Urdu and English mainstream channels, respectively. However, local media does not have trained professionals.*

This quote highlights the importance as well as the educational potential of local media. If there could be a collaborative effort between local and national media in order to create timely and continuous coverage during disasters, both national and local media would be considered even more effective.

The focus groups revealed that even though the media was the most trusted source of information regarding climate change and natural hazards for literate and semi-literate Pakistani women, they do not consider it to be a perfect source. In fact, the respondents provided suggestions as to how the media could improve its effectiveness. The focus group participants were of the view that this effectiveness could be enhanced by avoiding sensationalism in media coverage during and following disasters. A participant from Punjab University remarked:

> *The television's motto or logo [is] "breaking news", in other words, something which is sensationalized.*

Due to the prevalence of commercialization in the private, for-profit media as well as the pro-government stance of publicly funded media, private and public media channels sometimes take divergent stances as a way of attracting viewers and increasing their profit, which can create sensationalism and confusion among the Pakistani population. De Marchi (1993) explains that there are major differences among media broadcast modes, such as the roles of publicly funded and private, for profit channels, which must be taken into account when considering the effectiveness of media during times of crisis. In Pakistan, media ownership structures and media politics impact the perceived effectiveness of media. This was addressed by one respondent from Peshawar University:

> *Private channels only commercialize such unfortunate events while the government channel only focuses on the efforts put forth by the government. Both private and government channels should collaborate with each other in order to achieve maximum results, because the government has a hefty mandate while private channels are trusted by the public.*

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Therefore, even if the public and private media were able to work together to provide a holistic view of climate change and natural hazards, it is also very important that the viewers develop and maintain a critical capacity. If public and private media channels in Pakistan work to undercut one another, however, the differing information tends to have varied views. Similarly, another participant from Baluchistan University commented:

> *PTV[21] [a public channel funded by government] only lauds the government's efforts while private channels only highlight the discrepancies and problems in the government's efforts. The media has desensitized the public to such an extent that people no longer bother to confirm the authenticity of news channels (whether private or government-based).*

The viewers are less likely to develop a critical approach to media information in general since they are accustomed to being polarized as to which source to trust. The majority of our participants expected the media to be more proactive in educating the masses about the impacts of climate change, rather than simply informing them about the latest disasters. Many of the respondents believed that the media provides disaster coverage by investing in field reporters and special studio desks in order to provide fresh information during and immediately after disasters, but then leaving the scene when the public's interest wanes and the news of the devastated environment has become a long-term situation. One of the semi-literate focus group participants from Sindh was still living with her family in tents in the wake of the 2010 floods said:

> *In the early days of the floods, the media people came to ask us about our problems but as the days have passed now no one come to inquire about us.*

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[21] Pakistan Television Corporation

They made a promise to help but now we are siting helpless since last year.

They have forgotten us.

This is a serious issue in Pakistan as many internally displaced people (IDPs) are still living in temporary housing structures, even two years after the actual occurrence of the flood. Another affectee from Punjab said:

Earlier, media people came to us and promised to help us but now as some time has passed no one comes to inquire about what happened to us.

Media producers realize that such long-term effects of disasters have less potential to attract viewers, and therefore for economic reasons they discontinue their coverage shortly after a catastrophe.

This begs the question of the social responsibility of the media. A number of participants from Punjab University and the Peshawar focus groups commented:

It can be said that it is a part of the social responsibility of the media to not present a biased picture, but a picture which is complete in its totality of negative and positive aspects. Media does highlight negative aspects at the expense of positive aspects or it only focuses on some positive aspects, but not all.

A participant from Punjab University commented:

Unfortunately, there is no follow-up and in cases where there is, it is only due to the follow-up being a component of the "breaking news" segment. The media should visit not only the affected places but also areas where NGOs are working or where private individuals have set up camp instead

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of only focusing on the government's efforts or providing a one-sided

picture that suits its vested interests.

Media follow-up, whether in the form of experts' opinions or through portraying ongoing relief activities, is crucial to educating the Pakistani women as well as the entire world about the catastrophic effects of climate change and the subsequent disasters. This channeling of information and its consequences by involving the experts increases Pakistani women's perception of the media's effectiveness with regard to natural hazards.

A participant from the psychology department of Peshawar University commented:

The media can also come up with solutions by consulting subject experts,

creating think tanks and providing empirically tested knowledge for policy-

makers. Media can air sitcoms based on experts (to authenticate statistics,

data, etc.) and experts should be consulted for the good of the public. It is

easy to level criticism or offer sensationalism but experts need to be

consulted and it is important to make their opinions/advice accessible to

the public.

According to the participant, the media message can become more effective if the experts are involved in the dissemination of information. Experts are considered opinion leaders in their fields. They are the people who influence the opinions, beliefs, attitudes, motivations and behaviors of others. This is a human nature that people believe those who are considered having more knowledge in any field (Valente, & Pumpuang, 2007). The participant has suggested media to overcome its sensationalism by inviting the experts to share their opinion with others. Not only does the media's focus on its own vested interests create distrust among the at-risk and affected populations, but more importantly it diminishes the motivation to assist that might be expected among unaffected citizens if

there were continuous coverage of the long-term effects. The more that people are aware of the serious, long-term effects of climate change-related disasters, the more motivated they will be to participate in relief efforts, and the more they will be interested in addressing the climate change. The next section will explain the amount of informational reliance that Pakistani women place on family, friends, neighbors and coworkers.

6.6.2   Effectiveness of family, friends, neighbors, and coworkers.

Family, friends, neighbors or coworkers were thought to be effective by 8.1% of the literate women. Friends, family, neighbors and coworkers were also not considered very significant in gaining information about natural hazards by these literate women. However, 33 % of the semi-literate women considered family, friends, and neighbors effective during natural hazards. This shows that semi-literate women, the majority of whom live in rural areas, discuss catastrophes with family, friend, and neighbors when there are facing any natural hazards and that they are compelled to share their problems with others when disasters hit them. One of the focus group participants from rural Sindh said:

> *We were sleeping when water came up to our houses. My neighbor knocked*
>
> *on our door in the middle of the night and informed my husband that we*
>
> *should get up immediately and leave the house.*

One woman who was seriously affected by the 2010 flood in Baluchistan explained her helpless situation:

> *My husband was not at home when flood hit our house. I knew from my*
>
> *neighbors that the flood was going to sink my house. Her husband and sons*
>
> *helped me to save my kids. The water level was very high and my one son*

was drowning in the water while I was saving others. I might have lost my

son if they had not saved him.

It shows that although media plays a role in gathering and transmitting information during or after disaster, the erratic behavior of disasters implies that sometimes word of mouth is the quickest channel of communication. The rural areas of Pakistan have an inadequate communication infrastructure. During disasters, interpersonal communication was not only an important but was an effective source of information.

6.6.3   Effectiveness of government and local political authorities.

Tables 6.3 and 6.4 show that literate and semi-literate Pakistani women do not acknowledge the government or local political authorities as being trustworthy and effective sources of information about climate change or in times of disaster; in fact, the respondents considered them to be the least trustworthy information sources. Therefore, the issue of effectiveness becomes even more important. The perceived effectiveness of the government is as follows: 5% of the literate respondents and 11.7% of the semi-literate respondents thought that the government had been effective in the recent natural hazards. The effectiveness of the local political authorities was considered to be 4.7 % and 16% by literate and semi-literate women, respectively. Our data demonstrates that the government was considered to be effective by only a small percentage of the sampled population, although the semi-literate respondents were two to three times as likely to consider the government effective as the literate respondents. Amongst the literate respondents, the perceived performance of the government and local political authorities was very negligible. The inference which may be drawn is that the government and local political authorities are proving ineffectual with respect to addressing natural hazards, especially

amongst educated people. The government is unable to cater to a very basic need of the people to provide a reliable weather report. The government seldom provides authentic and reliable meteorological information that people can trust and prepare themselves for combating disasters. Unlike developed countries like the U.S., whose governments have a systematic method of providing information related to climate change, the Pakistani government has yet to come up with a well-knit infrastructure for relaying such information. One of the focus group participants from Baluchistan said:

> *When there was news of cyclone that was coming toward us, people from*
>
> *the government came to us and asked to leave the houses but no one*
>
> *listened to them because nobody trusted them at the moment, so I think that*
>
> *they are the worst persons if you want to get something across.*

The government and local authorities either do not provide information or contradict themselves in their statements, thus losing public trust. The public becomes a victim of its own increasing skepticism or distrust of official statements, as this distrust decreases the total number of information sources available to them in times of crisis. This in turn increases the danger which the public faces in the wake of disasters as they may not be open to receiving precisely the information they need to make timely precautionary and survival preparations/decisions.

The data emphasizes another dimension in relation to the perceived effectiveness of government and local political authorities, namely the differing responses of the semi-literate and literate women. Literate women (7.9%) are more apt to be skeptical of the information given to them by the government, whereas semi-literate women (18.1%) have more of a propensity to accept this information. One of the semi-literate participants from Punjab said:

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> *Potwari (official representative who deals with land) phoned the*
>
> *Numberdar (local representative of the village), who informed the people*
>
> *about the flood.*

In this instance the change of command created an element of trust, but another participant added:

> *They reached us when water was at our doorsteps. But it was too late; we*
>
> *were helpless to do anything except move to some safe place.*

This respondent makes clear that during past disasters the government failed to provide timely information to the most relevant people. Furthermore, the government has also acted in ways which increase the distrust of the public. An example of this is the statement by a participant from Punjab University, included in section 6.5.4, who said that the government officials did not distribute the goods meant to aid the affected population but had the trucks "unloaded at their godown". When there is distrust, there is also a decrease in effectiveness.

Our research indicates that the Pakistani government is not perceived as effective or trustworthy in reference to providing information about climate change and natural hazards. However, these hurdles can be overcome by increasing the government's perceived effectiveness through certain measures. The research suggests that the government should widen its net of influence by working as mutual partners with the media. Media is a widely popular information source which is accessed by almost all Pakistani individuals; as such it can greatly influence the public.

6.7 Gendered Perspective of Media in Climate Change and Natural Hazards

The media needs to play a role in highlighting how climate change affects women in different ways than it does men. In order to have their interests voiced, women deserve a

correlatively significant position in media coverage. However, the media remains biased by supporting male interests and this situation further aggravates women's vulnerability.

The Secretary of Ministry of Disaster Management in Pakistan commented on media's coverage of gender, climate change and natural hazards:

Media are hyperactive in covering gender issues like vani[22], rape, women harassment and other women issues that can be sensational for the audience but unfortunately media's coverage regarding climate change is not very promising. In general, professionalism in media is on decline.

This remark takes into account the fact that women's problems are covered, but recognizes that greater sensationalism accompanies women's concerns due to the exploitative nature of their problems. Women are exploited for selfish reasons but also the media is not fulfilling its ethical duties or presenting a holistic view. The Deputy Secretary of Ministry of Environment added:

Climate change itself is not the media's priority, and this is even less true of gender and climate change. Media has less know-how about the relationship of gender and climate change. We need to have specialized professionals in media.

Both of these Pakistani experts emphasized that media professionalism needs to be enhanced by having specialists who can deal with climate change and natural hazards and present programs focused on these issues.

Where men are beset by physical problems such as rebuilding the house or economically taking care of the family, women are more psychologically affected. The

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[22] Vani is a cultural custom wherein young girls are forcibly married as part of punishment for a crime committed by her male family member.

main reason for this is that they have to look after not only the male members of their families but also young children who do not have proper drinking water, food, clothing etc. Given the maternal instincts of females they tend to become more adversely concerned when faced with such problems and it has more psychological impact on them. A focus group participant from Peshawar University supported this by commenting:

> *Media show problems on a generalized level without focusing on specifics; for instance, the physical problems faced by a family as a whole are addressed but not the individual woman's physical needs or psychological problems.*

Another very important issue that the media can address with reference to gender and climate change was presented by another of the participants at Peshawar University, who commented:

> *The media should address not only the basic needs (clothing, food, housing etc.) of women but also the counseling needs in a holistic framework. A framework or strategy needs to be developed to address these feminine issues.*

The media can be a useful tool in conveying the non-gender-neutral nature of climate change and can create awareness for women as well as about women regarding their role in such situations. Similar concerns were shown by the international gender and climate change activist Ulrike Rohr, who said:

> *Gender issues of climate change are not given much coverage in the media. Media is more interested in showing women's pictures only in a*

stereotypical way during disasters. Media focus on women's sufferings in leading positions to get the audience's attention.

In the coverage of victims of disasters, women, both as causalities and as survivors, figure prominently. As Rohr points out, disaster coverage with an exclusive focus on gender is an available commodity to sell on the open market to audiences. It may increase the circulation of the newspapers and ratings of the news media. Thus the coverage of disaster-affected women becomes available as a marketing strategy for the media. Commenting on international media coverage, Rohr further noted:

Media has given less coverage to developed nations women as compared to developing countries' women. Third world countries' poor women get space in international media during disasters and that is only to increase their circulation and viewership.

A faculty member from the University of Baluchistan also shared the same concerns:

There are no gender-specific programs. The media do give a generalized overview related to the general destruction wreaked by such phenomena but no focus is placed on women and their problems. The media sensationalizes women's problems but it does not present any solution. The reason for the sensationalism is that they can make money by doing so, but a solution does not present any monetary gain.

The important point from the comment above is not only that women in developing countries are given coverage but also that their plight during disasters is exploited on consumerist principles. This may also be a reason for the inadequate knowledge about world affairs on the part of women in these situations. While engaged in reporting, the

media sometimes present oversimplified and distorted characterizations of the responses of women to disaster. Media, quite often, play a considerable role in propagating mistaken beliefs about female victims during disaster coverage. The media often portray women as being helpless, awaiting external aid and support, unable to cope and deserving of charity. News reports and media stories that depict female victims and survivors as being shocked and confused can create an environment of public misunderstanding.

In fact, not all women are paralyzed; only a few are panic-stricken and traumatized, while most of the women, even those stricken with grief, begin on immediate evacuation, relocation and resettlement. But people believe in the gender stereotype of women as helpless victim. Ulrike Rohr also identified the colonial attitude underlying international media reports about women in developing nations:

> *It may be the colonialists 'view of developing countries' women during disasters. It is easier to explain the impact of disasters by showing the agony of women caused due to climatic catastrophes.*

A very significant point raised by this expert is that of the colonial framework, especially in relation to Pakistan as a former colony. According to Franz Fanon (2008), the colonizer's approach to the Third World is, at best, that of a mother who must prevents the child from harming itself. This is exacerbated in gender terms, as Gayatri Spivak (1988) contends that the "brown woman" needs saving by the "white man" (p. 297). Similarly, during disasters it is easier for developed countries to picture that females are vulnerable and severely affected; therefore, they need to be saved through timely intervention. It not only justifies the colonial mindset but also validates international aid. The coverage of vulnerable women in disasters may create greater sympathy and compassion among the people. It encourages volunteers and donors to come forward for rescue operations and to provide food, shelter

and medical aid to victims and those affected. To a large extent, the media play a role in triggering the momentum of relief activities. Following the 2004 tsunami, media coverage of the disaster played a role in motivating the people to generate remarkably large donations from the international community for the rebuilding of affected areas (Benedikt, 2007; Stirrat, 2006). Despite the positive benefits of presenting a monochromatic vision of the helpless women, the media needs to also focus on disseminating programs designed to help women combat their vulnerability. Given the patriarchal structure of our society we do not give the female sector much importance or consider that they can be of much help in any instance and the media's agenda is also based on these societal norms and values. Similarly, not many people thought that educating women would be of much use in this regard.

There is a great deal of coverage given to climate change after floods in Pakistan but climate change with reference to females has not been emphasized. There are two factors which should be highlighted by media. The first one is that media should focus on female education and the second is that the true potential of females in the wake of climate change/natural hazards should be nurtured and encouraged to flourish. As mentioned by a participant, media does give stories about how women are affected by climate change and but it does not focus on how to address these problems. If women are educated about these problems they will not only be able to cope with climate change and to address natural hazards, but will be able to change the thinking of the society on a whole. However, it is also important to keep in mind that not all Pakistani women are "victims". Many have become conducive members of society and have learnt how to deal with disasters; however, such women are not highlighted by the media much as the "victimized" nature of the females presents a more lucrative subject for media (Z. S. Ali, 2014). In such a situation it is

the responsibility of the media to not only use their sway over the public in a positive manner by imparting awareness and educating females but also highlighting the practical steps that women have taken in order to shatter long-held beliefs as well as overcome adverse circumstances. Media can only render its responsibility effectively, if people have trust in it.

A very important aspect of the perceived effectiveness of media is thus related to education. It has been established above that the media plays an essential role in creating awareness about climate change. The data collected in this research shows that the media is a very influential means of informing both literate and semi-literate Pakistani women. Our respondents suggested that the media as such needs to shoulder the responsibility of educating the masses. Syed Mujtiba Hussain, an expert, commented:

> *Awareness of any phenomenon needs three factors: policy-makers, civil society and media. Among these three actors, media has a more important role and responsibility regarding educating people about climate change.*

There are no two opinions regarding the educational value of the media. But some are of the opinion that media has not harness its potential due to commercialization aspect of the media.

A participant from Karachi University commented:

> *Media is commercialized; it imparts less educational value programs regarding climate change and natural hazards. Media can affectively tell us about climate change so it should allot time to public education, keeping in view its social responsibility. Public education and environmental issues should be emphasized.*

If public education were emphasized, the media could not only serve the role of keeping the population informed during natural hazards and contributing to disaster recovery by providing continuous coverage of the after-effects, but it could also take the lead in educating the population about the links between climate change and natural hazards. A participant from the psychology department of Peshawar University made a similar point:

> *The media needs to place a spotlight on issues which the public should be educated about.*

We see that great social and economic benefits could result from a coordinated effort to educate and prepare the Pakistani population for natural hazards and climate change by the government, media and NGOs.

6.8   Summary

The qualitative as well as quantitative data shows that both literate and semi-literate women own/have access to some form of media or another. The patterns of media usage vary with reference to location as rural media usage is different from that of urban media usage with the exception of television viewing. Similarly, the issue of trust is also different for different information sources. Nevertheless, on the whole media is a widely trusted source. Media should take great care to protect this position and ensure that information is relayed in such a manner as not to excite panic or inflame emotions. This means that the media is responsible for not only relaying information but also monitoring the modalities of how information is relayed. The Pakistani people, like citizens of other countries, exhibit appeal fatigue. Once the "fad" of helping affectees wears off, they lose interest in lending their support. The general public is not cognizant of the fact that it takes considerable time for the lives of disaster victims to return to a semblance of normality, and that they need

ongoing support for that to occur. This research shows that a part of this loss of interest, and the subsequent decline in assistance from the public, may be accredited to the Pakistani media.

Since media is a widely trusted and used source of information, media producers should also take great care to become an effective means of conveying information and initiating change. People trust media sources, which in turn ensure that the media can be an important proponent of effectively addressing climate change and handling disasters. Media can become even more effective by focusing on enhancing the motivational and inspirational factor of information provision. After analyzing the accessibility, usage, trust and effectiveness of media, it can be concluded that the more an information source is trusted, the more effective it can be and vice versa. Media can use the trust it has already garnered amongst the population to serve as a stimulant of awareness and education for climate change and disasters. Within the media field, the Internet remained the literate women's second option for getting information about climate change and natural hazards. The next chapter will thus delve into new media and provide further details about the Internet and mobile phone usage among women.

Chapter 7 : Internet and Mobile Phone as Information Sources about Climate Change and Natural Hazards

7.1   Introduction

This chapter focuses on the practices and perceptions of Pakistani women when it comes to obtaining climate change and natural hazard information from the Internet and/or via mobile phone. In Chapter 6 (see Table 6.1), the quantitative data revealed that 64.7% of literate Pakistani women own or have access to devices that connect to the Internet. As mentioned in Chapter 6, the semi-literate women were not asked about Internet access. However, both groups have access to mobile phones, specifically 77.3% of the literate women and 61.7% of the semi-literate women in the data pool. Chapter 6 also revealed that family, friends, neighbors or coworkers were thought to be effective information sources during natural hazards by 8.1% of the literate respondents and 33% of the rural, semi-literate respondents. Although some this communication occurred through word of mouth, other essential information was communicated by mobile phone.

The rationale behind dedicating a chapter to the role of the Internet (via personal computer or mobile phone) and person-to-person communication via mobile phone is that the qualitative data from this study indicates that both are emerging means of information exchange regarding climate change and natural hazards in Pakistan. We can only expect their usage and therefore importance as information sources to increase. Policy-makers can therefore plan proactively for future disasters by understanding the current and potential roles of the Internet and mobile phones in greater detail.

In this chapter we will explore in depth Pakistani women's usage of the Internet and mobile phones. We will also discuss the current and possible future impacts of these sources

with regards to the decentralization of information and the "new journalism" that is arising as a result of these technologies.

7.2   The Internet as a Tool for Climate Change Education

Information consists of a series of neutral facts, but it is up to the users to interpret and act on these facts according to their information needs and thought processes. The circumstances in which an individual acquires information are also very important. For instance, when the data for this study was collected in early 2011, the floods of 2010/2011 were still fresh in the respondents' minds. Therefore, they were very alert to the process of acquiring information about floods from what they deemed to be a trustworthy source and then deciding what actions to take to preserve lives and livelihoods. Thus, this research validates how information which is intended to be, and was presented as, value-neutral can become value-added according to its perceived trustworthiness. New media provides women with more options to acquire information. In comparison to older forms of media, Internet users are able to choose information selectively. It is in the users' control whether they decide to seek information about natural hazards or climate change, and from which Internet sources. The vast range of information providers on the Internet means that information becomes decentralized, which is to say the recipient needs to rely less upon traditional information sources. Users have both the choice and the responsibility to test the validity of these sources and base their actions upon those that they deems most trustworthy. The Internet has become a watch dog of official and journalist crisis communication (Bucher, 2002).

In an American study conducted over a decade ago, McBean and Hengeveld (2000) asserted that the three primary sources of information regarding climate change for students

and the general public were traditional media, the Internet and formal education settings. In the UK Demeritt and Langdon (2004) found the Internet to be the most consulted source of information for British adults when it came to climate change. A more recent study found that American teens and young adults consider formal education to be of much less importance than the Internet in regards to gaining understanding and awareness of climate change (Leiserowitz, Smith, & Marlon, 2011). This may be the case with Pakistani youth as well, as they are the heavy users of the Internet and mobile devices. In previous chapters, our data revealed that most of the Pakistani women involved in the study received information about climate change and natural hazards from television and radio. However, the quantitative data also revealed that the Internet is already the second most accessed and trusted source of information for literate women. The sharp rise of Internet usage presents a challenge to the traditional media in its ability to provide updated information. No doubt, the traditional media continues to play a role in informing the public about climate change and natural hazards, but it seems that the Internet is becoming a more effective medium for information transfer. One might say that this translates into informal, self-directed education about climate change.

This diversification of information regarding climate change and natural hazards due to varied dissemination platforms is a positive outcome for the Pakistani public at large. Due to the competition between the Internet and traditional media sources, information providers have been forced to attempt to reach more audiences, using more diverse forums, channels, messengers, and frameworks (S. C. Moser, 2010). In fact, Haddow and Haddow (2009) noted that text messaging, blogging, and video sharing achieved faster coverage than traditional media during the 2008 disasters in Myanmar and China.

7.3   Penetration of the Internet and its Impact on Mainstream Media

Pakistan is ranked fourth in the world for broadband growth, with an increase in broadband usage of 46.2% during 2013 (PTA, 2013). The efforts to network the country have continued, and 3002 towns and cities have been plugged in to the Internet since 2007-2008 ("Pakistan: Key Telecom Growth Market," 2006; Survey 2010, 2010). The use of broadband services has undergone phenomenal growth in homes and offices located in major cities. All the universities of Pakistan are continuing to expand the accessibility of computers and the Internet for their staff and students.

In this context, the Internet is fast gaining importance as an information source. The Secretary Ministry of Disaster Management, Javed Malik, commented:

> *The Internet has brought a change in the flow of information. There is a bottom-up information flow that has challenged the media's role as the only information providers. The Pakistani youth is adapting to the Internet at quite a rapid pace and this may bring a revolution in the near future.*

The impact of the Internet on the traditional functions of the media is related to the bottom-up approach of the Internet. The speed and range of information spread through this approach has improved journalism practices and made mainstream journalism more competitive. It can be inferred that the Internet is continuously creating new challenges for the mass media. Furthermore, media organizations constantly have to upgrade and improve their services because their audience has access to a greater number of resources. Media organizations have had to rethink their role in the changing position of their audience in order to remain indispensable information sources to their readers and audiences. It is an ongoing challenge for writers, editors and advertisers to stop thinking in terms of the old

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broadcast model (one-to-many) and to start "thinking network" (one-to-one) (Bowman & Willis, 2003).

The argument made in Chapter 6 was that the accessibility and trustworthiness of an information source is connected with its effectiveness. The increased penetration of the Internet in Pakistan currently provides literate Pakistani women with access to many sources of information about climate change and natural hazards. It is likely the semi-literate rural women will also soon have access to the Internet. As the Internet offers a kind of informal education, there is the possibility that this group could become more literate as well as becoming educated about climate change and having more sources of information to choose from in times of disasters.

7.3.1 User-generated Internet content as a new journalism.

User-generated content on the Internet is now challenging national and international media as well as their narratives. Much of the attention-grabbing and useful information on climate change and natural hazards can be found on the Internet due to its easily accessible, user-generated content and the role this plays in providing information and creating awareness about climate change and natural hazards. When asked about the role of the Internet regarding climate change and natural hazards, Mahmood Akhtar Cheema, the Pakistani representative for International Union for Conservation of Nature (IUCN) said:

> *There is a huge difference between the coverage of mass media and alternative media regarding climate change. However, alternative media is a good tool but making these tools useful in a more organized way is a big challenge.*

Cheema called the Internet an alternative media source, but it should be kept in mind that "alternative media" itself is a broad term. Alternative media is greatly varied and can be

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obtained in a number of formats such as movies, magazines, the Internet, newspapers, radio etc. Alternative media is simply that which provides a different perspective from mainstream media. For instance, in Aceh, the tsunami-torn province of Indonesia, user-generated content through emails, tweets and other social networking sites not only outpaced national and international media coverage but also challenged the reports of media (Benthall, 2008). Citizen media outlets on the Internet are inverting the power structure between citizens and elite traditional media companies (J. Armstrong & Zúniga, 2006; Reynolds, 2007).

The ease of upload onto citizen and social media sites is creating a new kind of journalism, or at least an extension of journalism (Deuze, 2003; Dizard, 2000; Dominick, 2010; McQuail, 2010; Stovall, 2005; Uwakwe, 2010). Opinion about the influence of the Internet on the mainstream media is polarized. On one hand, some commentators argue that the Internet is presenting a positive challenge to the mass media, while on the other hand, some argue that the extreme freedom associated with the Internet renders many people who have no journalistic training into journalists. This environment of the Internet creates an extremely difficult situation in regulating its usage and hence has introduced many unethical reporting practices, such as immorality, vulgarity, bias, bad taste, sycophancy, sensationalism, falsehood, manipulation, moonlighting, chauvinism, and intrusion (Kur & Essien, 2014). This type of journalism is not socially responsible (McQuail, 2010). Whereas mainstream media is held responsible for its coverage, individuals involved in citizen journalism are not directly responsible to anyone and hence may engage in fabrication, sensationalism, use of unverified sources etc. Online content posted in cyberspace is very difficult to standardize, despite the importance of standardization. At the same time, online content is increasingly prone to commercialization, with cyberspace operating as a terrain

for selling and buying alongside its function of disseminating information (McQuail, 2005). From the perspective of news providers, one of the experts interviewed had another opinion about the Internet:

> *The Internet is also improving the quality of reporting as the media now has easier access to data based information and is using many online available services.*

According to this expert, the Internet allows traditional news media to gather and distribute information more professionally. Reporters can gain up-to-date information about natural hazards by browsing sites with Geographic Information System (GIS) maps and satellite images (Emani & Kasperson, 1996). The unique technological applications of the Internet make it a valuable source for journalists, improving their reports and helping them to cover natural hazards more efficiently and comprehensively.

A very significant attribute of the Internet is its ability to give voice to users who question the status quo as well as the power holders. This is further intensified by its ability to connect people into communities based around the same interest. After the catastrophic 2010 and 2011 floods in Pakistan, there were numerous texts and photos on the Internet about the floods and the affectees, as ordinary users as well as various stakeholders engaged with the Internet to show the country's situation to the rest of the world. In Pakistan, the flood-affected areas were not digitally networked, so the Internet was not used by victims as a mean of communication. But in many countries, the Internet connects survivors with the rest of the world, especially in those cases when communication networks are severely affected by disasters. Consequently, victims and their families were not able to communicate with one another. In order to overcome this gap in communication they used the Internet, especially social media such as Facebook, Skype, Twitter, etc. along with local

Japanese networks to keep in touch with the outside world and family members (Kaigo, 2012; Wallop, 2011).

In Pakistan, the Internet is limited in its current effectiveness due to insufficient penetration, power cuts, low literacy rates, and limited purchasing power for computers and connections, as well as poor Internet service in rural areas. Yet in urban settings, the Internet is contributing to the dissemination of information about climate change and natural hazards, though only amongst the educated elite and middle classes. Although Pakistan does not yet have an extensive infrastructure when it comes to the Internet, the existing framework highlights the importance of the Internet in disasters. One of the climate change task force members said during his interview,

> *Traditionally, TV and newspapers do of course focus on climate change and disasters. They usually mention disasters in the news section, front page or part of the 'breaking news' segment, but the role of alternative media in the form of the Internet is undeniable. The Internet is quickly becoming a popular means of accessing information for the educated middle class. Therefore, it can play a significant part in providing information about climate change and natural hazards.*

Most of the experts were of the opinion that the Internet is creating a niche for itself, along with mass media, regarding climate change and natural hazards. In Pakistan, however, the Internet simultaneously has a broad and narrow scope. It is narrow in the sense that uneducated Pakistanis are unable to avail themselves of the Internet, yet broad with respect to its range, both in terms of the variety of issues it can address and the large number of educated people it can reach over a diversified area. The Internet is of course fast gaining a foothold in the arena of mass communication and as such it can prove to be a useful tool in conveying awareness and information to the masses. However, for the Internet

to be used to its fullest potential an infrastructure needs to be developed which can deal with not only the demand for but also the credibility of information. The Internet is being used to a great extent amongst youth, which offers the potential to build communication bridges within a national community and an international one with reference to climate change and natural hazards by exploring new ways in which they can be addressed. Emani and Kasperson (1996) conclude that, in the history of disaster management, Internet usage marks the beginning of a new period for communicating information about disasters. However, there are still many countries like Pakistan which do not have a proper Internet infrastructure and where people are not even aware of Internet usage.

Unfortunately, as compared to developed countries, Pakistan belongs to one of the regions where the Internet has not penetrated to a great extent. National broadband penetration was a mere 1.52 % in 2013, meaning that 1.52 individuals out of 100 subscribed to broadband services on average (PTA, 2013). Even with an available Internet facility there are problems, as the Internet often cannot be properly used due to low speed, poor connectivity and the long duration of power cuts. Limited coverage can affect the applicability of technologies such as Google's Person Finder, which is an open source web application that provides access to a registry and message boards. The registry and message boards connect victims with other victims as well as families and loved ones who have been affected by natural hazards. Person Finder, which facilitates information postings, proved highly successful in Japan following the earthquake and tsunami in 2011 (Price & Richardson, 2011). However, this application could not help much in the aftermath of the 2010 Pakistan floods as the vast majority of the affected population were digital have-nots prior to the flooding. Additionally, the areas affected are predominantly home to poor, semi-literate, rural Pakistanis. As Ramaswami, the founder of the Google Person Finder,

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has noted, despite their recent successes, the [Person Finder] team is still learning and adapting. For instance, the Person Finder tool launched for September 2010 floods in Pakistan was a failure: those most affected by the flood had no Internet access (Goldman, 2011). This requires a serious effort from the government to provide an improved IT infrastructure to urban as well as rural areas of Pakistan to increase their connectivity.

7.4   Role of the Internet in Providing Information about Climate Change and Natural Hazards

In the present study, the Internet was not added to the list of options for semi-literate respondents for reasons of lack of accessibility as well as viability. The Internet is largely not available in remote rural areas, and women in these areas are not literate or technically adept enough in any case to use the Internet. In order to ascertain literate women's perceptions regarding the extent and role of the Internet in conveying information related to climate change and natural hazards, their usage of the Internet provided a starting point. Usage patterns were gauged by how much time the female respondents spend on using the Internet and also how often they use the Internet. Since there are a number of sources and various options on the Internet which give valid and pertinent information, the respondents were further asked to specify their information sources with respect to natural hazards and climate change.

7.4.1   Pakistani women's Internet usage per week.

To explore the usage of the Internet among literate women, they were asked how often they used the Internet. The summary of their responses about the frequency of the Internet use is presented in Figure 7.1:

Internet Usage per week among literate Pakistani Women
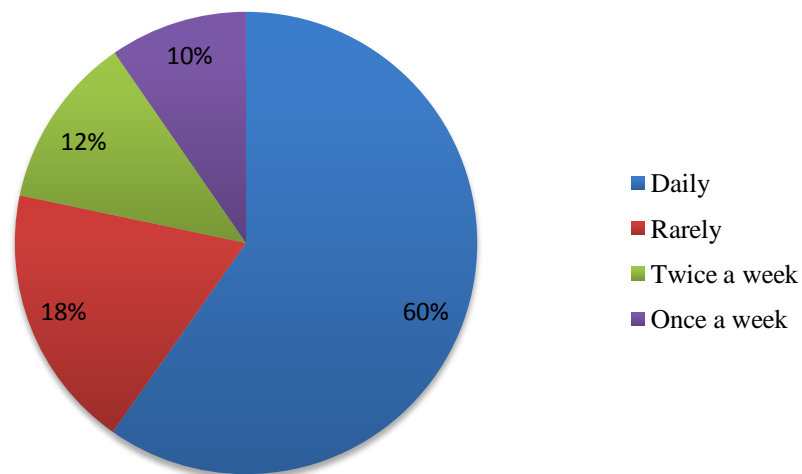
Figure 7-1 : Internet usage per week among literate Pakistani women

The majority of the respondents (58.4%) use the Internet daily. 18.1% said that they rarely use it, whereas 11.8% use it twice a week and 9.4% of the respondents use the Internet once a week. From the statistics given above, it can be inferred that using the Internet is becoming a part of the daily routine of educated women, like watching TV. It should be kept in mind that the respondents were female university students who not only knew where to access the Internet but also how to access it. There was a sharp decrease in the percentage of these respondents who accessed the Internet rarely, once a week and twice a week (i.e. from 58.4% with daily access to 9.4% with access once a week). Focus group participants consisting of academic staff also confirmed that the majority of them use the Internet daily. One of the participants from University of the Punjab said:

Computer and the Internet have become a part of our daily life. I cannot work properly if my computer or the Internet connection is not functioning properly. When I go to my office, the first thing I normally do is to switch on my computer.

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This points to the fact that the Internet has become an inescapable part of life in the educated stratum. The majority of the faculty members of the universities consider the use of computer and the Internet a basic necessity in their personal as well as professional life. One of the faculty members from the University of Karachi said:

> *Today in this information age; you cannot imagine a university, a classroom or a faculty member's office without a computer and the Internet connection. Our universities are establishing computer labs to ensure the access of computer and the Internet for all the students. Although all of our classrooms and offices are not equipped with the Internet, it is very important to keep pace with the information revolution.*

Therefore, this means that the literate respondents were aware of not only the potential that the Internet holds but also believed that the facility should be provided to both the students and the faculty so that they can acquire the latest and most up to date information. This shows that the Internet has made a strong place for itself amongst the educated class of Pakistan.

7.4.2 Time spent on the internet per day.

Female students were asked how much time they spent a day on the Internet. The question explored the extent of use of the Internet among respondents. Figure 7.2 presents the summary of their responses:

Duration of time spent in a day on the Internet
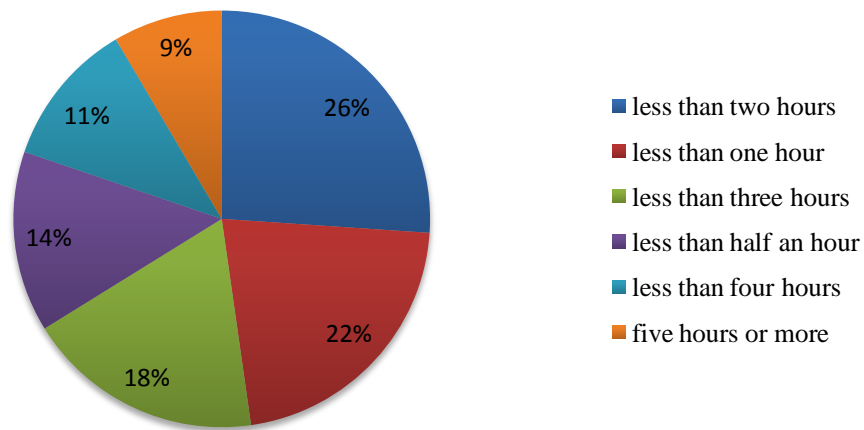
Figure 7-2 : Time spent on the Internet per day

The female students who used the Internet less than two hours per day were largest in number. This finding is contradictory to the general perception of the Pakistani population regarding the excessive use of the Internet by youngsters. Pakistani parents tend to think that their children are too involved with the Internet and spend a great deal of time on the web. However, these findings show that the respondents did not spend too much time online. One of the reasons for relatively limited time per day given to Internet usage could be that the respondents of this study were university students who had to give more time to their formal education. The lower percentage of female students who used the Internet up to four or five hours daily suggested that as a norm students were either not spending much time on the Internet or they were reluctant to admit to their heavy use of the Internet due to social reasons. In Pakistani society, the use of the Internet by young women is not considered appropriate as it provides them with the opportunity to contact the opposite sex, which is not appreciated by many parents. In this cultural context, the young girls are open about their use of the Internet but are reluctant to admit using it too frequently (Z. S. Ali,

2012). In urban settings, however, this is going to be a less relevant concern than in rural cultures, where it is still valid.

7.5   The Internet as a source of Information for Climate Change and Natural Hazards

In order to find out the Internet as a source of information for climate change and natural hazards among female university students, they were asked whether they had been using the Internet or not. The summary of the responses of the respondents is presented in the Figure 7.3:

The Internet as a source of Information for Climate Change and Natural Hazards
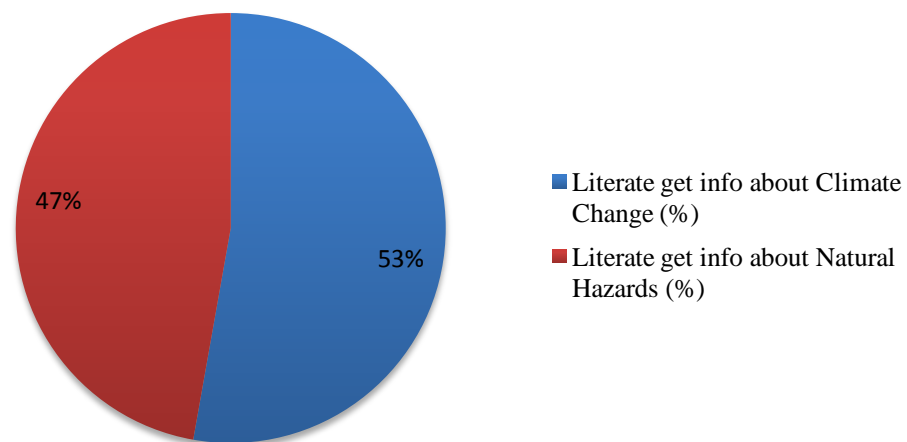
Figure 7-3 : The Internet as a source of information for climate change and natural hazards

In the present study, the quantitative data reveals that, after television, the Internet most commonly provided literate women with information about climate change and natural hazards. The Internet was the second most widely used source by literate women to gather

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such information, with 46.3% and 41.4% receiving information about climate change and natural hazards respectively. This finding is in line with Wei et al. (2014) conducted in the Centers for Disease Control and Prevention in Shanxi province, China. The study showed that in terms of information sources the Internet is the most common source of information (85.4%), followed by television (78.3%) and newspapers (53.5%). Wei et al. also found that there was a statistically significant association between educational level, gender and the Internet as a source of information; respondents with a higher educational level (89.0%) and women (88.9%) were more likely to acquire climate change information through the Internet.

The Internet is now available in almost all educational institutions of Pakistan and most universities provide this facility to their students and staff. With the Internet gradually taking its place amongst television and printed newspapers, literate women tend to obtain information via the Internet through search engine headlines such as those provided by Yahoo. Such information is not, however, always sought by these women. One of the faculty members from University of the Punjab commented:

> *Many months have passed since the flash floods but the Internet keeps reminding me of them. Whenever I open some search engine like Yahoo, MSN and others, there is relief appeal from many international organizations. This keeps reminding me about the catastrophe that the Pakistani nation witnessed.*

Another participant from the same university added:

> *I encounter information about floods whenever I open the Internet for checking my email or open YouTube for some other purpose. Uploaded flood videos catch my attention.*

As such, the Internet serves both as a tool for information gathering and as a reminder of national tragedy, keeping natural hazards present in the consciousness of educated women.

Despite the fact that the Internet is widely accessible in Pakistani universities, it is necessary to point out that the Internet has not replaced television viewership. Literate women continue to consult the television in order to obtain information. This could be due to the underdeveloped infrastructure of Pakistan, where Internet use is hampered by many problems related to obtaining bandwidth and the fact that available bandwidth is not always at an optimal level. People thus tend to rely on TV more than the Internet. Urban women can easily access the TV at home, whereas not all of them have the Internet at home.

7.6 Sources of Information about Climate Change and Natural Hazards from the Internet

Through online newspapers, online radio, blogs, chat rooms, social networking sites, email and YouTube, the Internet provides better opportunities to the users for understanding environmental issues. A number of online sources such as podcasts, list serves, online publications, blogs, etc. as well as an explosion of information sources have had a number of repercussions for the discussion and analysis of climate change. Survey respondents were asked about which sources they used to obtain information on the Internet regarding climate change and natural hazards. Figure 7.4 presents the summary of the responses:

Sources for Information about Climate Change and Natural Hazards from the Internet
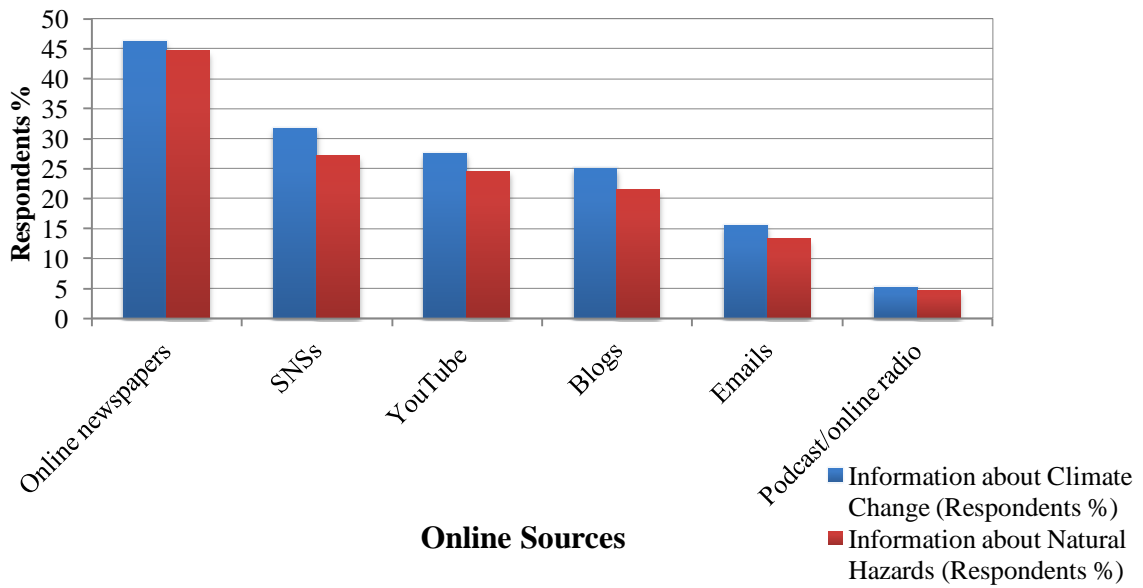
Figure 7-4 : Sources of information about climate change and natural hazards from the Internet

Figure 7.4 reveals that online newspapers were used by 46.2% and 44.8% of the respondents for climate change and natural hazards respectively. Online newspapers are a source of factual information and as such people consult them with reference to serious issues such as climate change and natural hazards. In a move that echoes the shift to reliable online information occurring in other countries, nearly half of the respondents in this survey also turn to online newspapers when they want to know about climate change and natural hazards and their impacts. As one of the experts, a graduate from Harvard who has spent time in other countries, noted:

> *Now the Internet is gradually making its place along with mass media and many leading countries are pioneering the way to use the Internet to relay information about climate change and natural hazards. The citizens of developed countries*

either use online sites for newspapers or they use aggregators on the web such as
Google News.

Social networking sites such as Facebook are also used by female university students to gain information about climate change and natural hazards. According to ITU, there were 7,984,880 Facebook subscribers on Dec 31, 2012 with 4.2% penetration in Pakistan (Internet World Stats, 2014). As the findings in Figure 7.4 demonstrate, one third of the female students (31.7%) use social networking sites (SNS) to get information about climate change and 27.2% use SNS to get information about natural hazards. Social networking users tend to discuss issues related to all spheres of life, from personal announcements to social problems and political issues, and this also includes climate concerns. In fact, it is easier to discuss such issues during the flow of a conversation while exchanging emails or chatting with friends, coworkers and other members of the family online. Thus, it may be said that social networking sites not only connect people, but also provide a platform where people can share their experiences related to climate change and natural hazards. The findings of Murthy and Longwell (2012) similarly suggests that users perceive social media as a legitimate communication form during disasters in Pakistan. Posts on Facebook pages not only circulate information but also provide important updates. One of the participants from University of Punjab said:

I have my Facebook account and I received many posts and messages from my
friends who are living out of the country and they were asking about the floods.
They were asking about the loss, affected areas, and affected people. Whenever we
chat, flood was the topic that comes up in our talk. It shows how much they are
worried about their country and their fellows. They are getting the information

through media also, but they want to get personal satisfaction by getting
information from me.

According to this participant, her Facebook friends told her that they were getting information from the traditional media about the havoc created by the floods, but through social media they found a means of getting reliable information from their friends, whom they could ask personal questions. This shows that even if people get information from various media sources, the interpersonal communication through Facebook and emails gratifies their need to be in touch with their compatriots when there is some problem in the country. Even aside from disasters, discussion of the weather often works as an ice breaker when an informal chat is initiated on SNS. This exchange of experiences helps people learn from each other and it can prepare them for dealing with any disaster.

In Pakistan, which has 6.8 million[23] YouTube users, people tend to access video sites such as YouTube to watch the climatic havoc wreaked whenever some disaster strikes. Figure 7.4 shows that YouTube was accessed by 27.5% of the respondents to get information about climate change, while 24.6% of the respondents used YouTube to gain information about natural hazards. The appeal of YouTube is that it shows current and often real-time coverage related to the impact of climate change and natural hazards. A participant from University of Peshawar said:

My son is 16 years old and he is always busy with the Internet. Earlier that was
really annoying for me because he wastes his time. One day he showed me the
YouTube videos of the tsunami in Japan that made me to think that if he was not
using the Internet he may not know the havoc caused by disasters in other countries.

Now, I believe that Internet is enhancing knowledge of other countries among its users.

Therefore, it can easily be said that the Internet is not only providing information about climate change and natural hazards within the country, but it has also become a platform for providing information to Pakistanis about such phenomena in other countries as well. Moreover, YouTube also offers a means of informal education, as the content provided is open to interpretation. For instance, if an individual accesses YouTube and watches a video about flood victims and the steps taken in the face of the floods, then she will arrive at her own conclusion about what measures one should take in similar circumstances. In this way, objective information, in the form of neutral facts, is transformed into subjective knowledge according to the values, requirements and circumstances of the people watching.

The Internet has made it possible to pool disaster videos in real time from all corners of the world. Such videos can be either informal or formal. Various news channels use YouTube to attract users and amateur photographers, while video makers use YouTube and other such sites for the sake of relaying captured footage. This helps develop new perspectives and insights as now, instead of one TV crew, we have thousands, all of them recording, bearing witness and publishing online as a challenge to the hegemony of the media professionals. Nonetheless, despite the fact that YouTube users are able to "see" the circumstances, it is significant that people rely more heavily on online newspapers and SNSs as compared to YouTube. Although YouTube provides graphic knowledge, online newspapers and SNSs are still the topmost source when it comes to the promulgation of information relating to natural hazards and climate change. A reason for this could be that newspapers are considered to be more trustworthy than videos posted on YouTube.

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Journalists are required to write an article after a considerable amount of research; in contrast, anybody can post a video on YouTube irrespective of the amount of research that has or has not been conducted. It is pertinent to note that whereas amateur You Tube videos do challenge the hegemony of professionals, on the other hand, people seeking information still tend to trust professional media producers more. The survey results indicate that literate women are aware of this distinction.

Accessed nearly as often by respondents as YouTube, blogs are popular especially because of their interactive format, which facilitates chatting, collaboration and interpersonal communication (Thurman, 2008). The use of blogs is increasing in Pakistan. Blogger.com alone has 1.7 million Pakistani bloggers[24]. Blogs related to climate change, such as "Climate of My Future", "Accuweather Climate Blog", "MediaClimate", etc. are updated every day. Our survey revealed that 25.1% of the female university students get information from blogs about climate change, while 21.5% of them use blogs for information about natural hazards; in other words, almost one quarter of the respondents regularly access blogs. Through blogs people have greater access to news items, but blogs are also a game changer in the sense that they have helped shift the balance of power between the news power holders, such as traditional media outlets, and the public; this in turn has led to the generation of news reports by citizens and the public (J. M. Armstrong & Moulitsas, 2006). Although we have seen that Pakistani Internet users access YouTube, SNSs and online newspapers, the public focus and longer format of blogs mean that those who take interest in environmental issues often turn to blogs for detailed and specific information. At the same time, the blog format has also become a commercialized business and as such it has adopted some of the structures of traditional journalism. The main

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[24] http://www.blogger.com/profile-find.g?t=l&loc0=PK&loc1&loc2

blogger hires underlings such as editors and full-time writers who even engage in investigative journalism. Blogs also serve to decentralize power with respect to citizen involvement as compared to the traditional hierarchical control rampant in journalism (Crumlish, 2006; Levine, Locke, Searls, & Weinberger; Rosen, 2006; Scoble & Israel, 2006; Surowiecki, 2005). Where earlier there was a clear line between amateurs and professionals, now the line is becoming indistinct due to the advent of new media. As in other areas of life where amateurs have greater freedom to experiment, new media and the resulting coverage has also granted amateurs greater freedom. During the last 20 years, risk communication has also been affected by the inclusion of a greater number of people. Given the current financial and economic scenario, media has a somewhat perplexing potential. New media provides amateurs the chance to engage in information provision and even serve as motivators of mobilization towards environmental issues. However, traditional media is also challenged by the amateur blog community.

Amongst the tech-savvy public, individual blogs are being maintained. Blogs and other social media sites are also distributing news reports about natural hazards and climate change. The most important difference between news on blogs and news on mass media sources such as the radio, TV and newspapers is the formal nature of the latter as compared to the informal nature of blogs and other social media sites. With the availability of digital media, many scientists have assumed the role of citizen journalists in order to report on the effects of climate change first-hand. More specifically, they even communicate directly with the general public through blogs. In this way, they are utilizing new media and thus changing the landscape of journalism and scientific information (Murdock, 2010). This, mean that information obtained via the Internet is not always non-reliable. In fact, availability of various kinds of information obtained from the Internet help in getting

various viewpoints. Not only does this hybrid form of citizen journalism convey and improve people's awareness of climate change and associated manners, but is also shows how reportage on environmental issues can be restructured anew.

Figure 7.4 also reveals that 15.5% of the respondents get information about climate change and 13.3% of the respondents get information about natural hazards while exchanging emails. This means that emails were ranked the second-to-last source of information for climate change and natural hazards. Nevertheless, a small percentage of people do gain information through emails, but this percentage has to do with generational difference. As discussed in the methodology chapter, the survey data involving literate women was collected from university students while the focus groups involved academic staff. Therefore, two aspects should be kept in mind: the first is that these women belong to two different age groups and the second is that they have equal access to the Internet. This accounts for a slight difference in the quantitative data and qualitative data. The survey respondents were students aged between 22 and 24 who were engaged heavily with Facebook, whereas the focus group participants were female faculty members of the universities who were in a higher age bracket and the majority of whom claimed to be more dependent on emails than SNS. Most of the faculty members and experts considered SNS to be platforms which were mostly used by the youth and remarked that they themselves preferred to contact others through email. One of the participants from University of Peshawar said:

> *I have a computer in my office and there is not a single day that I come to my office and turned on my computer but do not use my email. I exchange lot of emails with my other coworkers from different countries whom I met in various conferences. The email has increased my connectivity. Earlier while coming back from conferences, I*

had a lot of visiting cards of other academicians and researchers working in my research area but I normally misplaced their cards and then the contact information of that person was also lost with it. Now, emails help me keep the contact information stored for a longer period of time.

Although this participant did not mention if the exchange of emails facilitates information-gathering regarding climate change and natural hazards, another participant form the Institute of Environmental Studies, University of Karachi mentioned:

Off and on through exchange of emails with my other fellows, I come to know the climatic changes in other countries. Though we start with weather that leads, sometimes, to the reasons and factors behind the erratic behavior of weather and normally ends on the discussion around climate change.

People continue to get disaster information from the mass media, but the above statement indicates that the Internet now helps them verify the media reports personally through email exchange. As, one of the faculty members of the University of Baluchistan said:

Many people who are in my mailing lists asked me about the severity of the floods through emails when the country was in severe catastrophe. People, who know me, sent me emails enquiring about me and my family's safety and about the affectees' situation. I was able to tell them the actual situation in Pakistan due to the Internet.

While university students ranked SNSs as the second and email as the second-to-last option for getting information about climate change and natural hazards, the majority of the faculty members during focus groups said that they use email for getting and exchanging information about climate change and natural hazards. It can be inferred that the use of email has an age variable, which is a decisive factor. The above-mentioned participant from

the University of Baluchistan did not mention the age of her email interlocutors, but we can assume that she has other coworkers of her age. According to her, emails helped her communicate about the disaster Pakistan was facing. It can also be inferred that this online forum plays a role in counter-checking or confirming the media reports. People had a perception about the disasters from media reports that they then pursued more personally through their email contacts. This interpersonal communication is the foremost reason for the use and popularity of email as well as social media.

The dialogue through interpersonal communication via social networking sites, email exchange, posts on blogs and comments on YouTube leads to the sharing of experience and knowledge, and represents a mode of education that is informal but often has greater impact than traditional media. Such interpersonal discussion and interpretation help an individual to gain a greater awareness about the topic at hand. Therefore, the information obtained through emails, SNS and blogs, despite often being of a personal nature, leads to experience-sharing and interpretive acts which help build up knowledge beyond the more traditional channels of information distribution.

An important part of interpretation is also the selection of pertinent information. As a user, an individual may discard or embrace the information available on the Internet. One may believe in its validity or ignore it on the basis of its unreliability. Internet users may, however, opt to make certain information searches automatic as they find reliable pathways to information they perceive as necessary. One of the participants from University of Punjab said:

I was not in the habit of checking the weather forecast daily. Now, I have an application that shows the weather forecast on the desktop of my computer that

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keeps me updated about weather daily. If we enhance its use, we can forewarn people about natural hazards.

This participant has pointed out the possibility of using web-based apps to forewarn people about natural hazards in order to reduce their vulnerability. If people are aware of the expected weather through weather forecasts and related apps, they will be able to anticipate risk factors and address them while also taking on preventive measures. The concern, of course, is that a string of natural hazards arising from frequent climate fluctuations could lead to the depletion of resources as well as risk management options at the domestic, communal and even national level (Heltberg, Siegel, & Jorgensen, 2009). This would require people to be more self-sufficient in gathering and sharing information, and the Internet offers such a possibility. The survey and focus groups show that a variety of Internet-based communication is helping the participants to share their knowledge of climate change and natural hazards, and thus to broaden their awareness of global climate change as well as to inform the world about Pakistan's situation during disasters.

As for bandwidth radio, listenership is in decline in Pakistan and radio is not used by many people in order to gain information about natural hazards, as shown in Chapter 6. Information related to natural hazards is readily available from other sources; thus podcast/online radio is not of much significance in this regard. As Figure 7.4 shows, podcast/online radio was used by only 5.2% and 4.7% of the female university students for getting information about climate change and natural hazards respectively. Amongst the reasons for this low percentage, the most notable is that most people do not know about online radios. They are aware of online newspapers and specific newspaper sites, but online radio sites are relatively unknown and thus rarely used. On enquiring about the role of online radio in natural hazards, one of the faculty members asked with surprise,

Is the radio really available on the Internet?

This quote demonstrates that only a small number of the respondents were users of online radio/podcasts; as a result, online radio was seldom consulted to gather information about climate change and natural hazards.

7.7 Perception of Women about the Role of the Internet in Addressing Climate Change

To extend the issue of Internet use to questions of perceptions of the Internet's usefulness in addressing the issue of climate change, the women were asked to what extent the Internet is able to provide updated information regarding climate change. As discussed above, the Internet is an informal educational medium as well as a medium for sharing experiences. The formal online education offered by various universities is not in the scope of this study, but emphasis can be placed on the informal education that a user gets by sharing experiences and exchanging knowledge through various platforms available on the Internet. Hence, respondents were also asked about the educational role of the Internet as well as what they had learned from the Internet about how they can play a role in dealing with climate change. As the present study addresses the gender-specific nature of climate change, the respondents were asked about the role of the Internet in educating women about climate change. Furthermore, the respondents were asked about the role of the Internet in addressing national and international climate change politics. The responses are given in the form of a bar graph in Figure 7.5:

Internet creates awareness about climate change
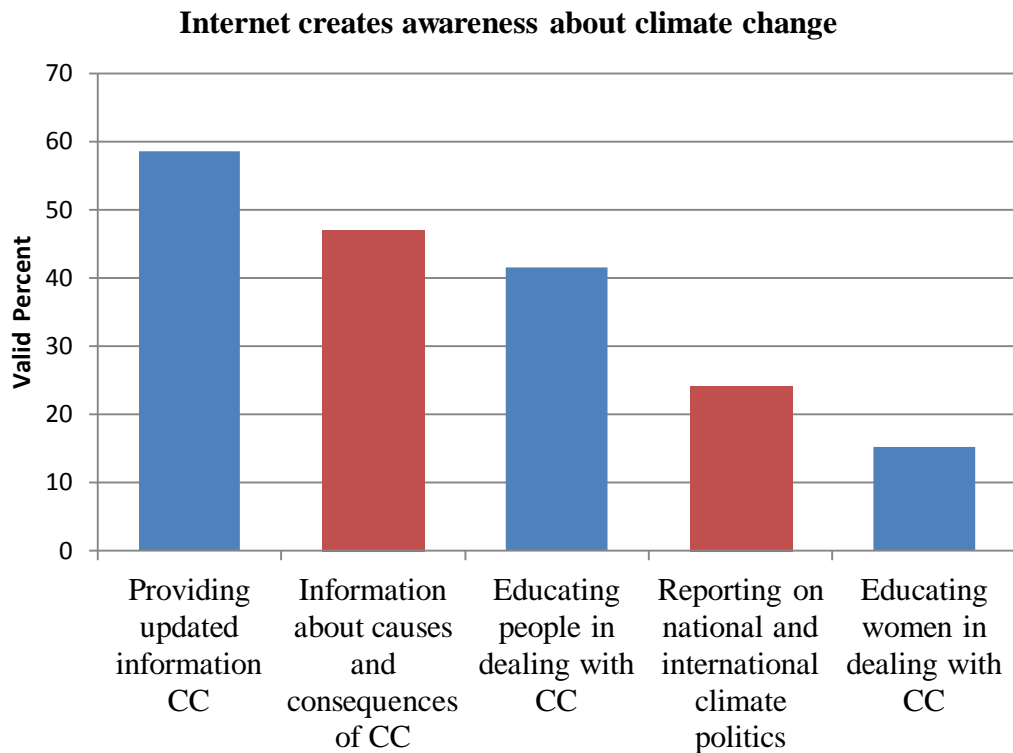
Figure 7-5 : Bar Graph about role of the Internet in addressing climate change

As the bar graph shows, 58.6% of the respondents thought that the Internet creates awareness about climate change by providing updated information. 47.1% of the respondents believe that the Internet provides information about the causes and consequences of climate change. Updated information received through the Internet enhances the awareness of the respondents about their surroundings and helps to improve their personal and social understanding. Because of its interactive and updateable nature, the Internet is full of the latest details, facts and data uploaded from across the globe. It provides an opportunity for sharing experiential; knowledge; at the same time, it provides the means for users to access scientific knowledge about climate change. As Ulrike Rohr pointed out:

...the Internet has also connected ordinary people with scientific knowledge by providing information. We can get much better information from the Internet than mass media. Masses need to be addressed through mass media but through the Internet they can get many ways to explore the issue. The Internet is becoming more important nowadays.

Internet based technologies such as Web 2.0 have led to decentralization of information. Web technologies also ensure that there is more interaction with and amongst users; thus information flow has become more dialogic rather than merely being limited to one-way delivery. Such technologies are conducive to the promulgation of information and the underlying principle is the improvement of interpersonal communication. The Internet and Internet based technologies have ensured that information is not only accessible to power holders but also has a broader and more generalized basis, one which involves the masses to a greater extent and is less discriminatory. McCullagh (2003) suggests that the technology can create a more open public sphere in which citizens have access to a wider range of information and interpretation than the conventional media provide.

Another important function of the Internet is that it has helped spread scientific information which is not only inaccessible but complicated for the ordinary layman. Before the advent of the Internet, it was difficult to get advanced information about scientific knowledge so easily. Now the Internet, as a tool for either disseminating or getting information regarding climate change, has made such information accessible and comprehensible for a layman due to many sources available on the Internet. For example, there are many websites devoted to news and information about climate change, such as

ScienceDaily: News[25] and ScienceNews,[26] which are dedicated to conveying simple and understandable scientific information about climate change to Internet users.

Besides providing updated information, the Internet also educates the user population. As shown in Figure 7.1, 41.6% of respondents said that the Internet is educating people about how individuals can play a role in dealing with climate change. One useful benefit of information obtained via the Internet is that there is more potential for discussion, as the Internet promotes interactivity and interpersonal communication. The interactive nature of the Internet highlights the distinction between traditional media and new media. While traditional media focuses on providing information (and entertainment), new media not only provides information but also provides intersecting platforms for discussion of this information. This, however, also introduces the problem with new media, namely the fact that information obtained from the Internet is difficult to verify. In spite of the verification dilemma, the Internet is the second most valued source of information about climate change and natural hazards, as mentioned in Chapter 6.

The Internet has played an effective role in establishing links among various stakeholders in the climate change debate and it is becoming a potential tool of climate change politics. Climate change discussions have come to revolve around public relations, strategic communication and efforts at advocacy displayed by numerous stakeholders. All of these aspects are pertinent to specifying the public agenda and providing the background story of climate change, which is framed differently according to specific perspectives. Public opinion plays a crucial role in climate politics (Bernauer, 2013). Online media has now become an arena for the change in international and national climate politics. 24.1% of

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[25] https://www.google.co.nz/?gfe_rd=cr&ei=-SAVU_HmH9DC8geDu4DQAg#q=science+daily+news

[26] https://www.sciencenews.org

the respondents thought that the Internet was active in reporting on national and international climate politics.

Most people are unaware of the problems faced by people halfway across the world, but the Internet brings these problems to the forefront. It ensures that the propagation of information is not limited to only one district, region or country. People from any part of the country or world can learn about events in other parts of the country or other countries altogether. The Internet has also played a part in building bridges, as Ulrike Rohr has pointed out:

> *Climate issues have received more salience on the Internet. Mass media play an important role in bringing the climate issue to government agendas but at the international level, the Internet has more force to push the international community to act in addressing the climate change problems.*

As contended by this expert, the Internet has provided a means for the international community to be active in addressing climate change. As pointed out by Ulrike Rohr:

> *The Internet has also helped climate change issues gain international recognition.*

Indeed, the international community has been forced to pay attention to climate change due to the Internet. At the same time, the Internet has become a means of connecting organizations and agencies, enabling them to work together to address climate change at a local as well as global level. For instance, a number of ads related to relief efforts during the 2010 floods gained the attention of national and International donors. One of the experts explained:

Internet connectivity has linked many organizations working in this area together.

These organizations are sharing and learning from each other's experiences

through the Internet.

These organizations include but are not limited to government agencies, private stakeholders, NGOs, etc. This collaboration of agencies and organizations ensures not only thorough diffusion of information but also the relay of important information and messages to the public. Many government agencies are gradually realizing this potential and utilizing it.

The Pakistani government is also well aware of the potential of the Internet and the need to harness it. Consequently, the Internet is fast gaining importance for the Pakistani government in the field of climate change adaptation. As Javed Malik commented:

The power and influence of the Internet cannot be ignored by the government institutions as well as the media themselves. Pakistan Meteorological Department has its web portal with the name of Pakmet[27] to disseminate information to the web users. Similarly, Pakissan[28] is another website connecting the agri-community by providing information about prices, weather, for better farming. This information available on the Internet [is] contributing to some extent.

As mentioned by the expert, even the government has begun to operate websites to pass along information. Pakmet, Agromet as well as Pakissan provide weather forecasts on a daily basis. Pakmet and Pakissan also give information about climate change, but not very regularly. Such websites aim to ensure that an optimal amount of information reaches the public and that the government's findings (at least those that they intend to share with

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[27] http://www.pakmet.com.pk/

[28] http://www.pakissan.com/

people) are easily conveyed to the public. Despite having an Internet presence and information in the national language, however, such websites cannot reach the most necessary target audience (farmers or ruralites) as they do not have access to the Internet due to poverty, low literacy rate and lack of Internet infrastructure in the rural areas. However, these websites are giving information to national and International stakeholders interested in agricultural products of Pakistan and those concerned about the impact of climate change on agriculture. It shows that the digital platform to share the information is available; the only requirement is to enhance rural people's capacity to access the information.

Educating women about how they can play a role in dealing with climate change was considered to be a role of the Internet by only 15.2% of the respondents. Unfortunately, educating women by the female respondents was deemed of even lower importance for Internet use than reporting on climate politics. There is plenty of information about gender equality, women health, women' s role in mitigation and adaptation from national and International organizations available on the Internet regarding women and climate change, but female respondents were not very sensitive about getting information related to the gender-specific aspects of climate change. It can also be inferred that the women themselves are not very conscious about the role they can play in dealing climate change and natural hazards. One of the faculty members from the University of Karachi recalled a YouTube video:

> *One of the women was swimming in deep water to save her animals. Seeing her in the water, the men tried to save her and her belongings.*

The faculty member was able to recall this video because it had been registered by her consciously as a potentially important event that could be used for further reference.

Interestingly, what she registered was that men can be useful in rescue missions in such situations. When she shared the video with the focus group, the other women similarly saw it as an opportunity to admire the men's actions. This is a reflection of gender stereotyping operative even in women's minds, for even the women were less appreciative of the woman's role in the video. The woman who struggled to save her belongings was not only unappreciated by the men around her, but even other women watching the YouTube video tended to admire the role of the men who came forward to save her and her animals.

When asked about the role of the Internet in preparing women for their role in dealing climate change and natural hazards, one of the female senior program officers at the Ministry of National Disaster Management, Pakistan addressed this question in relation to literacy rates:

> *Given our socio-cultural background, we tend to overlook the usefulness of educating women in any sphere of life, whether it is related to gaining formal education or education related to life skills. There is a low literacy rate among women. They can only use the Internet effectively provided they have some formal education.*

This shows that women who are sitting at the helm of government affairs are conscious about the gendered aspect of climate change and natural hazards. The interviewee considered the low literacy among women to be a major factor that hampers their ability to benefit from the available technology of the Internet. Regarding the role of the Internet in creating awareness among women about climate change, another government representative commented in an interview:

> *The Internet has not had much effect on the awareness of women regarding climate change. Women have a lower literacy rate and it hinders women's use of the*

Internet. As far as mobile phone is concerned, they cannot read and write SMS. Rather, radio and television are more effective channels in climate change awareness programs.

This underlines the fact that the Internet can be used only by literate urban women, whereas the majority of rural semi-literate or uneducated women cannot benefit from the resources available on the Internet. The majority of the literate respondents, however, agreed that the Internet plays a role in addressing climate change, as only a small number of respondents were either unsure or did not think that the Internet could help propagate awareness about climate change. Thus, it can be inferred that among literate survey and focus groups participants the Internet is thought to be of significance when it comes to familiarizing people with climate change and natural hazards. However, these same participants did not emphasize women as a separate social group that needs to be familiarized with climate change. Even for the women in the study, women are to be grouped under the same category as men.

It can be safely concluded that the Internet is in fact playing an important albeit secondary role in providing information about climate change and natural hazards. It plays a role in enhancing the understanding of the users. One of the most advantageous aspects of the Internet is that it enhances the user's ability to get up-to-date information on any topic at any time. Those who have the ability to access and synthesize the unlimited information available through new media channels have the potential to expand their knowledge, and to do so through means of official as well as interpersonal communication. Community preparedness and disaster recovery planning is an important form of adaptation. To be successful, it requires public engagement. The Internet can be an effective tool for preparing

the (literate) community as it provides numerous platforms for getting information, sharing experiences and getting answers to various queries.

Information technology can only help if the literacy rate is improved. Along with raising the literacy rate it is important to educate the masses, not only formally but informally as well. They need to be educated on how to handle information and how this information can be utilized in the wake of a disaster. This is most true in the case of women. Not only are women, especially those belonging to rural areas, unaware of information sources; they are also unaware of how they can use new media sources to deal with the effects of climate change and mitigate the problems caused by climate change. There is a need for women as a whole, whether literate or semi-literate, to be provided with more outlets for information so that they can be fully educated about climate change and natural hazards. The universities have already working on improving their digital presence by enhancing the improved digital infrastructure but there is still need to increase the use of the Internet in their academic curricula to motivate students to utilize the available sources for getting information about climate change and natural hazards.

7.8   Mobile Phone Usage to Access the Information Regarding Climate Change and Natural Hazards

At the moment, about 71.7% of Pakistani use mobile phones, there were 128.93 million users in the summer of 2013. 92% of the land is covered by 35,889 cell sites scattered across Pakistan. However, this does not necessarily mean that mobile phones are used for climate change information, as the Figure 7.6 below shows:

Mobile Phone as a Source of Information for Climate Change and Natural Hazards

- ■ Literate get info about Climate Change (%)
- ■ Semi-literate get info about Climate Change (%)
- ■ Literate get info about Natural Hazards (%)
- ■ Semi-literate get info about Natural Hazards (%)
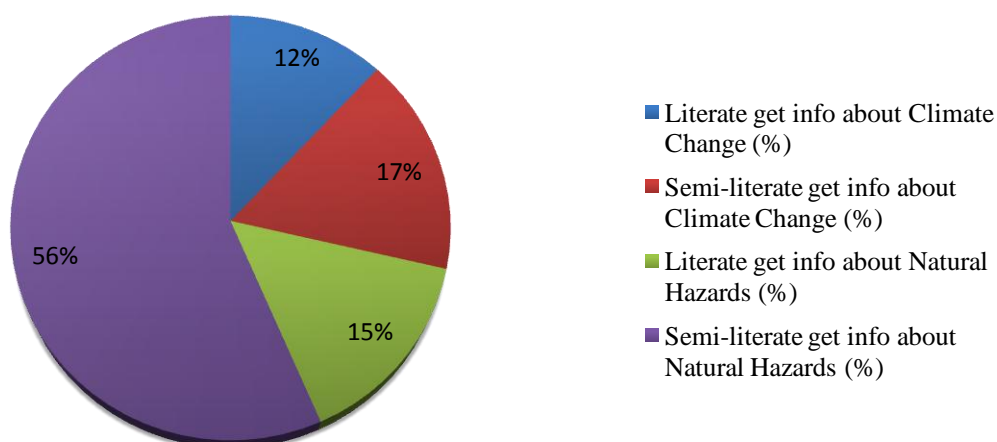
Figure 7-6 : Mobile Phone as a Source of Information for Climate Change and Natural

Hazards

As noted in Chapter 6, more literate respondents (77.3%) owned mobile phones than semi-literate respondents (61.7%), yet the quantitative data in Table 7.5 reveals that 13.5% and 16.8% of the literate respondents received information about climate change and natural hazards, respectively, through mobile phone or SMS, whereas 63.8% semiliterate respondents received information about natural hazards through the mobile phone. Here the difference of percentage in getting information about natural hazards is worth noting. The majority of semi-literate women were affectees living in rural areas, so they had experience of flash floods and hence had relied on information exchange about disaster through the mobile phone. The majority of literate women living in the cities were less directly affected by the floods, so they had less pressing reasons to exchange information regarding climate change and natural hazards through the mobile phone.

Most of the focus groups participants who talked openly about ownership of mobile phones were married. The young girls in the rural areas were not very open about their

ownership of mobiles, as it is considered immodest to possess a mobile phone. This is a phenomenon found in most developing countries. A study conducted by Steenson and Donner (2009) also reveals that in India the gender codes of modesty conflict with mobile phone ownership. Another study conducted by Green and Singleton (2009) in a Pakistani community in Britain found that women's "mobile talk" was considered to be just "gossip" a perception which devalues women's conversation. In this regard, social hindrances could be a valid reason for the lower reported number of rural semi-literate users of mobile phones, rather than affordability, inexperience or disinterest. However, during the floods of 2010 and the 2011, this gendered dimension of mobile phone use changed, as young women commented during the focus group that they were openly using mobile phones to inform their relatives about their situation in the floods.

From the data, we can say that the mobile phone is a technological means of crisis management. When there were floods in the country, it was the mobile phone that was used to connect people and facilitate the management of the crisis. As Jan Mohammad, a journalist from Karachi confirmed:

> *SMS and loudspeaker announcements were the most effective in playing a role in the recent floods.*

It is not only the management of the crisis but also the financial aspect of such disasters which were assisted by mobile phones. One of the flood affectees from Charsadda, Peshawar, who was comparatively richer than the other participants of the focus group, described the role of mobile phone assistance during the floods as follows:

My sister was with her family on a recreational trip to the hilly area in Swat valley[29] when the flood hit her house. The house was full of expensive things. We normally keep our gold ornaments at home. She gave us instructions pertaining to the places that she had kept her gold ornaments and other ornaments. We were only able to effectively follow her instructions due to our mobile phones.

With reference to this respondent's comment it is important to keep the socio-cultural background in view. Khyber Pakhtunkhwa is a traditional region where they keep the belongings of their ancestors as a token of pride. Some of the ancestral belongings have more emotional attachment than economic value. Another participant from Khyber Pakhtunkhwa mentioned how mobile phones were instrumental in helping them save their ancestral valuables.

We were not at home when water entered our house. I phoned my brother who lived nearby where flood water had not reached. He reached my house; the ground level was being inundated with water. I was giving them instructions about my ancestral vintage items and they were searching in the water and collecting the aforementioned items. I thank God that at that time of distress we both (my brother and I) had mobile phones.

Mobile phones in an area such as Khyber Pakhtunkhwa are a two-pronged information source. Not only are they easily available in such an area which has not attained the same degree of advancement as Lahore or Karachi, but they are also useful for the female population. The women in Khyber Pakhtunkhwa seldom leave their homes alone, and thus mobile phones serve as an essential means of communication.

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[29] Due to media coverage and Taliban insurgency, people take Swat valley to be a war-torn area, but in reality it is one of the few spots where people from around Pakistan go to spend their holidays.

Citizen journalism is one of the challenges that mainstream media is facing. The dependency on and ready availability of mobile phones in developing countries has made professional journalists wary about the content and visuals which are uploaded to the Internet by cell phone users. Professional photographers have the means and the training to capture images of areas stricken by natural hazards, but they have to contend with amateur mobile-phone photographers who have either just arrived or were already in the disaster-struck area. Often the amateur photographers are the first to get there. As a result, the content could be arbitrary without consideration of the background, or pictures and news items are presented without proper investigation. Another negative aspect of amateur photography is that a holistic picture tends to be avoided in favor of the sensational aspects of a disaster scene. Furthermore, the pictures are usually presented without any explanation or comments. Hattotuwa (2007) defines such imagery as "victim journalism". Where journalists have to compete with amateur "journalists", they also have to compete with a variety of other sources online which seek to provide information with reference to climate change and natural hazards, such as SNSs, blogs, chat rooms, emails etc. Thus, professional journalists have to compete with both the content available online as well as the unloaders of this information. Nevertheless, it is important to note that online newspapers are still the highest accessed source for information about climate change and natural hazards. Therefore, journalism has retained its value to some extent in relation to other online sources.

7.9   Summary

This chapter has reported the findings and explored the subtleties regarding the importance and usage patterns of the Internet and mobile phones among Pakistani women. The qualitative research has revealed the life-saving qualities of these media forms for rural

women during the recent disasters, as well as the acceptance and even taken-for-granted nature of these devices among literate urban women, especially young students. Moreover, we found that these new media devices lead to a sharing of knowledge and experiences among people. Raising the consciousness of Internet users on an individual and personal level may allow people to understand their role, and take action in dealing with climate change and natural hazards.

Chapter 8 will delve into the potential for disaster planning and risk reduction to be carried out by and through the media, including the question of what the Internet and mobile phones can offer to policy-makers as well as to individual women with regard to climate change and natural hazards.

Chapter 8 : Media and Disaster Risk Reduction (DRR)

8.1   Introduction

DRR refers to "the concepts and practices of reducing disaster risk through systematic efforts to analyze and manage the casual factors of disasters, these include reducing exposure to hazards, lessening the vulnerability of people and property, skillful land and environmental management, and improving preparedness for adverse events" (UNISDR, 2009). DRR is an essential concept for third-world countries which are victim to the vagaries of weather caused by climate change. Unfortunately, while most third-world countries have DRR policies, they do not have a proper DRR infrastructure. Without DRR, populations are prone to widespread loss of livelihood and human lives as well as great financial loss. As noted in the definition above, a proper system needs to be developed in order to create viable policies and strategies. A community's adoption of precautionary and preventive measures can reduce the dire consequences of a disaster. Climate change and natural hazards are both phenomena which contribute to disaster risk. Many media outlets such as newspapers, news agencies, broadcasters etc. play a vital role during and after disasters by relaying information to the public about DRR. Proper and timely warnings about natural hazards through the media prior to a disaster can result in effective preparedness (Cretikos et al., 2008).

Generally speaking, everybody is affected by disasters, be it men, women or children. However, women and children are the most vulnerable in the face of disasters due to the existing inequalities. The vulnerability of women can be reduced by enhancing their ability to prepare for disasters, their ability to cope with them, and their capacity to recover. Since on-site training is not possible for an entire population, people need to be able to

prepare themselves, which in turn requires some sort of communication medium. Whichever media form is available to the majority of women is the best communication channel, but there is also much to be said for diversifying media channels to reach as many people as possible. In this way, media can play a pivotal role in creating awareness and helping the women to actively participate in DRR through dissemination of information and education about climatic hazards. It can provide much needed impetus in risk mitigation and disaster preparedness. It can save lives and reduce economic losses to a considerable extent; however, the media needs to appreciate its responsibilities in DRR.

There are at least two roles played by the media in the prevention of human and economic losses in cases of disaster. The first role has to do with the media's ability to transmit warnings to a population at risk. The media disseminates information about hazards and offers services and guidance to a large and heterogeneous population. The media needs to take into account the fact that disasters are not gender-neutral. In order to uphold its social responsibilities, the media needs to customize the information it provides to focus on the fact that the cultural responsibilities, access to information, education, socio-cultural taboos, and hindrances for women and girls make them a distinctive market. If women are appropriately informed, trained and educated, they will be able to save their own and other's lives during disasters. The second role played by the media is to keep the population informed about disasters in other parts of the world. This will raise the public's disaster awareness in general and enable them to sense their own vulnerability. The common objective of these two media roles is that they tackle risks associated with disasters and use communication methods that increase prevention and preparation measures.

In the eyes of the public, DRR is closely linked to climate change and natural hazards. In fact, awareness of these issues is directly proportional: the greater the awareness

of climate change and natural hazards, the greater the effect and functionality of DRR. The power of the media to create social change can be seen in the success of the campaigns to prevent AIDS and lethal traffic accidents. In one of the World Bank projects to support HIV prevention services with respect to the most vulnerable risk group in Pakistan, the media campaign aimed at creating awareness and reducing stigma did made a difference in a reduction in risk behaviors, most notably among injecting drug users.

The media not only created awareness of these issues but emphasized that condoms and seat belts should be used in all cases, because risk is always present. Similarly, the media could ensure that the public understands that the risk of natural and human-made disasters is ever present; therefore, even if people have not personally been the victims of earthquakes or floods, they should still take DRR precautions. UNISDR has published a guidebook entitled "Disaster through a Different Lens", which has been compiled with a view to encouraging a greater role for the media in DRR. The authors note that the media of a nation-state can be the pivotal motivator in making every individual a risk reducer and therefore creating a safer world, one which is armed against disasters (Leoni, Radford, & Schulman, 2011).

Information management is a crucial component of any disaster response. Communication among various stakeholders such as government functionaries, local populations, affectees, and disaster relief agencies is necessary to facilitate coordination, address issues that emerge, and resolve inaccuracies when they exist. Media, along with other communication channels, are the primary sources of disaster communication. People need to know if they are at risk of disaster so they can access services that may help minimize their vulnerability as well as take actions protect themselves. An affected community needs to be clearly informed about what has occurred in order to dispel or

minimize rumors. Information plays a decisive role in addressing all the risks that accompany disasters, and spreading information broadly means using the media to educate people about DRR.

The present chapter examines DRR information flows and perceptions in Pakistan by firstly exploring the opinions of women regarding the role of media in providing disaster risk information. Secondly, the chapter will evaluate how effective the media, along with other sources of information, has been in providing DRR information and education.

8.2   Perception of Literate Women about the Role of Media in DRR

To explore the collective perception of the literate women in the sample group, the researcher asked them to register the extent of their agreement or disagreement with four statements regarding the role of media in providing information about DRR (see Table 8.1). The result shows the mean and standard deviations of the respondents regarding their level of agreement or disagreement with each item. Mean response values between 1 and 2 indicate strong disagreement, mean response values between 2 and 3 indicate disagreement, those between 3 and 4 agreement, and those between 4 and 5 strong agreement.

Table 8-1: Mean Response Values and Standard Deviation of Literate Women's Perception about the Role of Media in DRR

Statements	Mean	Std. Deviation
You get information about DRR from the Internet	3.99	1.72
You get information about DRR from television	3.79	1.48
You get information about DRR from newspapers	3.29	1.53
You get information about DRR from radio	3.02	1.66

As all the mean response values are more than 3, this indicates that the respondents agreed that all four media have a role to play in providing information about DRR. Mean response values for the four statements range from 3.02 to 3.99, which indicates that literate women have a positive perception about the capacity of newspapers, radio, television and the Internet to provide information. The Internet scores highest with a mean response value of 3.99. The lowest mean value at 3.02 comes in response to radio. Taken together the data indicates that literate women are more inclined to get information from the Internet about DRR, but are less likely to use radio for the same purpose. After the Internet, television is the second most important source regarding DRR. There is somewhat less agreement, by contrast, with the claim that they turn to newspapers for DRR information. We can conclude from Table 8.1 that all major forms of media, including radio, television, newspapers and the Internet, are seen to be providing information about DRR. This informational role of the media during disasters matches the predominant role of media in the 2010 Haiti earthquake, the 2010 Chile earthquake, the 2010 Jamaica earthquake and the

2010 Peru earthquake (Richard Stuart Olson, Juan Pablo Sarmiento Prieto, & Gabriela Hoberman, 2010).

8.3   Women's Perception of Media Effectiveness for DRR

It is evident from Figure 8.1 that women are getting information about DRR from the media. The next stage in the research process was to discover the literate women's perception about the effectiveness of media in DRR. The summary of their responses regarding effectiveness of different modes of mass media is presented in Figure 8.1:

Effectiveness of Various Media about Disaster Risk Reduction
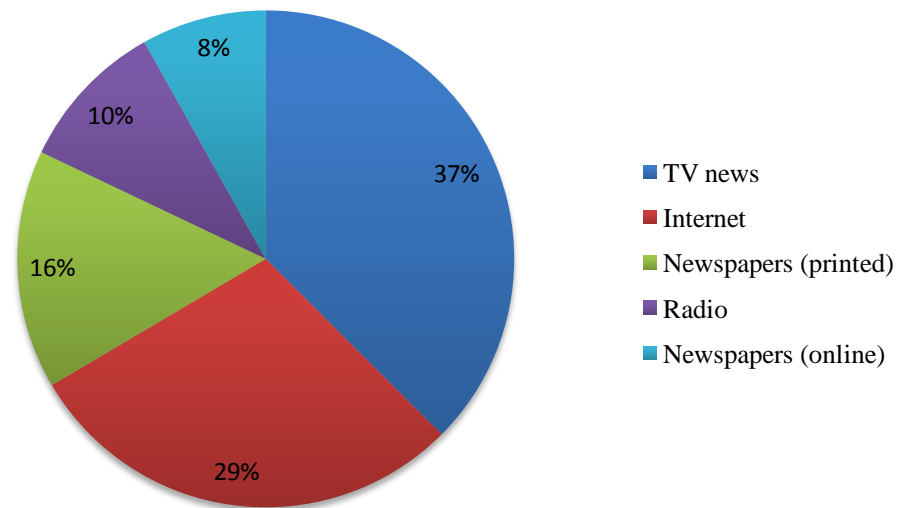
Figure 8-1 : Effectiveness of various media about DRR

According to Figure 8.1, TV news was found effective by 58.1% of the respondents. By a substantial percentage, television is considered the most effective source of information about DRR. In comparison to the role of media in providing information about DRR (as shown in Table 8.1), where the Internet was ranked first for getting information on DRR, television news outstrips the Internet when it comes to effectiveness of media

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sources. There could be many reasons why TV news was considered the most effective, but the likeliest is that, in the Pakistani cultural milieu, watching television is often a part of the daily household routine, including watching the news at a fixed time each day. In spite of being considered the most effective information source for DRR, the television news is event-based and tends to focus on the sensationalist aspect, which is the severity of the event. Therefore, the majority of the focus group participants thought that the media was overactive during disasters and not active enough when it came to helping the public prepare for disasters or providing post-disaster information which would help them cope with such situations. About TV programs on DRR, one of the faculty members from Peshawar University said:

> *There is dearth of programs on television about DRR. People need to be educated how to behave when they are struck with disasters. There should be educative programs about natural hazards telling audiences what is possible in the anticipation and mitigation of any natural hazard.*

This participant was strongly in favor of seeing television broadcasts which would investigate the degree of DRR measures that have been undertaken, such as mitigation, adaptation, preparedness and recovery. This perception was echoed by one of the faculty members from Karachi University, who said:

> *There is an abundance of information at the peak of the disaster but the media has no program afterward. There should be programs based on a detailed study of what worked and what went wrong in a particular natural hazard, which will help people to be prepared for any future disasters.*

The Internet was considered the most effective source of DRR information by 45 % of the female respondents. As previously noted, many of the literate sample groups were female

university students mainly between the ages of 18 and 25 years. Thus their education has trained them to use the Internet as well as to understand how important the Internet can be as an information source. Even so, only 12.6% of them considered online newspapers to be an effective source for DRR information. 24.1% considered printed newspapers to be more effective. A possible reason for this is that many of the literate women use the Internet to access video-sharing sites such as YouTube and social networking platforms such as Facebook and MySpace. They may therefore find online newspapers less attractive in comparison to the direct social interaction that these sites offer. As discussed in Chapter 7, social media is not only limited to fraternizing; it also allows individuals to discuss and share their disaster experiences on a person-to-person level. YouTube provides access to disaster footage recorded by members of the public who are actually on-site and experiencing the disasters. Another reason for the discrepancy may be that online newspapers provide mainly written descriptions of events. Gaining information about the disasters through multi-media images and videos is likely be more attractive to this cohort. Nevertheless, printed newspapers are still considered to be an effective source of information regarding DRR, even though they do not provide as much visual stimulation. Most of the literate sample group read print newspapers as part of their daily routine, since nearly every middle-class household and most academic institutions subscribe to several newspapers. Radio was considered the least effective source of information about DRR for of the literate respondents (15.2%). A major reason for this could be, as mentioned in Chapter 6, that radio listenership is low in urban areas. Thus, as indicated in Table 8.1, educated women receive less DRR information from the radio, which in turn leads them to consider it less effective.

8.3.1 Effectiveness of non-media sources of information for DRR.

During major natural hazards, people make decisions about risk management based on myriad sources of information. For example, they may receive warning messages from government and local authorities, from the mass media, and from family, friends, and relatives. As far as the mass media is concerned, Figure 8.1 reveals that all forms were considered to have some degree of effectiveness in DRR (58.1%, 45 %, 37%, 24%, 15%, and 13%). Figure 8.2 compiles the results of the perceived effectiveness of non-media sources among the literate sample group. The non-media communication sources surveyed were mobile phones; friends, family and neighbors; and government and local authorities.

Perceived Effectiveness of Interpersonal Communication Sources for DRR
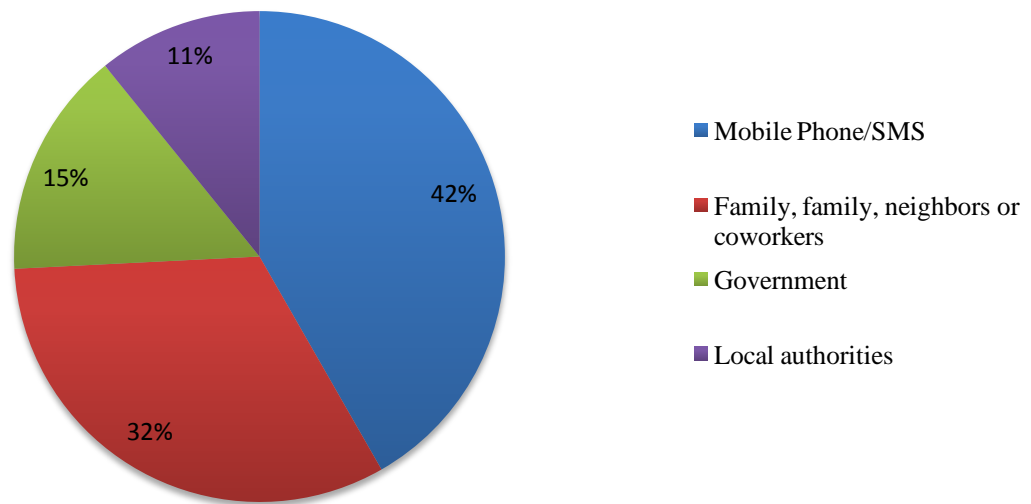

Figure 8-2 : Perceived Effectiveness of Interpersonal Communication Sources for DRR

Mobile phones and short messages service (SMS) were considered effective for DRR by 13.1% of the respondents. The information provided by SMS/mobile phones was not valued highly by most of the respondents. This could be due to the fact that mobile

phones companies rarely disseminate information regarding DRR because they lack the necessary infrastructure. It is interesting to note that online newspapers were even less valued (12.6%) than mobile phones/SMS. In Pakistan, SMS is considered an emerging mode of interpersonal communication. It is increasing in popularity among youth as it is inexpensive and allows people to contact each other anytime and anywhere. According to Shaheen (2012), 88.7% of Pakistani female university students have their own mobile phones and a considerable percentage of these send more than 80 texts per day. This demonstrates that there is a tremendous opportunity to use mobile phones for DRR, especially among youth.

Family, friends, neighbors, or coworkers were thought to be effective DRR information sources by only 10.2% of the literate sample group. This shows that people tend not to discuss preparation for disasters which may or may not occur in the future. While DRR prepares the public for challenges which may arise before, during, and after a disaster, the public tends to only discuss climate change catastrophes with family, friends, neighbors or coworkers once a disaster occurs. The data presented in Chapter 7 demonstrated that women use mobile phones to inform unaffected family members about the crippling effects of a specific disaster on their daily lives.

Even though the government is the primary stakeholder tasked with caring for the general public, it was not considered as valuable (national government 4.7% and local government authorities 3.4%) by the respondents when compared with other communication modes. This is because the government is not proactive in disseminating information regarding DRR. As noted by Ainuddin, Aldrich, Routray, Ainuddin, and Achkazai (2013) in their study of Baluchistan, there is a need for local involvement focusing on decentralization of disaster management institutions in Pakistan. Currently, few

government projects are designed to disseminate DRR information before a disaster occurs or to provide information and help post-disaster. It could be said that the government systems especially lack capacity formation at the district, sub-district, and local levels. One of the participants from Baluchistan said:

No one from the government come to us to tell us what we should do before disasters strike our houses. They do not even bother to come to listen to our problems even when disasters ruin our houses, crops and animals.

Another focus group participant from Punjab said that even when government or local authorities came to see them, it did not make much difference. She noted:

The tehsildar (local representative of the government) came to us when we had lost our valuables and had to migrate due to flash floods. He promised to help us but his promise never materialized. We are still living in our dilapidated house and waiting for his return or at least some show of support or help.

The above quotes indicate that government representatives are perceived to be ineffectual not only before and after a disaster but also during it. In the face of this lack of government information, the media's role becomes more crucial for DRR.

8.4 Role of Media in Disasters from 2005-2010: A Comparison

During disasters, the media keeps the people informed and motivates them to help the affectees. To evaluate the role of the media during actual disasters, the respondents were asked about the role of the media in the 2010 floods, the 2010 glacier melt which created Attabad Lake, the 2010 Phet Cyclone, and the 2005 earthquake. The comparison of the role of media in disasters from 2005-2010 is presented in the following table.

Table 8-2 : Comparison of Role of Media in Disasters from 2005-2010

Specific role of media	2010 Floods, Respondents (%)	2010 Phet, Respondents (%)	2010 Glacier Melt, Respondents (%)	2005 Earthquake, Respondents (%)
Providing updated information	59.2	52.9	57.1	73.6
Organizing relief activities	50.3	28	29.1	53.7
Reporting about government performance	48.2	24.6	30.4	46.1
Educating people how to face the disaster	29.3	24.1	22.8	33.2
Educating women about how to face the disaster	11.5	6.3	5.8	10.5
Giving voice to women	8.9	6	5.8	9.2

Table 8.2 shows a common pattern across all four disasters: the media's role in providing updated information is ranked first and giving voice to women is ranked last. The majority of the respondents believed that the most important function any source of information can play is providing updated information, which the media, including television, newspapers and the Internet, did consistently. It is through these updates that the

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general population becomes aware of the damage that has occurred during a natural hazard. However, there is a difference of percentages representing the respondents' agreement on the role of media in each of the disasters. In relation to providing updated information, 59% said that this was the most important role of media in the 2010 floods, 57% said it of the 2010 glacier melt, 53% of the 2010 Phet Cyclone and a substantially higher 74% said it of the 2005 earthquake. This reveals that the media was perceived to play a more effective role during the 2005 earthquake as compared to the 2010 disasters. Likewise, media was seen to have been more active in organizing the relief activities during the 2005 earthquake, certainly in comparison to the glacier melt and the cyclone, as the data shows that people's perception of the media's primary role in organizing the relief activities was 50% in the 2010 floods, 29% in the 2010 glacier melt, 28% in the 2010 Phet Cyclone and 54% in the 2005 earthquake. From the table above, it can be seen that the respondents considered the media to have played the biggest role during the earthquake and the flood. The main reason for this could be that these were bigger disasters that impacted a far greater number of people than the Phet cyclone or the glacier melt, and therefore more people were accessing media to ascertain the situation. There being more viewers automatically increase the perception of information promulgation.

An important aspect of media's role during the disasters was found to be that of organizing disaster relief, especially during the flood and earthquake. The respondents perceived that the media played a role in organizing relief activities, for example by requesting donations and volunteers. Consequently, the media is recognized as playing a special part in obtaining help for internally displaced people (IDPs). An eminent media analyst said:

Pakistani media has in fact been vital in not only relaying information about the catastrophes that brought widespread destruction to millions of people and their crops in the affected areas, but it also has played a crucial role in conveying this situation to the international community. Consequently, many people, including expats, were motivated to contribute hefty amounts of money as palliative measures to help relocate and rehabilitate the victims of these national disasters.

A similar view about how the media has helped garner support for the affectees was shared by one of the participants from the University of the Punjab:

My uncle was watching the news coverage of the flood on television. The plight of helpless hungry children weeping and asking for food was intolerable for him. So he gathered his friends and together they took a truck loaded with food for the affectees. My uncle is not the only example of somebody who was motivated by the media coverage.

One of the participants from University of Peshawar said:

During the catastrophic event of glacier melting, people wanted to know what they could do to help with money, food, clothing, and medical supplies. Media coverage could have advised them on what was most needed and how it could be conveyed to the affected place.

During disasters, many philanthropists, local community members, and NGOs come forward to help the affected people. Once again, the scale of relief needed in the 2005 earthquake and the 2010 floods was greater than in the others: not only did these two calamities have impact on more people but also they also geographically took place across a larger area. The areas affected by both the earthquake and the flood (three provinces were

simultaneously affected by the flood) were massive, whereas the glacier melt was limited to only a small portion of the NWFP province and by the time the Phet cyclone had reached Pakistan its intensity had lessened. Another major reason for the perceived focus on the organization of relief efforts could be the interest of the people. The earthquake took place in Islamabad, which is not only the capital of Pakistan but a very important bureaucratic city housing many foreign nationals. A number of international organizations are located in Islamabad and Pakistani policy makers also live in Islamabad. Therefore, the prime location of the city coupled with its political importance ensured greater relief efforts and consequently greater major coverage of those relief efforts.

The respondents considered that the media had played a role by reporting about government performance. This is an important aspect as citizens of any country need to be reassured that their government will provide support for them when needed. The government officials also prefer to use the media to communicate with the public. There are many reports of the government engaging experts to provide information about the disaster situation to the population through the media. For example, during the cyclone the chief government meteorologist Arif Mahmaod talked to the media and explained that only the coastal areas would be affected. Through the media as well as messages delivered by military helicopter, the fisherman of Sindh and Baluchistan were warned not to venture into open sea and thus their lives were saved. This shows that the media greatly enhances the government's ability to communicate and can thereby help in averting the severe effects of any disaster.

Even though few respondents perceived that the government played an active and helpful role during the floods, the government is in fact the only institution whose infrastructure is large and coordinated enough to undertake rescue missions, and rehouse

people according to a reasonable standard of living. Part of the media's role is to provide people with updated information about the activities of government officials in managing a disaster. The general population is interested to know how the government is addressing the catastrophic situation, but the government is also aware that its relief activities are carefully followed by the media. 48.2% of the respondents therefore thought that media played a role by reporting on government performance. A woman from Sindh said:

> *These government officials only come to see the affected people if the media gives coverage to the problem. They come to us when the media approaches them and holds them responsible for not taking action; otherwise they do not bother to come to see us in these katchiabadies (slum areas). They are only frightened of the media.*

The simultaneously coordinated and contrasting agendas of the media and government can create an effective form of DRR: firstly through the media providing updated information in a timely manner, and additionally because media exposure can be critical of government policies and warning methods and thus pressure the government to act more efficiently. Nevertheless, Minot (2002) points out that the media also has its own priorities when it comes to disseminating forewarnings, precautionary information, and post-disaster coverage of a natural hazard. The majority of the affectees from all four provinces were of the view that the media gave priority only to important personalities. The media provided coverage when a public person of interest, such as a politician or celebrity, planned a visit to an affected area. The respondents also perceived that these public figures only visited the affected areas for the sake of staged photo opportunities with the victims, and thus they were using the media to build their own positive image and publicity. The following quote from an affectee from Sindh demonstrates these reservations:

Media people come here only if powerful officials such as the Prime Minister or Chief Ministers are visiting. They do not come to us to know our problems. They leave as soon as the government official leaves the site and come back only if there is another such official visit.

The government's perceived failure to help victims reinforced the long-held opinion that civilian authorities are unsuccessful, leaving the Pakistani military to manage the situation in troubled times. The media is important in this regard because it conveys information about the government leadership to the affected and unaffected public. One of the affectees from Sindh recounted:

On the television, I heard news of the president leaving for a foreign trip and going to London. This shows a lack of concern for us on part of a Head of State. We are homeless and miserable people, needing their help.

In countries with weak or unstable political situations, it is important to equip the population with awareness and education about DRR. One of the experts said:

Pakistani media, specifically electronic sources, has been essential in dealing with the disasters which have been occurring across the country throughout the whole year. It cannot be denied and is worthy of sincere appreciation. However, one area in which the media has shown some deficiency is that about educating the masses about disasters and how the people can effectively cope with these disasters.

There is a notable difference between the respondents' perception that the media played a role in educating people and their perception that it had a part in educating women about natural hazards. This indicates that women are particularly ill-served by the media as an education tool. It should be kept in mind that if men are the breadwinners of the family,

then the women are the caretakers of the family. However, the media does not place much focus on women. Even lower than educating women, the statistics indicate that the media is not giving a voice to women with reference to floods. Only a small percentage of the respondents thought that the media was representing women's opinions in floods and about disaster management.

The most important finding revealed in Table 8.2 is that the respondents thought the media played only a small role in educating women and giving them a voice. The two disasters in which the respondents gave some recognition to the gendered aspects of media coverage were the flood and the earthquake, whereas for the glacier melt and the Phet cyclone the number of respondents who highly rated this role of the media was much less. This highlights two facts: firstly, that women's opinions are not a media priority, and secondly that the degree of priority given to women's education and opinions is regionally dependent. The flood and earthquake took place predominantly in Punjab and Islamabad. The women of both of these areas are relatively vocal and educated as compared to the province of Sindh and Baluchistan (where the Phet cyclone and glacier melt took place, respectively). This means that the stronger, better educated and more vocal the social group is, the greater degree of media representation they will receive. The women of Punjab and Islamabad are also involved in policymaking, and they present policies which focus on women and their problems. The rural women in Sindh and Baluchistan are less educated and therefore are rarely involved in policymaking. Thus, they are less represented or taken into account when policies are formulated.

Despite the temporal proximity of this study to the 2010 disasters (as data was collected in 2011), the data suggests that respondents consider the media's role to have been more significant during the 2005 earthquake. The media continuously provided information

about relief efforts which were underway. The respondents agreed that the media played some role in educating people in all four disasters, but the percentage was very low across the board. The earthquake of 2005 created a focus on educating people about earthquakes. People started to become more conscious about building earthquake-proof homes and preparing to face such a situation. This awareness was supported and to a large extent driven by various programs on TV and articles in newspapers. Despite the fact that the media is performing this role, the low percentage of respondents who perceived the media to be involved in DRR education indicates that people are not very satisfied with it. In some ways, the media's potential is as yet untapped as the data shows that education about DRR is not given much coverage in the media. This potential of the media to educate the population about climatic change, disasters, and environmental issues need to be properly utilized for maximum DRR effects.

8.5 Women's Education, Climate Change and Natural Hazards

> *Educate a boy and you educate one person.*
> *Educate a girl and you educate a nation*
> (A. Ibn-Badis, Algerian Muslim reformist, 1889-1940)

Education is a two-way street: people can both be educated and can educate those around them in accordance with their own expertise. Both educational routes can lead to empowerment. In Pakistan, the empowerment of women is paramount in order to decrease both their own vulnerability and that of their families. According to United Nations reports, empowered women serve as catalysts for economic progression, stabilization of population growth and improvement in personal health and hygiene. The effects are far-reaching, including effects in the education sector. Keeping in mind these benefits, environmental management is also an area which is affected by the education of women. According to

recent studies conducted by the Center for Global Development and the World Bank, education imparted to women and girls not only benefits the female segment of society but also ensures that the adaptability of communities is improved, resulting in less vulnerability in the face of climate change and natural hazards (Allison Anderson, 2010).

One of the interviewees, Mahmood Akhtar affirms the need to educate women in order to decrease their vulnerability in disasters:

Joint assessment reports of World Bank and Asian Development Bank of the 2010 floods and the 2011 floods showed women were more affected than men in the floods.

There are many reasons that have enhanced women's vulnerability. There is a comparatively smaller female literacy rate and it is even less among rural women.

Another expert interviewed threw light on the importance of educating women about addressing the issues that arise during disasters:

The most important thing pertains to educating women not only on a formal basis but even with reference to everyday life. They need to be educated about how to protect themselves physically from not only their male family members but also external ones. Women can be trained about how to cope with situations such as living in relief camps in such a manner that not only are they protected, but they are also aware of the demands of hygiene and sanitation.

If women are properly educated to deal with such circumstances, it can help them acquire an active rather than merely a passive role. In turn, women can help avert death and injury during weather-related aberrant circumstances. The focus needs to be placed on progressive but feasible female education policies. Future climate-related disasters can be

neutralized to some extent by imparting essential DRR education to women, which will help to reinforce the country's resilience in dealing with climate-related catastrophes.

A very important aspect of climate change and why women are more adversely affected than men due to such calamities is related to widespread female ignorance regarding technology and technological gadgets. A vital part of education is linked to technology; given the reliance on computers and other technology, there is a great need to teach women to be tech-savvy. In Pakistan, most women do not exhibit any inclination toward learning to operate such technology. Mahmood Akhtar, an expert, was of the view:

Technology is very much gender-specific in Pakistan. For example, there are tractors for ploughing the fields, but women will not use the tractors in the fields due to social taboos. So women cannot benefit from even the available technology. Furthermore, there is less women-friendly technology; one reason is that women are not involved in decision making. In this socio-political scenario, climate change further adds to the vulnerability of the women. The information about climate change is considered as scientific and there are fewer female scientists and experts in Pakistan. Similarly, we have gender-blind technology or fewer women in technological fields.

Just as social taboos have prevented women from accepting physical assistance, many of these same taboos have hindered women from accepting and using essential technological tools.

The issue is not only related to how women are affected by climate change but also the technological illiteracy of females. In fact, if women are given a chance to address climate change or are involved in decisions related to climate change and overcoming its effects, they will be more amenable to technology and can be more supportive of

technological advancement. Ulrike Rohr, a founding member of the organization *Live, gendercc*- working for gender and climate change and director of Genanet, said:

> Live *believe that the root cause of the problem should be addressed and it lies in the economy driven by masculine identity that believes in technologies.*

She added:

> *It is not a blame game; rather the role and responsibilities of gender makes them have different perspectives. Males are much more trained by technology-driven ventures from an early age.*

Overall, Ulrike Rohr was of the view:

> *Men are technology lovers and they are not ready to change their attitude, whereas women are ready to amend their approach towards technology.*

From Rohr's statements, it can be concluded that, despite women's possible technological aptitude, they are either not given opportunities to come into contact with technology or a dread of technology has been ingrained in them. Ironically, as contended by Ulrike Rohr, women are more amenable to technology but they are the ones who are usually technologically illiterate. In rural areas, a small percentage of men may know how to access and use new technology, but no women are able to use new technology. Not only are they unable to use new technology; they are not even aware of new technology.

Allison Anderson (2010), in a policy brief on "Global Economy and Development" at Brookings Institute, recommended that financing education be used as a means to address climate change. If a hefty investment is made in the area of education for the purpose of sustainable development, she claimed, notable and impressive results can be obtained. The same can be said for climate change and DRR, which is an area that can benefit on a multi-

platform basis due to the benefits of education and awareness. It can thus result in positive changes, such as the ability to cope with environmental instability and the improvement of mortality rates pertaining to mothers and children.

Given traditional gender ideology in Pakistan, people tend to overlook the usefulness of educating women in any sphere of life, whether it is related to gaining formal education or education in life skills. The patriarchal structure of Pakistani society does not give the female factor much importance or consider that women can be of much help in any instance. As Ulrike Rohr has pointed out:

> *Women are not only vulnerable to climate change but they are also contributing in addressing the climate change problems.*

Not only on a microcosmic level but also on a macrocosmic level women can play a very important role in helping a community to survive. Ghazala Raza, Senior Program Officer at the Ministry of Climate Change, has championed this role:

> *I would like to share with you the role of uneducated women in managing climate change and disaster. I have visited in the far-flung and not very developed areas of Pakistan such as Gilgat, interior Sindh, Hyderabad, Badeen and Thatta where many women have their own community-based organizations [CBOs]. These women, who are not very educated, are running their own CBOs and NGOs. They are contributing and putting their efforts into the development process. When I talked to them, they told me that they have non-availability of funds. The problem they are facing is lack of information about access to and outreach for funds.*

From this expert's remark, it can be seen how much women, even if they are semi-literate or uneducated, can contribute their available resources and can be a potential force to

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manage climate change effects and reduce disaster risk. Not only can they deal with such problems but, being an integral part of their community, they can pinpoint the problem areas in advance and help to overcome them. Despite being semi-literate these women have been able to successfully run their own NGOs and CBOs. This highlights the fact that these women are capable of initiating great changes; the only thing they require is support.

All of this points to the fact that there is a dearth of financial support and proper training for the women. Since women are fulfilling a variety of roles in rural areas ranging from household chores to budget management and even supporting their male members by working in the fields, they can easily work towards addressing the after-effects of natural hazards if provided with the proper funds and education. The social taboos mentioned above are not even a big hurdle, as many women commented that they did not face any problems related to obtaining permission. Ghazala Raza reported:

> *On asking them the women said that they did not face a great deal of trouble with regards to their male family members with reference to permission for working.*

It is normally thought that women need their husbands' consent when taking up any initiatives. Due to financial constraints, in some cases men create less hindrance to women's work, although women do need to seek permission from male family members for their work.

As mentioned above, in spite of insufficient funds women from rural backgrounds have been able to cope with the after-effects of flooding and other natural hazards. Nonetheless, currently insufficient funding is impeding climate change education. If funds are invested in the education sector regarding climate change and DRR, it will serve a dual purpose: not only will a practical education be imparted but young women can put it to

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proper use by becoming aware of the environment and reducing greenhouse gas emissions. This in turn will help mitigate the impacts of climate change.

Another main problem faced by women is their underrepresentation in environmental decision-making. Since females are not involved in decision-making, women's issues or gender perspectives are not taken into account during environmental policy-making (Vincent et al., 2010). The lack of women's involvement in policy-making to date has meant that they are unable to present the gender-specific problems that women face in national and international forums. This may be slowly changing on the international stage. One of the experts, Dr Pervaiz Amir said:

> *I saw the progression of gender involvement at COP 17. The women are in the decision making position at this COP17. The female leadership will bring the issue of gender at the helm of decision-making at COP17.*

Ulrike Rohr also agreed that there is a progress in addressing gender and climate change issues:

> *We started to consider the different impact of climate change on gender since COP1. But after COP14 at Bali, women became involved at UNFCCC conferences more seriously. International organizations working with close links with government have the capacity to expend funds and bring the issue into limelight. Due to the involvement of high-positioned female figures at COP 17, gendered impact of climate change promises to get more media attention. There are three women at the helm of COP17 affairs, bringing attention to the issue but not addressing the issue.*

As she mentioned, some women are involved at the higher level of decision-making, but she is not very satisfied with their ability to serve the cause of gender and climate change. The important step is to include women in policymaking, but they must be able to address their needs as well as society at large. However, Rohr agreed that the gendered impact of climate change is getting media attention. She further added,

> *South African media is focusing on gender and climate change as COP 17 is here and media pushed to address everything. However, African media is giving more attention to women in African countries.*

Women can assist in dealing with such problems related to climate change; the first important step to take is for the media to highlight how climate change and natural hazards affect women differently than men and to educate them so that they can work effectively as environmental managers rather than environmental aggressors. Media can play a vital role in this regard by providing women with much needed education pertaining to the climate, as well as educating policy-makers and international activists about the impact of climate change on women and the roles they already play to deal with such impacts.

The media needs to focus on prevention as well as mitigation and the only way this is possible is to equip women with the tool of education. The media can help to educate women on how to overcome adverse conditions. Another expert remarked that

> *The first line of media's attack should be towards educating women about water, cleanliness and agricultural operations. Women's productivity decreases due to climate change such as cooking, problems in getting drinking water etc. Girls' population needs to be equipped with knowledge about climate change in order to train them in managing climatic disasters.*

Media can play a role by not only educating but including women and girls in various activities related to climate change and disasters and involving them in various steps that may be taken in addressing such changes. Mahmood Akhtar commented on this same issue as he said:

There are number of ways to associate women in developing their capacities. Gender, climate change and DRR must be the part of academic curricula. There should be serious efforts to mainstream gender in climate change and DRR by arranging workshops for them.

Dr Pervez Amir further suggested:

We need to train girls as reporters on a local level so they can send reports from village and on tehsil level that may bring change at many levels. Even the girls from local areas should be trained to cover the issues.

There have been some programs to improve awareness amongst women about climate change and how to deal with it and also what women can do in order to overcome such situations and the complications arising therein. In order to overcome these external and internal factors, awareness programs need to be developed which are tailored to female requirements. Women-specific programs with reference to climate change and DRR are even more important in societies, such as Pakistan, where chores and duties are gendered and hence so are vulnerabilities. For instance, a participant from Punjab University said:

Additionally, the health channel does air programs on problems like dengue and programs based on preventive measures household women can take which is a step in the right direction.

Dengue is an interesting example in this context. It has wreaked havoc in Pakistan since 2010, with 16,580 confirmed cases and 257 deaths in Lahore alone, a district of Punjab (WHO, 2010). The government has not been able to completely eradicate it, but women can either help take the initiative or become a part of existing initiatives. The reason for this is that the main reason behind dengue, namely the reproduction of the dengue mosquito in standing water, can be overcome by educating women. They can be educated on how to drain all water and ensure that no water is left standing. Similarly, they can also be taught about how to use anti-dengue sprays and coils. Since women are in the house the whole day, they are better able to safeguard their houses than men. Media can help in a dissemination capacity by providing coverage to such educational programs for everyone in general and for women in particular.

8.6   Summary

Pakistani women perceive that the media, in addition to other information sources, plays an important role in DRR. In many recent DRR programs, the media has been shown to be an effective actor in creating awareness about disasters along with churches, local authority figures, community leaders, meteorologists, development planners, and emergency managers (Perez-Lugo, 2004). In DRR, aside from the government, the people themselves are one of the most important stakeholders. The omnipresence of media has to be utilized not only during disasters but also before and afterwards, not only in order to convey the issue at hand but also to help prevent future widespread negative impacts from such disasters. People can be educated through the well-organized use of media about mitigation and adaptation to reduce the risks of natural hazards.

On a simple level, the media can broadcast programs, for example, that teach first aid and cardiopulmonary resuscitation (CPR) to audiences for everyday life and for disaster response purposes. Many national and international NGOs use media to disseminate effective DRR strategies among different communities. People can be engaged in DRR initiatives. Therefore, DRR is not only the responsibility of the media or any one sector; rather it should be a concerted effort between various institutions, authorities and community leaders. These links can be strengthened through media. Media can help to provide a communicative bridge between authorities, institutions and the public. For these reasons, it is pertinent that all stakeholders join a common forum to develop a better understanding of the complex dynamics amongst media discourse, DRR policies, climate change policies, environmental strategies and people's practices. Such an understanding would, however, be even more effective if it took the gender-specific vulnerabilities of women into consideration.

Chapter 9 : Conclusion

9.1   Introduction

Climate change is one of the most pressing concerns of the current century and will be for the foreseeable future. Scientists now agree nearly unanimously that natural hazards are an outcome of anthropogenic climate change. Pakistan is in a distinctive geographical position to observe the impacts of climate change and even to be the epicentre from which a natural hazard could affect populations across the Asian continent. This study has demonstrated that Pakistani women are in a unique position to monitor, mitigate and inform DRR policies, as well as to create positive environmental change if given the opportunity.

This thesis has elaborated on the impacts of social inequality in creating disproportionate climate change suffering; those in the developing world and especially poor women in these nation-states are at very high risk. Economically challenged countries often lack sufficient infrastructure to cope with climate change and natural hazards and can be subject to high levels of corruption, which means that international aid may not arrive where it is needed if it arrives at all. The evolving role of traditional and new media in disseminating information and creating perceptions about climate change must therefore be understood in terms of specific economic and social contexts, as this thesis has suggested by focusing on Pakistan as a case study. Extensive quantitative and qualitative data was collected and triangulated; the exposure to so many generous informants has naturally lead the author to desire that the voices, opinions, and ideas of the participants be heard and their recommendations acted upon.

The women of countries like Pakistan are facing problems caused by climate change and natural hazards. A number of studies have been conducted which address the role of

media with reference to climate change, natural hazards and disaster risk reduction; however, not many studies highlight women's perception regarding media's role in such situations. This study has evaluated and emphasized the importance of a gendered perspective with reference to natural hazards and climate change, from the vantage point of media and its potential engagement with DRR.

The premise of this study is that climate change and natural hazards are not gender neutral; rather, they are gender-specific and have differential effects. Climate change impacts upon various socio-cultural female groups differently. For instance, women living in rural areas are more adversely affected by climate change as compared to those living in urban areas. In rural areas, women are not just responsible for their family but also, in some circumstances, for livelihood. The same may be said for urban women, but their livelihood is not dependent upon climate patterns. Many rural women are involved in cultivating crops and managing cattle, which further exacerbates their vulnerability in the face of climate change and natural hazards. In such circumstances, the media can play an essential role in disseminating information about climate change, natural hazards and disaster risk reduction. Women can turn to the media in order to obtain essential information about such climatic issues and how to cope with them. However, the media can only be used as a tool for addressing or at least mitigating the effects of climate change if the current role and perception of the media in the minds of the female population are ascertained.

Both the literate and semiliterate women in the study were well aware of climate change and how it affects the community at large. They were also quite aware of the exact factors leading to climate change. This means that women can understand the reasons and effects of climate change. However, there is still a need to highlight other causes of climate change. It is important to keep in mind that literate women seemed to be more aware of the

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causes of climate change as well as contributing factors, such as nuclear plants, carbon emissions, ozone holes, etc. A great number of the respondents linked health problems with climate change. Health problems could range from heat strokes to secondary outcomes such as the dengue fever epidemic. This, coupled with women's perception of unemployment caused by climate change, shows that women are aware of the dire socio-economic impacts of climate change. Almost the same dynamic holds true for the socio-economic impacts of natural hazards. The main difference, however, lies in concerns about social unrest as a major outcome. Social unrest was ranked second as a probable outcome of natural hazards, whereas for climate change it was not considered to be a dominant concern. The main reason for this is that during natural hazards shortages of food and money force people to become more violent or vocal.

Media devices were owned by both literate and semiliterate women. Nevertheless, there was variance in the device ownership and usage of media for information regarding climate change and natural hazards. Both literate and semiliterate use and trust TV. Semiliterate women were more prone to use the radio than literate women. Literate women, on the other hand, used new media and read newspapers. The bottom line was that both groups' usage pattern indicated which sources of information they used and trusted, which in turn renders it more effective.

With reference to television, it is also important to note that most respondents watched television on a daily basis. From general media usage patterns, this study moved into the usage patterns specifically related to climate change. Again television was the most important and accessible information source and most of the respondents had watched the TV for news about flooding etc., especially the semi-literate women. Where literate women were concerned, new media in the guise of the Internet also played a prominent role in

providing vital information. For literate women, the Internet was the second most widely used information source. However, television is still the primary information source, mostly due to the fact that Pakistan as a developing country faces issues pertaining to bandwidth and Internet speed. Despite the literate women's focus on television and the Internet, it is important to note that newspapers still hold sway when it comes to the promulgation of information. Newspapers are available in almost all university libraries and they also do not have problems pertaining to electricity outages, bandwidth etc.

According to the quantitative data, new media available via the Internet has become the second most accessed source for information about climate change and natural hazards. New media platforms have ensured the decentralization of information as well as ensuring that the information relay system is no longer top heavy. Information has also become more individualized and involves the public as providers and disseminators to a greater degree. New media thus serves an important role when it comes to climate change. It gives people ways of addressing climate change by presenting individuals with options and methods of how to deal with climate change effects and resulting natural hazards. A very important part of new media is the current function of social networking sites as well as their potential. Social networking sites not only allow for interpersonal communication, but they also facilitate the possibility of victims reaching out to others.

Where television was the predominant information source for both literate and semiliterate respondents, followed by new media and newspapers, communal sources such as family friends, neighbors and coworkers were the second most availed information source about climate change and natural hazards for semi-literate women. This is mainly due to the socio-cultural setup of rural areas as communities in such areas allot time for conversation. Many of the focus group participants claimed they learned about impending

damage through their neighbors. This underlines a further important aspect of the dissemination of information, namely trust. The more a source is trusted, the more it will be used to gather information. Media was the most trusted source of information for both literate and semiliterate respondents, while the government and local authorities were the least trusted information sources regarding climate change and natural hazards.

According to the quantitative data, the respondents agreed that newspapers, radio, television and the Internet (in that order) all play a role in providing information about DRR. The most informative medium, according to the literate respondents, was the Internet. Nevertheless, TV news was considered to be the most effective source of information when it came to DRR. This points to a discrepancy between the Internet being considered to be the source which provided the most information but TV news being considered the most effective. The perceived affectivity of television may be due to the fact that TV news and Breaking News are viewed by the majority of the population.

With regard to media's role in education, the highest percentage of respondents thought that the media educated people about how to face disaster. However, educating women about how to face natural disasters and/or giving voice to women were perceived to be the least most important or effective roles that the media plays. This highlights the fact that there is a need to overhaul the social awareness regarding women's position as well as the content that the media presents to the public.

9.2   Recommendations

Firstly, the media itself has to overcome inequality in its representation of gender in climate change and natural hazards before it can be expected to properly grapple with social, cultural, economic, and political matters to do with climate change. This is, of course, a large task requiring support from governments, the scientific community, and the corporate world, as well as journalists themselves. Media could then take a role in informing national and international populations about the compounding vulnerabilities and stressors that women face due to climate change and in events of natural hazards. It could also take an educative role, facilitating and building resilience, coping strategies, capabilities and disaster preparedness, not only for Pakistani women but for whole populations. The media also needs to take a responsible and pro-active role by providing accurate information when a disaster strikes so that international aid can be adequately delivered.

Secondly, female-safe DRR infrastructures must be developed, monitored for corruption, and held accountable to feedback, so that the most vulnerable can receive the assistance they require. These infrastructures must also be culturally/religiously sensitive and take the differing circumstances of rural and urban Pakistani women into account. Natural hazards not only disrupt communal life but render women susceptible to human trafficking. "Rescuers" need to be carefully screened and observed to ensure they are not perpetrators of such crimes. Women need to be trained to defend themselves, and educated to lift the silence, embarrassment and judgment they women face regarding physical, emotional and sexual abuse that predominantly increases during and after times of natural hazard and disaster. Media needs to play a watchdog role in such situations.

Thirdly, it needs to be widely understood and recognized (as discussed earlier in this study) that women in general have a special awareness and sensitivity to environmental and climatic changes. They are also more proficient at acclimatization. It is essential that communication channels be put in place to allow sharing of this invaluable information.

Fourthly, women themselves must engage in constructive dialogue to make these changes, which will be for the good of the current and future Pakistan, the Asian continent, and the global population.

Fifthly, it needs to be widely understood and recognized that women are dynamic agents of change, not only in their domestic spheres but also in their communities. It is a well-known fact that women's empowerment leads to economic growth and national development. If women were given technical and professional education and awareness through media, this would permit them to further prevent, mitigate and protect families and communities from the consequences of natural hazards. Women need to be shown how important and essential their contributions to addressing climate change and natural hazards can be. There are numerous things that women can do, but in order for them to do those tasks they need to be informed so they can understand their hidden potential. Since many Pakistani women are homemakers, they are the most suited to undertaking environmentally friendly measures. Many International organizations, NGOs and ENGOs are working toward the goal of female empowerment and using women's potential. Media can help this cause by educating women about how to react in such instances and become active members of society involved in improving the economic conditions.

Lastly, there needs to be a tripartite infrastructure of female involvement in policy-making and implementation, with the base being women at the local level who implement changed or formulated policies, the middle layer comprising women who pass the policies

along, and the top consisting of female policy-makers who are actively involved in formulating gender-specific policies.

9.3   Current challenges

A number of things have come to light through these findings. The foremost is that the role of women in the circumstances under discussion here is overlooked even by other women. The second is that scientific information regarding the causes and consequences of climate change and natural hazards is now available to the public in terms which are understandable. Keeping this in mind, even the Pakistani government is making efforts to harness new media's potential. There should be further efforts in Pakistan to utilize new media in the face of climate change and impending disasters.

The Pakistani government has mandated a cut in the budget of Pakistan's Ministry for Climate Change. This is in spite of the fact that Articles 1.3.1 and 3.2.4 of the National Risk Reduction Policy have highlighted the susceptibility of women and children, and have vowed to take on the task of mitigating their vulnerability. This policy has even mapped out the necessity of involving women in the DRR process and acknowledged the central roles played by women in dealing with previous and future natural disasters. This surprising funding cut will present large challenges to achieving the goals of the policy. The media needs to address this issue seriously.

The NDMA and PDMA do not work properly within the tehsils to educate, prepare, warn and disseminate timely information about climate change and natural hazards. They need to work more closely with the media in this regard, and for its part the media can pressure these government agencies to become accountable for formulating and

implementing female-safe and culturally and religiously sensitive DRR and environmental policies.

Women and girls need to become technologically literate. Just as social taboos may hinder rescue missions, so the same illiberal mindset has barred women from using technological tools which may help them to learn about and mitigate the causes and after-effects of climate change. The first step can be for the media to highlight and accurately represent the gender-specific nature of climate change and natural hazards so that the urgency of this literacy becomes apparent.

Currently, the media tends to focus on and widely broadcast images of helpless and victimized women during disasters because it produces high viewer ratings and therefore media profitability. This media coverage reinforces women's perceptions of their circumstances as being hopeless and unchangeable. It also prevents women from achieving their potential, not only in times of crisis but in their lives in general.

Scientific information has generally become more available, accessible and expressed in terms that the public can understand. This active involvement of the scientific community in clarifying and explaining the multiple causes and consequences of climate change needs to increase and not lose momentum due to "exclusive" mindsets or lack of funding. The decentralization of information and knowledge about climate change through new media sources needs to be nurtured, as social networking allows people to individualize their responses and options in times of natural hazards and to collectively brainstorm solutions on the macro-level. The Pakistani government is making efforts to harness new media's potential; however, further investment is required in the face of climate change and impending disasters. New media can be also be a source of misinformation so a balance needs to be found between allowing a free flow of information

and regulating these sources without reducing the financial revenue which incentivizes technology businesses to innovate.

The socio-economic impacts of climate change, of which women bear the main burden, need to be brought to the forefront of discussion. The question of "who should pay?" needs to be resolved on a global level so that health and wellbeing issues linked with and emerging from climate change are addressed comprehensively and equitably. In this way, the destructive and often lethal social unrest caused by lack of food and resources can be lessened.

9.4   Summary

The findings reported in this thesis have offered evidence of several very significant current and future public issues, not only for Pakistan and the Asian continent but on an international scale.

The comprehensive multidisciplinary and multilayered approach used in this research has verified the experiences and perceptions of Pakistani women in times of climate change, natural hazards, and their subsequent disasters. It has also established that the climate change crisis has a gender-specific component, with women suffering the greatest hardships, and most especially those women without any financial, legal, or human rights protections.

The role of various forms of media in disseminating information, whether accurate or inaccurate, constructive or sensationalist has been proven to be key in creating people's perceptions of climate change, natural hazards, and disasters. This research has also confirmed that it is people's perceptions of a situation that directly influence their conception of what choices are available for action, and their consequent decisions about

what action to take. This is true not only for those making life-and-death choices during or before a natural hazard hits them, but also for local government agents, rescuers, and on-the-ground aid workers. On a macro-level, this is also true for local, national, and international policy-makers, international aid organizations, inter-governmental bodies, and NGOs.

This study has also demonstrated that there is tremendous room for positive improvement in the monitoring, mitigation, and reduction of disaster risk as well as in climate change prevention strategies on all levels. As the scientific community has confirmed that the earth's population can expect greater and more severe natural hazards in the future, it is absolutely imperative that not only Pakistani women's but all women's ideas, voices, and actions be fully utilized and engaged in the struggle for climate and environmental safety – for the survival of the earth's inhabitants in this century and those of the future.

Chapter 10 :   References

Abramsky, T. (2014). 'Beating your wife is a sign of love' - changing norms to end domestic abuse.http://www.theguardian.com/global-development-professionals-network/2014/aug/29/domestic-violence-uganda

Adam-Bradford, A., Hoekstra, F., & van Veenhuizen, R. (2009). Linking relief, rehabilitation and development: A role for urban agriculture? . *Urban Agriculture magazine 21*

Adam, D. (2006). Royal Society tells Exxon: stop funding climate change denial. *The Guardian, 20*, 2006.

Adams, W. C. (1986). Whose lives count?:TV coverage of natural disasters. *Journal of Communication, 36*(2), 113-122.

Adger, W. N., Agrawala, S., Mirza, M. M. Q., Conde, C., O'Brien, K., Pulhin, J., . . . Takahashi, K. (2007). *Assessment of adaptation practices, options, constraints and capacity*. Cambridge: Cambridge University Press.

Adger, W. N., Dessai, S., Goulden, M., Hulme, M., Lorenzoni, I., Nelson, D. R., . . . Wreford, A. (2009). Are there social limits to adaptation to climate change? *Climatic Change, 93*(3-4), 335-354.

Adger, W. N., Eakin, H., & Winkels, A. (2008). Nested and teleconnected vulnerabilities to environmental change. *Frontiers in Ecology and the Environment, 7*(3), 150-157. doi 10.1890/070148

Aguilar, L. (2004a). *Climate change and disaster mitigation: Gender makes the difference*. International Union for Conservation of Nature.

Aguilar, L. (2009). Women and climate change: Vulnerabilities and adaptive capacities. *State of the world: Into a warming world. A Worldwatch institute report on progress towards a sustainable society*, 59-62.

Aguilar, L. (Ed.). (2004b). *Fact sheet on: Climate change and disaster mitigation*.

Aguilar, L., Araujo, A., & Quesada-Aguilar, A. (2007). Reforestation, afforestation, deforestation, climate change and gender. *Fact Sheet. Costa Rica: IUCN*

Ahmed, S., & Fajber, E. (2009). Engendering adaptation to climate variability in Gujarat, India. *Gender & Development, 17*(1), 33-50. 10.1080/13552070802696896

Ahmed, S. A., Diffenbaugh, N. S., & Hertel, T. W. (2009). Climate volatility deepens poverty vulnerability in developing countries. *Environmental Research Letters, 4*(3), 034004.

Ahmed, Z. (2013). Disaster risks and disaster management policies and practices in Pakistan: A critical analysis of Disaster Management Act 2010 of Pakistan. *International Journal of Disaster Risk Reduction, 4*, 15-20.

Ainuddin, S., Aldrich, D. P., Routray, J. K., Ainuddin, S., & Achkazai, A. (2013). The need for local involvement: Decentralization of disaster management institutions in

Baluchistan, Pakistan. *International Journal of Disaster Risk Reduction*, 16. http://dx.doi.org/10.1016/j.ijdrr.2013.04.001

Ajani, E. N., Mgbenka, R. N., & Okeke, M. N. (2013). Use of indigenous knowledge as a strategy for climate change adaptation among farmers in sub-Saharan Africa: Implications for policy.

Akhtar, R. S. (2000). *Media, Religion And Politics In Pakistan*: Oxford University Press.

Akif, A. T. (2013). *Television Drama and Military Rule in Pakistan.* (Master), Indus Valley School of Arts and Architecture, Karachi, Pakistan.

Akter, T. (2009). Migration and living conditions in urban slums: Implications for food security. *Dhaka: Unnayan Onneshan*

Alasuutari, P., Bickman, L., & Brannen, J. (Eds.). (2008). *The Sage handbook of social research methods*. london: SAGE Publication Ltd.

Ali, Z., Jan, M., & Bukhari, Q. (2013). Role of electronic media in changing value system in Pakistan *The International Asian Research Journal, 1*(1), 59-65.

Ali, Z. S. (2012). *Role of Information and Communication Technologies in bringing change among youngster's life: A gender perspective.* (Doctor of Philosophy), University of the Punjab, Lahore Pakistan, Lahore Pakistan.

Ali, Z. S. (2013). Media myths and realities in natural disasters. *Eur J Bus Soc Sci*, *2*(1), 125-33.

Ali, Z. S. (2014). Visual representation of gender in flood coverage of Pakistani print media. *Weather and Climate Extremes, 4*(0), 35-49. http://dx.doi.org/10.1016/j.wace.2014.04.001

Allern, S. (2002). Journalistic and commercial news values. *Nordicom Review*, *23*(1-2), 137-152.

Alston, M. (2009). Drought policy in Australia: Gender mainstreaming or gender blindness? *Gender, Place and culture, 16*(2), 139-154.

Alston, M. (2012a). In post-disaster recovery. *Gender-based Violence and Public Health: International Perspectives on Budgets and Policies*, 95.

Alston, M. (2012b). Rural male suicide in Australia. *Social Science & Medicine, 74*(4), 515-522.

Alston, M. (2013). *Gender mainstreaming and climate change.* Paper presented at the Women's Studies International Forum.

Alston, M. (2014). Gender mainstreaming and climate change. *Women's Studies International Forum, 47, Part B*(0), 287-294. http://dx.doi.org/10.1016/j.wsif.2013.01.016

Alston, M., & Kent, J. (2008). The Big Dry the link between rural masculinities and poor health outcomes for farming men. *Journal of Sociology, 44*(2), 133-147.

Alston, M., & Vize, S. (2010). Gender and climate change in the Pacific. *Gender, Leadership and Social Sustainability (GLASS) research unit, Monash University, Melbourne*

Alston, M., & Whittenbury, K. (2013). Does climatic crisis in Australia's food bowl create a basis for change in agricultural gender relations? *Agriculture and Human Values, 30*(1), 115-128.

Alston, M., & Whittenbury, K. (2014). Social impacts of reduced water availability in Australia's Murray Darling Basin: adaptation or maladaptation. *International Journal of Water, 8*(1), 34-47.

Alston, M., Whittenbury, K., & Haynes, A. (2010). Impacts of declining water availability in the Murray–Darling Basin: Short report. *Gender, Leadership and Social Sustainability (GLASS) research unit, Monash University, Melbourne*

Alston, M., Whittenbury, K., & Haynes, A. (2011. *Gender and climate change in Bangladesh* Paper presented at the International Rural Sociology Conference, Chania, Greece

Altizer, S., Ostfeld, R. S., Johnson, P. T., Kutz, S., & Harvell, C. D. (2013). Climate change and infectious diseases: from evidence to a predictive framework. *Science, 341*(6145), 514-519.

Anastario, M., Shehab, N., & Lawry, L. (2009). Increased gender-based violence among women internally displaced in Mississippi 2 years post–Hurricane Katrina. *Disaster medicine and public health preparedness, 3*(01), 18-26.

Anderson, A. (2009). Media, politics and climate change: Towards a new research agenda. *Sociology Compass, 3*(2), 166-182. 10.1111/j.1751-9020.2008.00188.x

Anderson, A. (2010). *Combating climate change through quality education*. Washington DC: The Brookings Institution.

Angula, M. (2010). *Gender and climate change: Namibia case study*. Cape Town: Heinrich Böll Stiftung Southern Africa.

Antilla, L. (2005). Climate of scepticism: US newspaper coverage of the science of climate change. *Global Environmental Change Part A, 15*(4), 338-352. DOI: 10.1016/j.gloenvcha.2005.08.003

Ardalan, A., Linkov, F., Shubnikov, E., & LaPorte, R. E. (2008). Public awareness and disaster risk reduction: Just-in-time networks and learning. *Prehospital and Disaster Medicine, 23*(3), 286-288.

Ariyabandu, M. (2003). Women: the risk managers in natural disasters. *Voice of Women, 6*(1)

Armstrong, J., & Zúniga, M. M. (2006). Crashing the Gate: Netroots. *Grassroots, and the Rise of People-Powered Politics, Chelsea Green, White River Junction, VT*

Armstrong, J. M., & Moulitsas, Z. (2006). *Crashing the gate: Netroots, grassroots, and the rise of people-powered politics*.

Arora-Jonsson, S. (2011). Virtue and vulnerability: Discourses on women, gender and climate change. *Global Environmental Change, 21*(2), 744-751.

Ashley, P., & Boyd, B. W. (2006). Quantitative and qualitative approaches to research in environmental management. *Australasian Journal of environmental management, 13*(2), 70-78.

Ashlin, A., & Ladle, R. J. (2007). Natural disasters' and newspapers: Post-tsunami environmental discourse. *Environmental Hazards, 7*(4), 330-341. 10.1016/j.envhaz.2007.09.008

Aten, J. D., Leavell, K., Gonzalez, R., Luke, T., Defee, J., & Harrison, K. (2011). Everyday technologies for extraordinary circumstances: Possibilities for enhancing disaster communication. *Psychological Trauma: Theory, Research, Practice, and Policy, 3*(1), 16-20. 10.1037/a0021259

Ayers, J. (2011). Resolving the adaptation paradox: Exploring the potential for deliberative adaptation policy-making in Bangladesh. *Global Environmental Politics, 11*(1), 62-88.

Ayers, J. M., & Huq, S. (2009). Supporting adaptation to climate change: what role for official development assistance? *Development Policy Review, 27*(6), 675-692.

Babugura, A., Mtshali, N., & Mtshali, M. (2010). Gender and climate change: South Africa case study. *Heinrich Böll Stiftung Southern*

Bailey, K. D. (1994). *Methods of Social Research* (4th Edition ed.). New York: The Free Press.

Baker, S. M. (2009). Vulnerability and resilience in natural disasters: A marketing and public policy perspective. *Journal of Public Policy & Marketing, 28*(1), 114-123.

Baker, S. M., Hunt, D. M., & Rittenburg, T. L. (2007). Consumer vulnerability as a shared experience: Tornado recovery process in Wright, Wyoming. *Journal of Public Policy & Marketing, 26*(1), 6-19. 10.1509/jppm.26.1.6

Barnes, M. D., Hanson, C. L., Novilla, L. M. B., Meacham, A. T., McIntyre, E., & Erickson, B. C. (2008). Analysis of Media Agenda Setting During and After Hurricane Katrina: Implications for Emergency

Preparedness, Disaster Response, and Disaster Policy. *American Journal of Public Health, 98*(4), 16-22.

Barnett, J., & Adger, W. N. (2007). Climate change, human security and violent conflict. *Political Geography, 26*(6), 639-655. http://dx.doi.org/10.1016/j.polgeo.2007.03.003

Barnett, J., & O'Neill, S. (2010). Maladaptation. *Global Environmental Change, 20*(2), 211-213.

Bartlett, S. (2008). Climate change and urban children: Impacts and implications for adaptation in low-and middle-income countries. *Environment and Urbanization, 20*(2), 501-519.

Bashir, Q.-u.-A. (2013). Media in Pakistan (1988-1999): An overview. *Pakistan Perspectives, 18*(1)

Bechtel, M. M., & Hainmueller, J. (2011). How lasting is voter gratitude? An analysis of the short- and long-term electoral returns to beneficial policy. *American Journal of Political Science, 55*(4), 851–867.

Bekhet, A. K., & Zauszniewski, J. A. (2012). Methodological triangulation: an approach to understanding data. *Nurse Researcher, 20*(2), 40-43.

Bell, A. (1994). Climate of pinion: Public and media discourse on the global environment. *Discourse & Society, 5*(1), 33-64. Doi: 10.1177/0957926594005001003

Benedikt, K. (2007). Antinomies of generosity: Moral geographies and post-tsunami aid in Southeast Asia. *Geoforum, 38*(2), 366-378. 10.1016/j.geoforum.2006.09.005

Bennett, R., & Kottasz, R. (2000). Emergency fund-relief for disaster relief. *Disaster Prevention and Management, 9*(5), 352-360.

Benthall, J. (1995). *Disasters, relief and the media* (second ed.). New York: I .B. Tauris.

Benthall, J. (2008). The disaster—media—relief nexus. *Anthropology Today, 24*(4), 4-5. 10.1111/j.1467-8322.2008.00598.x

Berelson, B. R., Lazarsfeld, P. F., & McPhee, W. N. (1986). *Voting: A study of opinion formation in a presidential campaign*: University of Chicago Press.

Bernabe, M. D., & Penunia , M. E. (2009). Gender links agriculture and climate change *Women in Action, 2*(21)

Bernauer, T. (2013). Climate change politics. *Annual Review of Political Science, 16*, 421-448.

Bilal, M. Q., Suleman, M., & Raziq, A. (2006). Buffalo: Black gold of Pakistan. *Livestock Research for Rural Development, 18*(9)

Billett, S. (2010). Dividing climate change: Global warming in the Indian mass media. *Climatic Change, 99*(1-2), 1.

Block, B. (2010). Covering climate change. *World Watch, 23*(2), 20-25.

Boetto, H., & McKinnon, J. (2013). Rural women and climate change: A gender-inclusive perspective. *Australian social work, 66*(2), 234-247.

Bohle, H. G., Downing, T. E., & Watts, M. J. (1994). Climate change and social vulnerability: Toward a sociology and geography of food insecurity. *Global Environmental Change, 4*(1), 37-48. http://dx.doi.org/10.1016/0959-3780(94)90020-5

Boin, A., & McConnell, A. (2007). Preparing for critical infrastructure breakdowns: the limits of crisis management and the need for resilience. *Journal of Contingencies and Crisis Management, 15*(1), 50-59.

Boko, M., Niang, I., Nyong, A., Vogel, C., Githeko, A., Medany, M., . . . Yanda, P. (2007). Africa.

Booth, C., & Bennett, C. (2002). Gender mainstreaming in the European Union towards a new conception and practice of equal opportunities? *European Journal of Women's Studies, 9*(4), 430-446.

Bord, R. J., Fisher, A., & O'Connor, R. E. (1998). Public perceptions of global warming: United States and international perspectives. *Climate Research, 11*, 75-84.

Bornstein, R. F. (2004). *Face Validity. Encyclopedia of Social Science Research Methods*. Thousand Oaks, CA: SAGE Publications, Inc.

Bostrom, Ann, Morgan, M. G., Fischhoff, B., & Read, D. (1994). What do people know about global climate change? Mental models. risk analysis. *14, 6*, 959-970.

Bott, E., & Spillius, E. B. (2014). *Family and social network: Roles, norms and external relationships in ordinary urban families*: Routledge.

Bouchard, T. J. (1976). Unobtrusive measures an i nventory of uses. *Sociological Methods & Research, 4*(3), 267-300.

Bowman, S., & Willis, C. (2003). *We media: How audiences are shaping the future of news and information*. USA: The Media Center at the American Press Institute.

Boyd, C. O. (1993). Combining qualitative and quantitative approaches. *NLN publications*(19-2535), 454.

Boyd, E., Grist, N., Juhola, S., & Nelson, V. (2009). Exploring development futures in a changing climate: frontiers for development policy and practice. *Development Policy Review, 27*(6), 659-674.

Boykoff, M. (2010). Indian media representations of climate change in a threatened journalistic ecosystem. *Climatic Change, 99*(1/2), 17-25. 10.1007/s10584-010-9807-8

Boykoff, M. T. (2007). Flogging a dead norm? Newspaper coverage of anthropogenic climate change in the United States and United Kingdom from 2003 to 2006. *Area, 39*(4), 470-481.

Boykoff, M. T. (2007). From convergence to contention: United States mass media representations of anthropogenic climate change science. *Transactions of the Institute of British Geographers, 32*, 477-489.

Boykoff, M. T. (2008a). The cultural politics of climate change discourse in UK tabloids. *Political Geography, 27*(5), 549-569. DOI: 10.1016/j.polgeo.2008.05.002

Boykoff, M. T. (2008b). Lost in translation? United States television news coverage of anthropogenic climate change, 1995–2004. *Climatic Change, 86*(1-2), 1-11.

Boykoff, M. T. (2009). We speak for the trees: Media reporting on the environment. *Annual review of Environment and Resources, 34*, 431-457. 10.1146/annurev.environ.051308.084254

Boykoff, M. T. (Ed.). (2006). *The Atlas of climate change: Mapping the world's greatest challenge* Earthscan.

Boykoff, M. T., & Boykoff, J. M. (2004). Balance as bias: Global warming and the US prestige press. *Global Environmental Change Part A, 14*(2), 125-136. DOI: 10.1016/j.gloenvcha.2003.10.001

Boykoff, M. T., & Boykoff, J. M. (2007). Climate change and journalistic norms: A case-study of US mass-media coverage. *Geoforum, 38*(6), 1190-1204. DOI: 10.1016/j.geoforum.2007.01.008

Boykoff, M. T., & Roberts, J. T. (2007). Media coverage of climate change: Current trends, strengths, weaknesses. *Human Development Report*, *2008*, 3.

Bradshaw, S. (2002). Exploring the gender dimensions of reconstruction processes post-hurricane Mitch. *Journal of International Development, 14*(6), 871-879.

Brannen, J. (Ed.). (1992). *Mixing methods: Qualitative and quantitative Research*. Avebury: Aldershot.

Breitmayer, B. J., Ayres, L., & Knafl, K. A. (1993). Triangulation in qualitative research: Evaluation of completeness and confirmation purposes. *Image: The Journal of Nursing Scholarship, 25*(3), 237-243.

Brossard, D., Shanahan, J., & McComas, K. (2004). Are issue-cycles culturally constructed? A comparison of French and American coverage of global climate change *Mass Communication and Society,, 7*(3), 359-377. 10.1207/s15327825mcs0703_6

Brouwer, R., Akter, S., Brander, L., & Haque, E. (2007). Socioeconomic vulnerability and adaptation to environmental risk: A case study of climate change and flooding in Bangladesh. *Risk Analysis, 27*(2), 313-326. 10.1111/j.1539-6924.2007.00884.x

Brown, P., & Minty, J. (2006. *Media coverage & charitable giving after the 2004 Tsunami*. Paper presented at the William Davidson Institute Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=968760

Bucher, H.-J. (2002). Crisis communication and the Internet: Risk and trust in a global media. *First Monday, 7*(4)

Buechler, S. (2009). Gender, water, and climate change in Sonora, Mexico: implications for policies and programmes on agricultural income-generation. *Gender & Development, 17*(1), 51-66. 10.1080/13552070802696912

Buncombe, A., & Castle, S. (2006 7 December). Exxon spends millions to cast doubt on warming Independent, *Independent,* p. 32.

Cabecinhas, R., Lázaro, A., & Carvalho, A. (2008). *Media uses and social representations of climate change*. A. Carvalho (Ed.) *Communicating Climate Change: Discourses, Mediations and Perceptions.*

Campbell-Lendrum, D., Pruss-Ustun, A., & Corvalan, C. (2003). How much disease could climate change cause. *AJ McMichael, D. Campbell-Lendrum, C. Corvalan, KL Ebi, AK Githeko, JS Scheraga, et al*

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological bulletin, 56*(2), 81.

Campbell, I., Dalrymple, S., Craig, R., & Crawford, A. (2009). Climate change and conflict: Lessons from community conservancies in northern Kenya. *Winnipeg: International Institute for Sustainable Development*

Campbell, J. C. (Ed.). (1996). *Media and policy change in Japan*. Honolulu: University of Hawaii Press.

Cannon, T. (2002). Gender and climate hazards in Bangladesh. *Gender and Development, 10*(2), 45-50.

Cardona, O.-D. (2004). The need for rethinking the concepts of vulnerability and risk from a holistic perspective: A necessary review and criticism for effective risk management. *Mapping vulnerability: Disasters, development and people*, 37-51.

Cardona, O.-D., Van Aalst, M., Birkmann, J., Fordham, M., McGregor, G., Perez, R., . . . Sinh, B. (2012). Determinants of risk: Exposure and vulnerability. *Managing the risks of extreme events and disasters to advance climate change adaptation*, 65-108.

Carr, E. R. (2008). Men's crops and women's crops: The importance of gender to the

understanding of agricultural and development outcomes in Ghana's Central Region. *World Development, 36*(5), 900-915.

Carvajal-Escobar, Y., Quintero-Angel, M., & Garc´ıa-Vargas, M. (2008). Women's role in adapting to climate change and variability. *Advances in Geosciences, 14*, 277-280.

Carvalho, A., & Burgess, J. (2005). Cultural circuits of climate change in U.K. broadsheet newspapers, 1985–2003. *Risk Analysis: An International Journal, 25*(6), 1457-1469. 10.1111/j.1539-6924.2005.00692.x

Chafetz, J. S. (2004). Bridging feminist theory and research methodology. *Journal of Family Issues, 25*(7), 953-967.

Chandra, V., Pandav, R., Ofrin, R., Salunke, S. R., & Bhugra, D. (2006). Mental health and psychosocial response after the worst natural disaster in the history of the Maldives. *International Review of Psychiatry, 18*, 567-572.

Chindarkar, N. (2012). Gender and climate change-induced migration: Proposing a framework for analysis. *Environmental Research Letters, 7*(2), 025601.

Chu, G. C., & Schramm, W. (2004). *Learning from television: What the research says*: IAP.

CIDA. (2002). *Gender equality and climate change: Why consider gender equality when taking action on climate change?* Gatineau, Quebec: Canadian International Development Agency.

Cohen, E. L., Ball-Rokeach, S. J., Jung, J.-Y., & Kim, Y.-C. (2002). Civic Actions after September 11: Exploring the role of multi-level storytelling *Prometheus, 20*(3), 221-228.

Cohen, M. J., & Garrett, J. L. (2010). The food price crisis and urban food (in) security. *Environment and Urbanization, 22*(2), 467-482.

Coleman, I. (2011). Women in the Global Economy. *Yale J. Int'l Aff., 6*, 25.

Comrie, A. (2007). Climate change and human health. *Geography Compass, 1*(3), 325-339.

Cook, J. T., & Frank, D. A. (2008). Food security, poverty, and human development in the United States. *Annals of the New York Academy of Sciences, 1136*(1), 193-209.

Cooper, G. (2007). Burma's bloggers show power of citizen journalism in a crises *Reuters Aert Net* (Vol. 2011): New Alert.

Corbett, J. B., & Durfee, J. L. (2004). Testing public (un)certainty of science: Media representations of global warming. *Science Communication, 26*(129) 10.1177/1075547004270234

Cosgrave, J. (2007). *Synthesis report: Expanded summary. Joint evaluation of the international response to the Indian Ocean tsunami*. London: Retrieved from www.tunami-evaluation.org

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.): Sage.

Cretikos, M., Eastwood, K., Dalton, C., Merrit, T., Tuyl, F., Winn, L., & Durrheim, D. (2008). Household disaster preparedness and information sources: Rapid cluster survey after a storm in New South Wales, Australia. *BioMed Central BMC Public*

Health, 8(195) 10.1186/1471-2458-8-195

Cronin, S. J., Gaylord, D., Charley, D., Alloway, B. V., Wallez, S., & Esau, J. W. (2004). Participatory methods of incorporating scientific with traditional knowledge for volcanic hazard management on Ambae Island, Vanuatu. *Bulletin of Volcanology, 66*, 652-668.

Crumlish, C. (2006). *The power of many: How the living Web is transforming politics, business, and everyday life*: John Wiley & Sons.

Cunha, R. T., Rangel, B., Vieira, O., & Rego, I. E. (Eds.). (2010). *Is it really happening here? A study of climate change perception in the Azores*. UK: WIT Press.

Dankelman, I. (2002). Climate change: Learning from gender analysis and women's experiences of organising for sustainable development. *Gender & Development, 10*(2), 21-29.

Dankelman, I. (2010). *Gender and climate change: An introduction*: Routledge.

Dankelman, I., & Davidson, J. (1993). *Women and environment in the Third World: Alliance for the future*. London: Earthscan.

Dekens, J. (2007). *Herders of Chitral: The lost messengers? Local knowledge on disaster preparedness in Chitral district, Pakistan*. Kathmandu: International Centre for Integrated Mountain Development (ICIMOD) Kathmandu, Nepal.

Dekens, J. (2007). *Local knowledge for disaster preparedness: a literature review*: International Centre for Integrated Mountain Development Kathmandu.

Demeritt, D., & Langdon, D. (2004). The UK climate change programme and communication with local authorities. *Global Environmental Change, 14*(4), 325-336.

Demetriades, J., & Esplen, E. (2008). The gender dimensions of poverty and climate change adaptation. *IDS bulletin, 39*(4), 24-31.

Denton, F. (2002). Climate change vulnerability, impacts, and adaptation: Why does gender matter? *Gender and Development, 10*(2), 10-20.

Denzin , N. K. (2009). *The Research Act: A Theoretical Introduction to Sociological Methods*. New Brunswick, NJ: AldineTransaction.

Deuze, M. (2003). The web and its journalisms: considering the consequences of different types of newsmedia online. *New media & society, 5*(2), 203-230.

Dillman, D. A. (2011). *Mail and Internet surveys: The tailored design method--2007 Update with new Internet, visual, and mixed-mode guide*: John Wiley & Sons.

Dispensa, J. M., & Brulle, R. J. (2003). Media's social construction of environmental issues: Focus on global warming - A comparative study. *International Journal of Sociology and Social Policy, 23*(10), 74-105.

Dizard, W. P. (2000). *Old media, new media: mass communications in the information age* (3rd edition ed.): Longman White Plains, NY.

Dominick, J. R. (2010). *The dynamics of mass communication: Media in the digital age*: Tata McGraw-Hill Education.

Douglas, I. (2009). Climate change, flooding and food security in south Asia. *Food Security, 1*(2), 127-136.

Doulton, H., & Brown, K. (2009). Ten years to prevent catastrophe?: Discourses of climate change and international development in the UK press. *Global Environmental Change, 19*(2), 191-202. DOI: 10.1016/j.gloenvcha.2008.10.004

Downing, T. E. (1991). Vulnerability to hunger in Africa: A climate change perspective. *Global Environmental Change, 1*(5), 365-380. http://dx.doi.org/10.1016/0959-3780(91)90003-C

Drexhage, J. (2006). *The World Conservation Union (IUCN) climate change situation analysis*. Switzerland: IISD-IUCN.Retrieved from http://www.iisd.org/pdf/2007/annrep_2006-2007_en.pdf

Drury, A. C., Olson, R. S., & Van Belle, D. A. (2005). The Politics of humanitarian Aid: U.S. Foreign disaster assistance, 1964–1995. *the Journal of Politics, 67*(2), 454-473.

Dunlap, R. E. (1991). Trends in public opinion toward environmental issues: 1965–1990. *Society & Natural Resources, 4*(3), 285-312.

Emani, S., & Kasperson, J. X. (1996). Disaster communication via the information superhighway: Data and observations on the 1995 hurricane season. *International Journal of Mass Emergencies and Disasters, 14*(3), 321-342.

Enarson, E. (2000). *Gender equality, work, and disaster reduction: Making the connections*. Geneva: InternationalLabour Organization (ILO).

Enarson, E. (2000). *Gender issues in natural disasters, Talking points and research needs in focus programme on crisis response and reconstruction workshop* Geneva: ILO

Enarson, E. (2001). What women do: Gendered labor in the Red River Valley flood. *Global Environmental Change Part B: Environmental Hazards, 3*(1), 1-18. 10.1016/s1464-2867(01)00009-2

Enarson, E., & Chakrabarti, P. G. D. (2009). *Women, gender and disaster: Global issues and initiatives*. US: SAGE Publications Pvt. Ltd

Enarson, E., & Fordham, M. (2001). From women's needs to women's rights in disasters, Global Environment Change. *Environment Hazards*(3), 133–136.

Enarson, E., Fothergill, A., & Peek, L. (2007). Gender and disaster: Foundations and directions. In *Handbook of disaster research* (pp. 130-146). Springer New York.

Enarson, E., & Morrow, B. H. (Eds.). (1998). *Women will rebuild Miami: A case study of feminist response to disaster*. Westport CT: Greenwood.

Entman, R. M. (2003). *Projections of power: Framing News, public opinion, and U.S. foreign policy*. Chicago: University of Chicago Press.

Eriksen, S., & Lind, J. (2005). *The impacts of conflict on household vulnerability to climate stress: Evidence from Turkana and Kitui Districts in Kenya.* Paper presented at the Submitted to Human Security and Climate Change International Workshop–Oslo.

Eriksen, S., & Marin, A. (2011). Pastoral pathways: Climate change adaptation lessons from Ethiopia.

Eriksen, S. H., & O'Brien, K. (2007). Vulnerability, poverty and the need for sustainable

adaptation measures. *Climate policy, 7*(4), 337-352.

ERRA. (2007). *Converting adversity into opportunity: Annual review 2006-2007*. Prime Minister's Secretariate, Islamabad: Earthquake Reconstruction and Rehabilitation Authority and Affiliates.Retrieved from http://www.erra.pk/reports/annual_review_2006-07.pdf

Fanon, F. (2008). *Black skin, white masks*. Grove press.

FAO. (2011). *The state of food and agriculture 2010–11: Women in agriculture: Closing the gender gap for development*. Rome, Italy:

FAO. (2012). *The state of food insecurity 2012. .* Rome: FAO/IFAD/WFP.

Fernando, J. (2010). Media in disaster vs media disasters *Anthropology News*.

Figueiredo, P., & Perkins, P. E. (2013). Women and water management in times of climate change: Participatory and inclusive processes. *Journal of Cleaner Production, 60*(0), 188-194. http://dx.doi.org/10.1016/j.jclepro.2012.02.025

Finnegan, M. (2006). Election 2006: California races, California elections, a landslide for Feinstein and governor. *Los Angeles Times, 8*

Finucane, M. L. (2009). Why science alone won' t solve the climate change crisis: manging climate change risks in the Pacific. from Honolulu: East-west Center

Fisher, H. W. I. (1996). What emergency management officials should know to enhance mitigation and effective disaster response. *Journal of Contingencies and Crisis Management, 4*(4), 209-217.

Fisher, J. R. (2010). Mass media coverage of global warming: An update. *Building Client Relationships in Global Markets*, 258.

Fordham, M. (2011). Gender and disasters. In O. N. Editor-in-Chief: Jerome (Ed.), *Encyclopedia of Environmental Health* (pp. 834-838). Burlington: Elsevier.

Fouillet, A., Rey, G., Laurent, F., Pavillon, G., Bellec, S., Guihenneuc-Jouyaux, C., . . . Hémon, D. (2006). Excess mortality related to the August 2003 heat wave in France. *International archives of occupational and environmental health, 80*(1), 16-24.

Fowler, F. J. (2014). *Survey research methods*. Los Angeles: Sage.

Frank, E., Eakin, H., & López-Carr, D. (2011). Social identity, perception and motivation in adaptation to climate risk in the coffee sector of Chiapas, Mexico. *Global Environmental Change, 21*(1), 66-76. 10.1016/j.gloenvcha.2010.11.001

Franks, S. (2006). The CARMA Report: Western media coverage of humanitarian disasters. *The Political Quarterly, 77*(2), 281-283.

Friis-Hansen, E., & Duveskog, D. (2012). The empowerment route to well-being: An analysis of farmer field schools in East Africa. *World Development, 40*(2), 414-427. http://dx.doi.org/10.1016/j.worlddev.2011.05.005

Gaillard, J.-C. (2007). Resilience of traditional societies in facing natural hazards. *Disaster Prevention and Management, 16*(4), 522-544. 10.1108/09653560710817011

Gaurav, A. (2010). Reclaim the river. Pune, Maharashtra, India.

Gavin, N. T. (2009). Addressing climate change: A media perspective. *Environmental*

Politics, 18(5), 765-780. 10.1080/09644010903157081

Gee, D. B. (1990). The Impact of students' preferred learning style variables in a distance education course: A case study.

Gentle, P., & Maraseni, T. N. (2012a). Climate change, poverty and livelihoods: adaptation practices by rural mountain communities in Nepal. *Environmental Science & Policy, 2 1*, 24-34. 10.1016/j.envsci.2012.03.007

Gentle, P., & Maraseni, T. N. (2012b). Climate change, poverty and livelihoods: adaptation practices by rural mountain communities in Nepal. *Environmental Science & Policy, 21*(0), 24-34. http://dx.doi.org/10.1016/j.envsci.2012.03.007

Ginige, K., Amaratunga, D., & Haigh, R. (2009). Mainstreaming gender in disaster reduction: Why and how? *Disaster Prevention and Management, 18*(1), 23-34. 10.1108/09653560910938510

Goh, A. H. (2012). *A literature review of the gender-differentiated impacts of climate change on women's and men's assets and well-being in developing countries*. International Food Policy Research Institute (IFPRI).

Golding, P., & Murdock, G. (1997). *The political economy of the media*. Edward Elgar.

Goldman, D. (2011, March 17). Google gives '20%' to Japan crisis, *CNN*.

Green, E., & Singleton, C. (2009). Mobile connections: An exploration of the place of mobile phones in friendship relations. *The Sociological Review, 57*(1), 125-144.

Green, L. (2013). In their own words: Using interview materials when writing up qualitative research. *Australian Journal of Communication, 40,*(3), 105-119.

Guedes, O. (2000). Environmental issues in the Brazilian press. *Gazette-Leiden Then Deventer Then Dordrecht Then London, 62*(6), 537-554.

Gul, I. (2010). *The most dangerous place: Pakistan's lawless frontier*. New York: Penguin

Guzmán, J. M., Martine, G., McGranahan, G., Schensul, D., & Tacoli, C. (2009). *Population dynamics and climate change*: UNFPA.

Haddow, G. D., & Haddow, K. S. (2009). *Disaster communications in a changing media world*. USA: Elesvier.

Hallegatte, S. (2012). A framework to investigate the economic growth impact of sea level rise. *Environmental Research Letters, 7*(1), 015604.

Hannan, C. (2002. *Mainstreaming gender perspectives in environmental management and mitigation of natural disasters*. Paper presented at the Disproportionate 1mpact of Natural Disasters on Women, United Nations, NY, USA. Retrieved from http://www.un.org/womenwatch/osagi/pdf/presnat%20disaster.PDF

Hansen, A. (Ed.). (1993). *The mass media and environmental issues* Leicester: Leicester University Press.

Happer, C., Philo, G., & Froggatt, A. (2012). *Climate change and energy security: Assessing the impact of information and its delivery on attitudes and behaviour*. UK: UK Energy Research Centre.

Haq, H. (2010). Aid after Haiti earthquake: Faster but will it be bigger. *Christian Science Monitor*

Hardee, K. (2009). Population, gender, and climate change, Editorial, *BMJ: British Medical Journal,* pp. 1157-1158. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=45430763&site=ehost-live

Harding, S. (1998). Women, science, and society. *Science, 281*(5383), 1599-1600. DOI: 10.1126/science.281.5383.1599

Hardoy, J. E., Mitlin, D., & Satterthwaite, D. (2014). *Environmental problems in an urbanizing world: Finding solutions in cities in Africa, Asia and Latin America*: Routledge.

Harmeling, S. (2011). *Global climate risk index 2012: Who suffers most from extreme weather events? Weather-related loss events in 2010 and 1991 to 2010*. Germany: Germanwatch.

Hasan, N., & Norma, N. (2007). The representation of environmental news: a comparative study of the Malaysian and New Zealand press.

Hattotuwa, S. (2007). Who is Afraid of Citizen Journalists? *Communicating disasters - An Asia Pacific resource book*, 81-84.

Haynes, K., Barclay, J., & Pidgeon, N. (2007). The issue of trust and its influence on risk communication during a volcanic crisis *Bulletin of Volcanology, 70*(5), 605-621. 10.1007/s00445-007-0156-z

Heckenberg, D., & Johnston, I. (2012). Climate change, gender and natural disasters: Social differences and environment-related victimisation *Climate Change from a Criminological Perspective* (pp. 149-171): Springer.

Heltberg, R., Siegel, P. B., & Jorgensen, S. L. (2009). Addressing human vulnerability to climate change: Toward a 'no-regrets' approach. *Global Environmental Change, 19*(1), 89-99. http://dx.doi.org/10.1016/j.gloenvcha.2008.11.003

Hemmati, M., & Rohr, U. (2009). Engendering the climate-change negotiations: Experiences, challenges, and steps forward. *Gender & Development, 17*(1), 19-32. 10.1080/13552070802696870

Hertel, T. W., & Rosch, S. D. (2010). Climate change, agriculture, and poverty. *Applied Economic Perspectives and Policy*, ppq016.

Houghton, C., Casey, D., Shaw, D., & Murphy, K. (2013). Rigour in qualitative case-study research. *Nurse Researcher, 20*(4), 12-17.

Houghton, R. (2009). *Everything became a struggle, absolute struggle: Post-flood increases in domestic violence in New Zealand*: Sage: New Delhi.

Howard-Williams, R. (2009). *Representations of the environment on New Zealand Television.* (Master of Arts in Mass Communication unpublished Masters thesis), University of Canterbury, New Zealand.

Howell, P. (2003). *Indigenous early warning indicators of cyclones: Potential application in coastal Bangladesh*. Benfield Hazard Research Center.

Howell, R. A. (2011). Lights, camera ... action? Altered attitudes and behaviour in response to the climate change film The Age of Stupid. *Global Environmental Change, In Press, Corrected Proof* doi: 10.1016/j.gloenvcha.2010.09.004

Huebner, A. (2012). Public perceptions of destination vulnerability to climate change and implications for long-haul travel decisions to small island states. *Journal of Sustainable Tourism, 20*(7), 939-951.

Hughes, T. (2006). [Personal communication].

Hussain, N., & Sultan, M. (2008). *The role of media in national security: A case study of 1998 nuclear explosions by Pakistan*: South Asian Strategic Stability Institute.

Hyder, A. A., Maman, S., Nyoni, J. E., Khasiani, S. A., Teoh, N., Premji, Z., & Sohani, S. (2007). The pervasive triad of food security, gender inequity and women's health: Exploratory research from sub-Saharan Africa. *African Health Sciences, 5*(4), 328-334.

IFAD. (2010). *Rural poverty report 2011 new realities, new challenges: new opportunities for tomorrow's generation*. Rome, Italy: International Fund for Agricultural Development.

Inhofe, J. M. (2003). The science of climate change: Senate floor statement. *Chair: Committee on Environment and Public Works, 28*

Intercooperation. (2008). *Mali: Highlighting local coping strategies for drought*. Geneva, Switzerland: United Nations Secretariat of the International Strategy for Disaster Reduction.

Internet World Stats. (2014). Internet users in Asia 2014.   Retrieved March, 2015, from http://www.internetworldstats.com/stats3.htm

IPCC. (2001). *Climate change 2001: Impacts, adaptation, and vulnerability*. Retrieved from http://www.ipcc.ch

IPCC. (2014). *Summary for policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability*. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.

Iqbal, Z. (2012). Media and Musharraf: A marriage of convenience. *European Scientific Journal, 8*(3)

ISDR, U. (2009). Making disaster risk reduction gender-sensitive policy and practical guidelines.

Islam, R. (2009). Climate change-induced disasters and gender dimensions: Perspective Bangladesh. *Peace and Conflict Monitor*

Jämting, H. (2008). Gender and climate change. *Society, Nature and Change*

Janofsky, M. (2006). *Bush's chat with novelist alarms environmentalists*:

Jaspal, Z. N., & Haider, N. (2014). Management of chemicals in Pakistan: Concerns and challenges. *Management, 29*(2), 497-517.

Jenkins, P., & Phillips, B. (2008). Battered women, catastrophe, and the context of safety after Hurricane Katrina. *NWSA Journal, 20*(3), 49-68.

Jenkins, P., & Phillips, B. (2008). Domestic violence and hurricane Katrina. *Katrina and the women of New Orleans*, 65-69.

Jiang, L., & Hardee, K. (2011). How do recent population trends matter to climate change? *Population Research and Policy Review, 30*(2), 287-312.

Jigyasu, R. (2002). *Reducing disaster vulnerability through local knowledge and capacity. The cace of earthquake prone rural communities in India and Nepal.* (Doctoral thesis monograph), Norwegian University of Science and Technology, Faculty of Architecture and Fine Art.

Kaigo, M. (2012). Social media usage during disasters and social capital: Twitter and the Great East Japan earthquake. *Keio Communication Review, 34*, 19-35.

Kakota, T., Nyariki, D., Mkwambisi, D., & Kogi-Makau, W. (2011). Gender vulnerability to climate variability and household food insecurity. *Climate and development, 3*(4), 298-309.

Kates, R. W. (2000). Cautionary tales: Adaptation and the global poor *Societal Adaptation to Climate Variability and Change* (pp. 5-17): Springer.

Katz, E. (1957). The two-step flow of communication: An up-to-date report on an hypothesis. *Public opinion quarterly, 21*(1), 61-78.

Katz, E., & Lazarsfeld, P. F. (2006). *Personal influence: The part played by people in the flow of mass communications*: Transaction Publishers.

Keatinge, W. R., Donaldson, G. C., Cordioli, E., Martinelli, M., Kunst, A. E., Mackenbach, J. P., . . . Vuori, I. (2000). Heat related mortality in warm and cold regions of Europe: Observational study. *British Medical Journal 321*, 670-673.

Keim, M. E., & Noji, E. (2010). Emergent use of social media: A new age of opportunity for disaster resilience. *American journal of disaster medicine, 6*(1), 47-54.

Kelly, L., Burton, S., & Regan, L. (Eds.). (1994). *Researching women 's lives or studying women's oppression? Reflections on what constitute feminist research* London: Taylor and Francis.

Kempton, W., Boster, J. S., & Hartley, J. A. (Eds.). (1995). *Environmental Values in American Culture*. Cambridge, Massachusetts: MIT Press.

Kenix, L. J. (2008). Framing Science: Climate Change in the mainstream and alternative news of New Zealand. *Political Science, 60*(1), 117-132. 10.1177/003231870806000110

Kevany, K., Siebel, M., Hyde, K., Nazer, D., & Huisingh, D. (2013). Water, women, waste, wisdom and wealth – harvesting the confluences and opportunities. *Journal of Cleaner Production, 60*(0), 4-10. http://dx.doi.org/10.1016/j.jclepro.2013.07.018

Khamis, M., Plush, T., & Zelaya, C. S. (2009). Women's rights in climate change: Using video as a tool for empowerment in Nepal. *Gender & Development, 17*(1), 125-135. 10.1080/13552070802697001

Khurshid, N., & Saboor, A. (2013). Impact assessment of economic interventions of AKRSP on the lives of rural women: A case study of Northern Areas of Pakistan. *International Journal of Economics, Commerce and Research (IJECR), 3*(1), 49-56.

Kishor, S., & Subaiya, L. (2008). Understanding womens empowerment: a comparative analysis of Demographic and Health Surveys (DHS) data.

Kitzinger, J. (1994). Focus groups: Method or madness. *Challenge and innovation: Methodological advances in social research on HIV/AIDS*, 159-175.

Knafl, K., & Breitmayer, B. (Eds.). (1991). *Triangulation in qualitative research: Issues of conceptual clarity and purpose*. London: Sage.

Kodrich, K., & Laituri, M. (2005). The Formation of a disaster community in cyberspace: The role of online news media after the 2001 Gujarat earthquake. *Convergence: The International Journal of Research into New Media Technologies, 11*(40) 10.1177/135485650501100304

Kovats, R. S., & Hajat, S. (2008). Heat stress and public health: A critical review. *Annu. Rev. Public Health, 29*, 41-55.

Krosnick, J. A., & Kinder, D. R. (1990). Altering the Foundations of Support for the President Through Priming. *The American Political Science Review, 84*(2), 497-512.

Krupnik, I., & Jolly, D. (Eds.). (2002). *The earth is faster now: Indigenous observations of Arctic environmental change*. Fairbanks, Alaska: Arctic Research Consortium of the United States. .

Kuha, M. (2009). Uncertainty about causes and effects of global warming in US news coverage before and after Bali. *Language & Ecology, 2*(4), 1-18.

Kumar, S., Lawrence, D. M., Dirmeyer, P. A., & Sheffield, J. (2014). Less reliable water availability in the 21st century climate projections. *Earth's Future, 2*(3), 152-160. 10.1002/2013EF000159

Kur, J. T., & Essien, C. F. (2014). Do new media make the practice of journalism more or less a profession? *New Media and Mass Communication, 21*

Kvale, S. (1983). The qualitative research interview: A phenomenological and a hermeneutical mode of understanding. *Journal of Phenomenological Psychology, 14*, 171-196.

Lakin, R., & Mahoney, A. (2006). Empowering youth to change their world: Identifying key components of a community service program to promote positive development. *Journal of School Psychology, 44*(6), 513-531. http://dx.doi.org/10.1016/j.jsp.2006.06.001

Lambrou, Y., & Nelson, S. (2013). Gender issues in climate change adaptation: Farmers' food security in Andhra Pradesh *Research, action and policy: Addressing the gendered impacts of climate change* (pp. 189-206): Springer.

Lambrou, Y., & Piana, G. (2006). *Gender: The missing component of the response to climate change*. Food and Agriculture Organization of the United Nations.Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=fmh&AN=MRB-VS090414-019&site=ehost-live

Lambrou, Y., & Sibyl, N. (2010). *Farmers in a changing climate: Does gender matter?* Rome: Food and Agricultural Organisation (FAO).

Lane, R., & McNaught, R. (2009). Building gendered approaches to adaptation in the Pacific. *Gender & Development, 17*(1), 67-80. 10.1080/13552070802696920

Lazarsfeld, P. F., Berelson, B., & Gaudet, H. (1948). *The People's choice*. New York:: Duell, Sloan and Pearce.

Lee, J. (2003, 28 May). Exxon backs groups that question global warming. *The New York Times,* C 5.

Lee, K. (2011). The role of media exposure, social exposure and biospheric value orientation in the environmental attitude-intention-behavior model in adolescents. *Journal of Environmental Psychology, 31*(4), 301-308. http://dx.doi.org/10.1016/j.jenvp.2011.08.004

Leggett, J. K. (2001). *The carbon war: Global warming and the end of the oil era*: Psychology Press.

Leiserowitz, A. (2005). American risk perceptions: Is climate change dangerous? *Risk Analysis, 25*(6), 1433-1442.

Leiserowitz, A., Smith, N., & Marlon, J. R. (2011). American teens' knowledge of climate change. *Yale University. New Haven, CT: Yale Project on Climate Change Communication*, 5.

León, B., & Erviti, M. C. (2013). Science in pictures: Visual representation of climate change in Spain's television news. *Public Understanding of Science* 10.1177/0963662513500196

Leoni, B., Radford, T., & Schulman, M. (2011). *Disaster through a different lens: Behind every effect, there is a cause*: UNISDR.

Levine, R., Locke, C., Searls, D., & Weinberger, D. The Cluetrain Manifesto: The End of Business as Usual [M].(2001): Basic Books Reprinted Edition.

Levy, D. L., & Egan, D. (1998). Capital Contests: National and transnational channels of corporate influence on the climate change negotiations. *Politics & Society, 26*(337) 10.1177/0032329298026003003

Liebes, T. (Ed.). (1998). *Television's disaster marathons*. London: Routledge.

Liebes, T., & Blondheim, M. (2002). Live television's disaster marathon of September 11 and its subversive potential *Prometheus, 20*(3), 271-276.

Light, R. J., Singer, J. D., & Willett, J. B. (1990). By design. *Cambridge, MA: Harvard University*, 296.

Lindell, M. K. (2013). Recovery and reconstruction after disaster. In *Encyclopedia of natural hazards* (pp. 812-824). Springer Netherlands.

Linnekamp, F., Koedam, A., & Baud, I. (2011). Household vulnerability to climate change: Examining perceptions of households of flood risks in Georgetown and Paramaribo. *Habitat International, 35*(3), 447-456.

Liu, X., Vedlitz, A., & Alston, L. (2008). Regional news portrayals of global warming and climate change. *Environmental Science & Policy, 11*(5), 379-393. DOI: 10.1016/j.envsci.2008.01.002

Lobell, D. B., Burke, M. B., Tebaldi, C., Mastrandrea, M. D., Falcon, W. P., & Naylor, R. L. (2008). Prioritizing climate change adaptation needs for food security in 2030. *Science, 319*(5863), 607-610.

MacDougall, C. D., & Reid , R. D. (1987). *Interpretative reporting*. New York: MacMillan.

MacGregor, S. (2010). Gender and climate change: From impacts to discourses. *Journal of the Indian Ocean Region, 6*(2), 223-238. 10.1080/19480881.2010.536669

Madriz, E. (Ed.). (2000). *Focus groups in feminist research* (2nd ed.). Thousand Oaks Calfornia: SAGE.

Manzo, K. (2010). Imaging vulnerability: The iconography of climate change. *Area, 42*(1), 96-107.

Markandya, A., & Chiabai, A. (2009). Valuing climate change impacts on human health: Empirical evidence from the literature. *International journal of environmental research and public health, 6*(2), 759-786.

Martin, W. J., Glass, R. I., Balbus, J. M., & Collins, F. S. (2011). A major environmental cause of death. *Science, 334*(6053), 180-181.

Masters, J. (2010). Weather Underground Retrieved from http://www.wunderground.com/blog/JeffMasters/article.html

Mathbor, G. M. (2007). Enhancement of community prepardness for natural disasters: The role of social work in building social capital sustainable disaster relief and management. *International Social Work, 50*(3), 357-369.

Maynard, M., & Purvis, J. (1994). *Researching women 's lives from a feminist perspective*. London: Taylor and Francis.

Mazur, A. (1998). Global environmental change in the news : 1987-90 vs 1992-6. *International Sociology, 13*(457)

Mc Donnell, I., Lecomte, H.-B. S., & Wegimont, L. (2003). *Public opinion, global education and development co-operation reform: In search of a virtuous circle*. fRANCE: OECD.

McBean, G. A., & Hengeveld, H. G. (2000). Communicating the science of climate change: A mutual challenge for scientists and educators. *Canadian Journal of Environmental Education (CJEE), 5*(1), pp. 9-25.

McCombs, M. E., & Shaw, D. L. (1972). The agenda-setting function of mass media. *Public opinion quarterly, 36*(2), 176-187.

McCright, A. M. (2007). Dealing with climate change contrarians. *Creating a climate for change: Communicating climate change and facilitating social change*, 200-212.

McCright, A. M. (2010). The effects of gender on climate change knowledge and concern in the American public. *Population and Environment, 32*(1), 66-87.

McCright, A. M., & Dunlap, R. E. (2003). Defeating Kyoto: The conservative movement's impact on US climate change policy. *Social Problems, 50*(3), 348-373.

McCullagh, K. (2003). E‑democracy: Potential for political revolution? *International Journal of Law and Information Technology, 11*(2), 149-161.

McDowell, J. Z., & Hess, J. J. (2012). Accessing adaptation: Multiple stressors on livelihoods in the Bolivian highlands under a changing climate. *Global Environmental Change, 22*(2), 342-352.

McQuail, D. (1997). Accountability of Media to Society Principles and Means. *European journal of communication*, *12*(4), 511-529. McQuail, D. (2005). *Mass communication theory* (5th ed.). London: Sage.

McQuail, D. (2010). *McQuail's mass communication theory*: Sage Publications.

Mercer, J., Kelman, I., Taranis, L., & Suchet-Pearson, S. (2010). Framework for integrating indigenous and scientific knowledge for disaster risk reduction. *Disasters, 34*(1), 214-239. 10.1111/j.0361-3666.2009.01126.x

Merton, R. K. (1948). Patterns of influence: A study of interpersonal influence and of communications behavior in a local community. *Communications research, 1949*, 180-219.

Mertz, O., Mbow, C., Reenberg, A., & Diouf, A. (2009). Farmers' perceptions of climate change and agricultural adaptation strategies in rural Sahel. *Environmental Management, 43*(5), 804-816.

Messick, S. (1995). Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning *American Psychologist, 50*(9), 741-749. 10.1037/0003-066X.50.9.741

Mikami, S., Takeshita, T., & Kawabata, M. (1999). Influence of the mass media on the public awareness of global environmental issues in Japan. *Asian Geographer, 18*(1-2), 87-97.

Miles, B., & Morse, S. (2007). The role of news media in natural disaster risk and recovery. *Ecological Economics, 63*(2-3), 365-373. 10.1016/j.ecolecon.2006.08.007

Mileti, D. S., & W., O. B. P. (1992). Warnings during Disaster: Normalizing Communicated Risk. *Social Problems, 39*(1), 40-54.

Miller, A., & Goidel, R. (2009). News organizations and information gathering during a natural disaster: Lessons from Hurricane Katrina. *Journal of Contingencies & Crisis Management, 17*(4), 266-273. 10.1111/j.1468-5973.2009.00586.x

Min, S.-K., Zhang, X., Zwiers, F. W., & Hegerl, G. C. (2011). Human contribution to more-intense precipitation extremes. *Nature, 470*(7334), 378-381. http://www.nature.com/nature/journal/v470/n7334/abs/10.1038-nature09763-unlocked.html#supplementary-information

Mitchell, T. (2006). *Building disaster resilient future: Lessons from participatory research in St Kitts and Montserrat.* University College London, London.

Mitchell, T., Tanner, T., & Lussier, K. (2007). *We know what we need: South Asian women speak out on climate change adaptation.* Johannesburg/London: ActionAid International (IDS, UK).

Moeller, S. D. (2010). Media coverage of natural disasters and humanitarian crises. In P. Norris (Ed.), *Public Sentinel: News Media and Governance Reform* (pp. 61-83): Washington, D.C.: World Bank.

Monbiot, G., Lynas, M., Marshall, G., Juniper, T., & Tindale, S. (2005). Time to speak up for climate-change science. If debate is left to greens and sceptics, people think the evidence is equal on each side. *Nature, 434*(7033), 559.

Mormont, M., & Dasnoy, C. (1995). Source strategies and the mediatization of climate change. *Media, Culture & Society, 17*, 49-65.

Moser, C., & Satterthwaite, D. (2010). Toward pro-poor adaptation to climate change in the urban centers of low-and middle-income countries. *Social Dimensions of Climate Change*, 231.

Moser, S. C. (2010). Communicating climate change: history, challenges, process and future directions. *Wiley Interdisciplinary Reviews: Climate Change, 1*(1), 31-53.

Murad, H. A. (2010). *Better communication during natural crisis communication.* (Master of Science in Mass Communication unpublished), Arkansas State University, Arkansas USA. (1479195)

Murdock, G. (2010). Shifting anxieties, altered media: Risk communication in networked times. *Catalan Journal of Communication & Cultural Studies, 2*(2), 159-176.

Murthy, D., & Longwell, A. S. (2012). Twitter and Disastes: The uses of Twitter during the 2010 Pakistan floods. *Information, Communication & Society, 16*(6), 837-855. 10.1080/1369118X.2012.696123

Muthoni, J. W., & Wangui, E. E. (2013). Women and climate change: Strategies for adaptive capacity in Mwanga district, Tanzania. *African Geographical Review, 32*(1), 59-71.

Naqvi, A. A., & Rehm, M. (2012). SHELscape: A Multi-agent Policy Toolkit for Extreme Events.

Nazare, F., Mdluli , T., Babugura, A., & Banda, K. (2005). *Assessing impact of climate change, gender and biodiversity in Bohlabela District, Limpopo Province*. Novafrica.

NCCP. (2012). *National climate change policy* Islamabad: Climate Change Division, Government of Pakistan.

NDMA. (2013). *National disaster risk reduction policy* Islamabad: Prime Minister's Secretariat.

Nellemann, C., Verma, R., & Hislop, L. (2011). *Women at the frontline of climate change: Gender risks and hopes: A rapid response assessment*: United Nations Environment Programme.

Nelson, D. R., Adger, N. W., & Brown, K. (2007). Adaptation to environmental change: Contributions of a resilience framework. *Annual review of Environment and Resources, 32*(1), 395-419. doi:10.1146/annurev.energy.32.051807.090348

Nelson, V., Meadows, K., Cannon, T., Morton, J., & Martin, A. (2002). Uncertain predictions, invisible impacts, and the need to mainstream gender in climate change adaptations. *Gender & Development, 10*(2), 51-59.

Nelson, V., & Stathers, T. (2009). Resilience, power, culture, and climate: A case study from semi-arid Tanzania, and new research directions. *Gender & Development, 17*(1), 81-94. 10.1080/13552070802696946

Neumayer, E., & Plümper, T. (2007). The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002. *Annals of the Association of American Geographers, 97*(3), 551-566.

Nevo, B. (1985). Face validity revisited. *Journal of Educational Measurement, 22*(4), 287-293. 10.1111/j.1745-3984.1985.tb01065.x

Nguyen, K. (2010). Haitian women lose out in post-quake "survival of the strongest". Retrieved 9 Jan 2015, from http://reliefweb.int/report/haiti/haitian-women-lose-out-post-quake-survival-strongest

Nightingale, A. (2009). Warming up the climate change debate: A challenge to policy based on adaptation. *Journal of Forest and Livelihood, 8*(1), 84-89.

Nitz, M., & Ihlen, O. (2006. *Oil and gas as natural riches or environmental problems: Framing contests in public relations*. Paper presented at the International Communication Association,

Norberg, E. G. (1996). *Radio programming : Tactics and strategy* Boston: Focal Press.

Nyong, A., Adesina, F., & Elasha, B. O. (2007). The value of indigenous knowledge in climate change mitigation and adaptation strategies in the African Sahel. *Mitigation and Adaptation Strategies for Global Change, 12*(5), 787-797.

O'Brien, K. L., & Wolf, J. (2010). A values-based approach to vulnerability and adaptation to climate change. *Wiley Interdisciplinary Reviews: Climate Change, 1*(2), 232-242. 10.1002/wcc.30

Oakley, A. (Ed.). (1981). *Interviewing women: A contradiction in terms* (ed.). London: Routledge & Kegan Paul.

Ofcom. (2007). *New News, Future News: The challenges for television news after Digital Switch-over*. Office of Communications.

Olsen, G. R., Carstensen, N., & Høyen, K. (2003). Humanitarian crises: Testing the CNN effect. *Forced Migration Review (FMR), 16*

Olsen, G. R., Carstensen, N., & Høyen, K. (2003). Humanitarian crises: what determines the level of emergency assistance? Media coverage, donor interests and the aid business. *Disasters*, *27*(2), 109-126.

Oleson, V. L. (Ed.). (2000). *Feminisms and qualitative Research at and into the Millenium* (2nd ed.). Thousand Oaks Calfornia: SAGE

Olson, R. S., Prieto, J. P. S., & Hoberman, G. (2010). *Disaster risk reduction, public accountability, and the role of the media: Concepts, cases, and conclusions*. Miami, Florida: Agency for International Development's Office of U.S Foreign Disaster Assistance (USAID/OFDA).

Olson, R. S., Prieto, J. P. S., & Hoberman, G. (2010). *Disaster Risk Reduction, Public Accountability, and the Role of the Media:Concepts, Cases, and Conclusions*. Latin American and Caribbean Center, Miami, Florida: Florida International University.

Omolo, N. A. (2010). Gender and climate change-induced conflict in pastoral communities: Case study of Turkana in northwestern Kenya. *African Journal on Conflict Resolution, 10*(2010///), 81-102.

Oosterhof, L., Heuvelman, A., & Peters, O. (2009). Donation to disaster relief campaigns: Underlying social cognitive factors exposed. *Evaluation and Program Planning, 32*(2), 148-157. 10.1016/j.evalprogplan.2008.10.006

Oreskes, N. (2004). Beyond the Ivory Tower: The Scientific Consensus on Climate Change. *Science of The Total Environment, 306*(5702), 1686. 10.1126/science.1103618

Osbahr, H., Twyman, C., Neil Adger, W., & Thomas, D. S. (2008). Effective livelihood adaptation to climate change disturbance: Scale dimensions of practice in Mozambique. *Geoforum, 39*(6), 1951-1964.

Oxfam. (2005a). *Gender and the Tsunami*. Oxford:

Oxfam. (2005b). The tsunami's impact on women.

Paavola, J., & Adger, W. N. (2006). Fair adaptation to climate change. *Ecological Economics, 56*(4), 594-609. http://dx.doi.org/10.1016/j.ecolecon.2005.03.015

Pakistan: Key Telecom Growth Market. (2006).

Panagariya, A. (2009). *Climate change and India: Implications and policy options*. India Policy Forum.

Patt, A. G., Daze, A., & Suarez, P. (2009). *Gender and climate change vulnerability: What's problem, what's solution?* UK: Edward Elgar Publishing.

Patz, J. A., Epstein, P. R., Burke, T. A., & Balbus, J. M. (1996). Global climate change and emerging infectious diseases. *The Journal of the American Medical Association, 275*(3), 217-223.

Pelling, M. (2003). The vulnerability of cities. *Earthscan, London*

Peralta, A. (2008). Gender and climate change finance-A case study from the Philippines. *Women's Environment and Development Organization (WEDO), New York*

Perera, A. (2006). *Long-term disaster management,corruption and the media -The SriLankan experience*. U4 Utstein Anti-Corruption Resource Centre.

Perez-Lugo, M. (2004). Media uses in disaster situations: A new focus on the impact phase. *Sociological Inquiry, 74*(2), 210-225. 10.1111/j.1475-682X.2004.00087.x

Peters, D. (2001). *Gender and transport in less developed countries: A background paper in preparation for CSD-9*. Paper presented at the Paper Commissioned by UNED Forum, London.

Petheram, L., Zander, K. K., Campbell, B. M., High, C., & Stacey, N. (2010). 'Strange changes': Indigenous perspectives of climate change and adaptation in NE Arnhem Land (Australia). *Global Environmental Change, 20*(4), 681-692. http://dx.doi.org/10.1016/j.gloenvcha.2010.05.002

Petrie, B. (2010). Gender and climate change: Regional summary. *Heinrich Boll Foundation Southern Africa, Cape Town*

Pew. (2005). *The Pew Research Center for the people and the press*. Retrieved from http://people-press.org/reports/display.php3?ReportID=260

Potter, D. M., & Van Belle, D. (2004). News media coverage influence on Japan's foreign aid allocations *Japanese Journal of Political Science, 5*(1), 113-135. 10.1017/S1468109904001343

Pouliotte, J., Smit, B., & Westerhoff, L. (2009). Adaptation and development: Livelihoods and climate change in Subarnabad, Bangladesh. *Climate and development, 1*(1), 31-46.

Poumadere, M., Mays, C., Le Mer, S., & Blong, R. (2005). The 2003 heat wave in France: Dangerous climate change here and now. *Risk Analysis, 25*(6), 1483-1494. 10.1111/j.1539-6925.2005.00694.x

Price, G., & Richardson, L. (2011). Access to information–inclusive or exclusive. *Forced Migration Review, 38*, 14-16.

PTA. (2013). *PTA Annual Report 2012-13* (978-969-8667-54-2). Islamabad:

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community* New York: Simon & Schuster.

Quarantelli, E. L. (1999). The disaster recovery process: What we know and do not know from research.

Quisumbing, A. R., Kumar, N., & Behrman, J. A. (2011). Do shocks affect men's and women's assets differently? *A review of literature and new evidence from Bangladesh and Uganda IFPRI Discussion Paper*(1113)

Quisumbing, A. R., & Pandolfelli, L. (2010). Promising approaches to address the needs of poor female farmers: Resources, constraints, and interventions. *World Development, 38*(4), 581-592. http://dx.doi.org/10.1016/j.worlddev.2009.10.006

Rahman, M. (2013). Climate change, disaster and gender vulnerability: A study on two divisions of Bangladesh. *American Journal of Human Ecology, 2*(2), 72-82.

Ramachandran, N. (2006). *Women and food security in South Asia: Current issues and emerging concerns*: Research Paper, UNU-WIDER, United Nations University (UNU).

Rana, I. (June 6, 2012). Climate change: Slow melting of glaciers to delay crop sowing *Tribune*. Retrieved from http://tribune.com.pk/story/389319/climate-change-slow-melting-of-glaciers-to-delay-crop-sowing/

Rasmussen, R. O. (2009). Gender and generation: Perspectives on ongoing social and environmental changes in the Arctic. *Signs: Journal of Women in Culture & Society, 34*(3), 524-532.

Ray-Bennett, N. S. (2009). The influence of caste, class and gender in surviving multiple disasters: A case study from Orissa, India. *Environmental Hazards, 8*(1), 5-22.

Rea, L. M., & Parker, R. A. (2012). *Designing and conducting survey research: A comprehensive guide*: John Wiley & Sons.

Redcross.org.ph, (2016). *Programs and Activities*. Retrieved 1 February 2016, from http://www.redcross.org.ph/what-we-do/red-cross-youth/item/79-programs-and-activities

Reddy, B. S., & Snehalatha, M. (2011). Sanitation and personal hygiene: What does it mean to poor and vulnerable women? *Indian Journal of Gender Studies, 18*(3), 381-404.

Reid, P., & Vogel, C. (2006). Living and responding to multiple stressors in South Africa—Glimpses from KwaZulu-Natal. *Global Environmental Change, 16*, 195-206. 10.1016/j.gloenvcha.2006.01.003

Renton, A. (2009). Suffering the science: Climate change, people, and poverty. *Oxfam Policy and Practice: Climate Change and Resilience, 5*(2), 53-113.

Resurreccion, B. P. (2011). The gender and climate debate: More of the same or new pathways of thinking and doing. *Asia Security Initiative Policy Paper, 10*

Resurrección, B. P. (2013). Persistent women and environment linkages in climate change and sustainable development agendas. *Women's Studies International Forum, 40*(0), 33-43. http://dx.doi.org/10.1016/j.wsif.2013.03.011

Reyes, R. R. (2002). Gendering responses to El Niño in rural Peru *Gender & Development, 10*(2), 60-69. 10.1080/13552070215907

Reynolds, G. (2007). *An army of Davids: How markets and technology empower ordinary people to beat big media, big government, and other Goliaths*: Thomas Nelson Inc.

RHRC. *Needs of women and girls must be addressed in Pakistan flood response and recovery*. Reproductive Health Response in Crises Consortium (RHRC).Retrieved from http://rhrealitycheck.org/article/2010/08/06/meeting-reproductive-health-needs-women-girls-affected-pakistan-floods/

Risbey, J. S. (2008). The new climate discourse: Alarmist or alarming? *Global Environmental Change, 18*(1), 26-37. 10.1016/j.gloenvcha.2007.06.003

Robert J, N. (2004). Coastal flooding and wetland loss in the 21st century: changes under the SRES climate and socio-economic scenarios. *Global Environmental Change, 14*(1), 69-86. 10.1016/j.gloenvcha.2003.10.007

Robine, J.-M., Cheung, S. L. K., Le Roy, S., Van Oyen, H., Griffiths, C., Michel, J.-P., & Herrmann, F. R. (2008). Death toll exceeded 70,000 in Europe during the summer of 2003. *Comptes rendus biologies, 331*(2), 171-178.

Robinson, P. (1999). The CNN effect: Can the news media drive foreign policy? *Review of International Studies, 25*(2), 301-309.

Rofi, A., Doocy, S., & Robinson, C. (2006). Tsunami mortality and displacement in Aceh province, Indonesia. *Disasters, 30*(3), 340-350. 10.1111/j.0361-3666.2005.00324.x

Rohr, U. (2004). *Mainstreaming gender into the climate change regime*. COP10 Buenos Aires:

Rohr, U. (2006). Gender and climate change. *Tiempo, 59*, 3-7.

Rohr, U. (2007). *Gender, climate change and adaptation: Introduction to the gender dimension*. Gender, Environment, Sustainability Background paper for the both ends briefing paper adapting to climate change: How local experiences can shape the debates Gennnet. Amsterdam.

Rohr, U. (2009). A View from the side? Gendering the United Nations climate change negotiations. *KVINDER, KØN & FORSKNING, 3*(4), 52-61.

Rohr, U., & Hemmati, M. (2008). A gender-sensitive climate regime? *Global Warming and Climate Change. Ten Years After Kyoto and Still Counting*

Roncoli, C., Kirshen, P., Etkin, D., Sanon, M., Somé, L., Dembélé, Y., . . . Hoogenboom, G. (2009). From management to negotiation: Technical and institutional innovations for integrated water resource management in the Upper Comoé River Basin, Burkina Faso. *Environmental Management, 44*(4), 695-711.

Rosen, J. (2006). The people formerly known as the audience: PressThink.

Rosenstiel, T., Mitchell, A., Purcell, K., & Rainie, L. (2011). How people learn about their local community. *Pew Research Center's Project for Excellence in Journalism and the Pew Internet & American Life Project*

Russill, C., & Nyssa, Z. (2009). The tipping point trend in climate change communication. *Global Environmental Change, 19*(3), 336-344. doi: 10.1016/j.gloenvcha.2009.04.001

Sabates-Wheeler, R., Sabates, R., & Castaldo, A. (2008). Tackling poverty-migration linkages: Evidence from Ghana and Egypt. *Social Indicators Research, 87*(2), 307-328.

Saeed, A. (2013). Climate change: Pakistan's anti-climatic response, *Dawn*.

Sakurai, R., Jacobson, S. K., Kobori, H., Primack, R., Oka, K., Komatsu, N., & Machida, R. (2011). Culture and climate change: Japanese cherry blossom festivals and stakeholders' knowledge and attitudes about global climate change. *Biological conservation, 144*(1), 654-658.

Sallu, S. M., Twyman, C., & Stringer, L. C. (2010). Resilient or vulnerable livelihoods? Assessing livelihood dynamics and trajectories in rural Botswana. *Ecology and Society: a journal of integrative science for resilience and sustainability, 15*(4)

Sampei, Y., & Aoyagi-Usui, M. (2009). Mass-media coverage, its influence on public awareness of climate-change issues, and implications for Japan's national campaign to reduce greenhouse gas emissions. *Global Environmental Change, 19*(2), 203-212. doi: 10.1016/j.gloenvcha.2008.10.005

Sample, I. (2007). *Scientists offered cash to dispute climate study*.

Savci, S. (2012). An agricultural pollutant: Chemical fertilizer. *International Journal of Environmental Science and Development, 3*(1), 77-80.

Scanlon, J. (2007). Unwelcome irritant or useful Ally? The mass media in emergencies. In H. Rodríguez, E. L. Quarantelli & R. R. Dynes (Eds.), *Handbook of Disaster research* (pp. 413-429). New York: Springer.

Schaffrin, A. (2011). No measure without concept. A critical review on the conceptualization and measurement of environmental Concern. *International Review of Social Research, 1*(3)

Schipper, E. L. F. (2007). Climate change adaptation and development: Exploring the linkages.

Scoble, R., & Israel, S. (2006). *Naked conversations: How blogs are changing the way businesses talk with customers*: John Wiley & Sons.

Semenza, J. C., & Menne, B. (2009). Climate change and infectious diseases in Europe. *The Lancet Infectious Diseases, 9*(6), 365-375. http://dx.doi.org/10.1016/S1473-3099(09)70104-5

Shackleton, S., Campbell, B., Lotz-Sisitka, H., & Shackleton, C. (2008). Links between the local trade in natural products, livelihoods and poverty alleviation in a semi-arid region of South Africa. *World Development, 36*(3), 505-526. http://dx.doi.org/10.1016/j.worlddev.2007.03.003

Shah, K. U., Dulal, H. B., Johnson, C., & Baptiste, A. (2013). Understanding livelihood vulnerability to climate change: Applying the livelihood vulnerability index in Trinidad and Tobago. *Geoforum, 47*(0), 125-137. http://dx.doi.org/10.1016/j.geoforum.2013.04.004

Sharmin, Z., & Islam, M. S. (2013). *Consequences of climate change and gender vulnerability: Bangladesh perspective*. Bangladesh Development Research Center (BDRC).

Shih, F. J. (1998). Triangulation in nursing research: Issues of conceptual clarity and purpose. *Journal of advanced nursing, 28*(3), 631-641.

Shiva, V. (1989). *Staying alive: Women, ecology and survival in India*. London: Zed Books.

Shoeb, N. F. (2008). *An analysis of Urdu and English editorial coverage of the 2007 emergency from Pakistani newspapers*: ProQuest.

Shuckburgh, E., Robison, R., & Pidgeon, N. (2012). *Climate Science, the Public and the News Media*. UK:

Silver, A., & Conrad, C. (2010). Public perception of and response to severe weather warnings in Nova Scotia, Canada. *Metroological Application, 17*, 173-179.

Silvestri, S., Bryan, E., Ringler, C., Herrero, M., & Okoba, B. (2012). Climate change perception and adaptation of agro-pastoral communities in Kenya. *Regional Environmental Change, 12*(4), 791-802.

Simon, R. (2006). Green laws no slam-dunk in new Congress. *Los Angeles Times, 18*

Singh, R. K., Turner, N. J., & Pandey, C. (2012). "Tinni" rice (Oryza rufipogon Griff.) production: An integrated sociocultural agroecosystem in Eastern Uttar Pradesh of India. *Environmental Management, 49*(1), 26-43.

Sissoko, K., van Keulen, H., Verhagen, J., Tekken, V., & Battaglini, A. (2011). Agriculture, livelihoods and climate change in the West African Sahel. *Regional Environmental Change, 11*(1), 119-125.

Siva, N. (2010a). First cases of cholera are reported in Pakistan. *BMJ, 341*(367)

Siva, N. (2010b). Malaria is on the rise in Pakistan, health workers warn. *BMJ, 341*(c4752) 341doi: http://dx.doi.org/10.1136/bmj.c4752

Smith, J. (2005). Dangerous news: Media decision making about climate change risk. *Risk Analysis: An International Journal, 25*(6), 1471-1482. 10.1111/j.1539-6924.2005.00693.x

Smith, K. (1993). *Environmental hazards: Assessing risk and reducing disaster*. London: Routledge.

Smith, M. L., & Glass, G. V. (1987). *Research and evaluation in education and the social sciences*. Englewood Cliffs, NJ: Prentice-Hall

Smyth, I. (2009). Gender in climate change and disaster risk reduction. *Development in Practice, 19*(6), 799-802.

Somera, N. (2009). Performance of persistence: A march for gender justice incClimate justice. 1 pgs.

Soroka, S. N. (2002). Issue attributes and agenda- setting by media, the public, and policymakers in Canada. *International Journal of Public Opinion Research, 14*(3), 264-285. 10.1093/ijpor/14.3.264

SPDRP. (2002). *Gender, households, community and disaster management: Case studies from the Pacific Island*. South Pacific Disaster Reduction Programme

Speranza, C. I., Kiteme, B., Ambenje, P., Wiesmann, U., & Makali, S. (2010). Indigenous knowledge related to climate variability and change: Insights from droughts in semi-arid areas of former Makueni District, Kenya. *Climatic Change, 100*(2), 295-315.

Speziale, H. S., Streubert, H. J., & Carpenter, D. R. (2011). *Qualitative research in nursing: Advancing the humanistic imperative*: Lippincott Williams & Wilkins.

Spivak, G. C. (1988). Can the subaltern speak? 297

Stamm, K. R., Clark, F., & Eblacas, P. R. (2000). Mass communication and public understanding of environmental problems: The case of global warming. *Public Understanding of Science, 9*(3), 219-237.

Steenson, M., & Donner, J. (2009). Beyond the personal and private: Modes of mobile phone sharing in urban India. *The reconstruction of space and time: Mobile communication practices, 1*, 231-250.

Stewart, M., & Hodgkinson, P. (1988). Disaster and the media. *Disaster Management, 1*(2), 8-18.

Stirrat, J. (2006). Competitive humanitarianism: Relief and the tsunami in Sri Lanka. *Anthropology Today, 22*(5), 11-16.

Stovall, J. G. (2005). *Journalism: Who, what, when, where, why and how*. Boston Pearson.

Sudman, S., & Bradburn, N. M. (1982). Asking questions: A practical guide to questionnaire design.

Surowiecki, J. (2005). *The wisdom of crowds*: Random House LLC.

Survey 2010. (2010). *Pakistan Economic Survey 2009-2010*. Islamabad: Ministry of Finance. Government of Pakistan.

Takahashi, B. (2011). Framing and sources: a study of mass media coverage of climate change in Peru during the VALCUE. *Public Understanding of Science, 20*(4), 543-557.

Takahashi, B. (2012). *Re-examining the media-Policy Link: A socio psychology study of government elites and climate change in Peru.* (Doctor of Philosophy), State University of New York, New York. (3516542)

Tamerius, J. D., Wise, E. K., Uejio, C. K., McCoy, A. L., & Comrie, A. C. (2007). Climate and human health: Synthesizing environmental complexity and uncertainty. *Stochastic Environmental Research and Risk Assessment, 21*(5), 601-613.

Tandon, N. (2007a). Biopolitics, climate change and water security: impact, vulnerability and adaptation issues for women. *Agenda: Empowering Women for Gender Equity, 21*(73), 4-17.

Tandon, N. (2007b). Biopolitics, climate change and water security: impact, vulnerability and adaptation issues for women. *Agenda, 21*(73), 4-17.

Tasokwa, V. M. K. (2011). *The impact of climate variability and extreme weather events on gender and household vulnerability to food insecurity.* University of Nairobi, Kenya.

Terry, G. (2009). No climate justice without gender justice: An overview of the issues. *Gender & Development, 17*(1), 5-18.

Thurman, N. (2008). Forums for citizen journalists? Adoption of user generated content initiatives by online news media. *New media & society, 10*(1), 139-157.

Tschakert, P. (2007). Views from the vulnerable:understanding climatic and other stressors in the Sahel. *Global Environmental Change, 17*, 381-396.

Tucker, C. (2011). Social media, texting play new role in response to disasters: Preparedness, communication targeted. *The Nation's Health, 41*(4), 1-18.

Twigg, J. (2009). Characteristics of a disaster-resilient community: a guidance note (version 2).

UN. (2005). *The Millennium Development Goals Report 2005*. New York: United Nations.

UN/ISDR. (2004). *Living with Risk: A global review of disaster reduction initiatives* (Vol. 1). Geneva:United Nations.

UNCCD. (2011). *Desertification: A visual synthesis* Bonn, Germany: United Nations Convention to Combat Desertification.

UNEP/GRID-Arendale. *Women at the frontline of climate change gender risks and hopes- A rapid response assessment*.

UNFPA. (2009). *Facing a changing world: Women, population and climate* (978-0-89714-958-7). NY: United Nations Population Fund, New York.

UNFPA. (2009). *UNFPA Annual Report 2009*. United Nations Population Fund.

UNIFEM. (2010). *Rapid gender needs assessment of flood affected communities*. United Nations Developmemt Fund for UN women.

UNISDR. (2009). UNISDR terminology on disaster risk reduction.

Uwakwe, O. (2010). *Introduction to mass communication in the digital age* Onitsha: Base 5 Publishers Ltd.

Valente, T. W., & Pumpuang, P. (2007). Identifying opinion leaders to promote behavior change. *Health Education & Behavior*.

Van Belle, D. A., & Hook, S. W. (2000). Greasing the squeaky wheel: news media coverage and US development aid, 1977–1992. *International Interactions*, *26*(3), 321-346.

Villagrasa, D. (2002). Kyoto Protocol negotiations: Reflections on the role of women. *Gender & Development, 10*(2), 40-44.

Vincent, K., Wanjiru, L., Aubry, A., Merson, A., Nyandiga, C., Call, T., & Banda, K. (2010). Gender climate change and community based adaptation: A guidebook for designing and implementation: Gender sensitive community-based adaptation and projects and programmes. *UNDP Environment and Energy Group, Bureau of Development Policy, New York, NY*

Wahlberg, A. A. F., & Sjoberg, L. (2000). Risk perception and the media. *Jou rnal of Risk Research, 3*(1), 31-50.

Wallop, H. (2011). Japan earthquake: how Twitter and Facebook helped, *The Telegraph*. Retrieved from http://www.telegraph.co.uk/technology/twitter/8379101/Japan-earthquake-how-Twitter-and-Facebook-helped.html

Walters, L. M., & Hornig , S. (1993). Profile: Faces in the news: Network television news coverage of Hurricane Hugo and the Loma Prieta earthquake. *Journal of Broadcasting & Electronic Media, 37*(2), 219-232.

Wamukonya, N., & Rukato, H. (2001). Climate change implications for Southern Africa: A gendered perspective. *Southern African Gender And Energy Network (SAGEN)*.

Wamukonya, N., & Skutsch, M. (2002). Is there a gender angle to the climate change negotiation? *Energy and Environment, 13*(1), 115-124.

Warraich, H., Zaidi, A. K., & Patel, K. (2011). Floods in Pakistan: A public health crisis. *Bulletin World Health Organisation, 89*, 236-237. doi:10.2471/BLT.10.083386

Waxman, J. J. (1973). Local broadcast gatekeeping during natural disasters. *Journalism Quarterly, 50*(4), 751-758.

Weber, E. U., & Stern, P. C. (2011). Public understanding of climate change in the United States. *American Psychologist, 66*(4), 315-328.

WEDO. (2008). *Gender and climate change finance: A case study from the Philippines*. New York.

Wei, J., Hansen, A., Zhang, Y., Li, H., Liu, Q., Sun, Y., & Bi, P. (2014). Perception, attitude and behavior in relation to climate change: A survey among CDC health professionals in Shanxi province, China. *Environmental Research, 134*(0), 301-308. http://dx.doi.org/10.1016/j.envres.2014.08.006

Weimann, G. (1982). On the importance of marginality: One more step into the Two-step flow of communication. *American Sociological Review, 47*(6), 764-773.

Weingart, P., Engels, A., & Pansegrau, P. (2000). Risks of communication: Discourses on climate change in science, politics, and the mass media. *Public Understanding of Science, 9*(261) 10.1088/0963-6625/9/3/304

Wenden, A. L. (2011). Women and climate change: Vulnerabilities and challenges *Climate Change and Human Well-Being* (pp. 119-133): Springer.

Wenger, D., & Friedman, B. (1986). Local and national media coverage of disaster: A content analysis of pint mdia 's teatment of dsaster mths *International Journal Of Mass Emergiencies and Disasters, 4*(3), 27-50.

Wenger, D., & Quarantelli, E. L. (1989). *Local mass media operations, problems and products in disasters*. USA: Disaster Research Center (DRC)

Whitmarsh, L. (2009). Behavioural responses to climate change: Asymmetry of intentions and impacts. *Journal of Environmental Psychology, 29*(1), 13-23. DOI: 10.1016/j.jenvp.2008.05.003

Whittenbury, K. (2013). Climate Change, Women's Health, Wellbeing and Experiences of Gender Based Violence in Australia *Research, Action and Policy: Addressing the Gendered Impacts of Climate Change* (pp. 207-221): Springer.

WHO. (2010). *Dengue fever-The current epidemic*. World Health Organisation.

Wilkins, L. (1993). Between facts and values: print media coverage of the greenhouse effect, 1987-1990. *Public Understanding of Science, 2*(1), 71-84. 10.1088/0963-6625/2/1/005

Wilkins, L. (1995). Television and newspaper coverage of a blizzard: Is the message helplessness? *Newspaper Research Journal, 6*(4), 51-65.

Wilkinson, S. (Ed.). (2004). *Focus groups: A feminist method*: Oxford University Press.

Wilson, K. M. (2000). Drought, debate, and uncertainty: Measuring reporters' knowledge and ignorance about climate change. *Public Understanding of Science, 9*(1), 13. DOI: 10.1088/0963-6625/9/1/301

Wong, S. (2009). Climate change and sustainable technology: Re-linking poverty, gender, and governance. *Gender & Development, 17*(1), 95-108.

Worawongs, T. W., Wang, W., & Sims, A. (2007. *U.S media coverage of natural disasters: A framing analysis of Hurricane Katrina and the Tsunami.* Paper presented at the Annual meeting of the Association for Education in Journalism and Mass Communication, The Renaissance, Washington DC

World Bank. (2010). *World Development Indicators 2010: Development and climate change*. Washington DC, USA: World Bank Publications.

Yin, J. (1999). Elite opinion and media diffusion exploring environmental attitudes. *The International Journal of Press/Politics 4*(3), 62-68.

Yonder, A., Akcar, S., & Gopalan, P. (2005). *Women's participation in disaster relief and recovery*: Population Council New York.

Zahur, M. (2008). *Pakistan: Climate change and the gender implications*. Poznan: Gendercc.Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=fmh&AN=MRB-SRI090427-040&site=ehost-live

Zehr, S. C. (2000). Public representations of scientific uncertainty about global climate change. *Public Understanding of Science, 9*(2), 85-103.