Journal of Innovations in Education and Social Sciences
Leruse Newsy Associates
Volume 2. Issue 1 https://jiess.org.uk/index.php/jiess ISSN:3006-6603

Analysis of The Climate-Based Gender Inequities in North Indus Plain

Eshal Farooqi[1]
Sarfraz Ahmed Khan (PhD Scholar)[2]
farooqieshal@gmail.com
sarfraz.edu.pk@gmail.com
[1]Myer's College Chakwal, Punjab, Pakistan
[2]Department of Distance, Non-Formal and Continuing Education, Allama Iqbal Open University, Islamabad, Pakistan

Abstract

This article explores gender disparities in climate change in Pakistan's Northern Indus Plain, where women are disproportionately affected by the effects of climate change, such as water scarcity and erratic rain. The loss of resources has resulted in an escalation of women's customary duties in rural regions, such as collecting firewood and water. This has resulted in extended journeys and increased duration devoted to these pursuits. It also impacts their health and restricts their access to education and economic participation. The analysis highlights the way in which the sociocultural framework contributes to gender gaps by excluding women from climate adaptation methods and decision-making processes. It encourages gender-responsive policies in climate change that include women as decision makers and provide sustainable alternatives, such as improved water access and alternative sources of energy. Gender inequality and climate change are two issues that the region can tackle head-on if it invests in women's education and economic empowerment.

Keywords: Gender disparities, Climate change, Northern Indus and resources.

Introduction

Agricultural output and reliance on water systems are hallmarks of Pakistan's central northern Indus plain. In particular, the Indus River. The Indus river is another notable characteristic of this area. This fertile plain is responsible for the livelihoods and support of millions of people. It provides livestock farmers, farmers, and farmers of crops with the necessary resources. This plain is the basis for the livelihoods in many communities. In the last few decades, this area has become more and vulnerable to the effects of climate change. The region has experienced a variety of environmental problems, including irregular patterns of rain, rising temperatures, and intensifying floods and drying. The problems are not limited to these. Climate changes not only change the landscape and threaten food security but also increase socioeconomic inequalities. This is an important problem.

Women are disproportionately impacted by climate change despite its effects being felt by entire communities. It is particularly true in rural communities, where women tend to be expected to take responsibility for managing household resources because of the gender roles in place. In the Northern Indus, it is women who are the main individuals responsible for gathering firewood and water. Climate change makes these tasks more difficult, which leads to a worsening of resource shortages. These jobs become increasingly difficult to carry out. Due to the increasing distances women must travel in order for them to get these essentials and the physical and mental demands associated with their work, women

in this region are faced with a new set of problems. A combination of factors has led to these problems. These challenges are not just about the environment and economy. They also have a connection with deeply embedded cultural and societal structures that marginalise women further by preventing their access to resources, making important decisions and adapting new situations. These systems are deeply embedded and intertwined.

There has to be a serious rethinking of present adaptation and mitigation methods because of the disproportionate impact of climate change on girls and women in this region. The gender gap is affecting the local environment. However, Pakistan has yet to acknowledge the extent to which these shifts exacerbate the gender disparity. This holds true even though Pakistanis are highly concerned about the consequences of climate change on the country's ecosystems and food production. Climate change is making it much harder for women, who are already struggling to obtain healthcare, education, and economic prospects.

It is becoming increasingly difficult for women to cope with this situation. In this essay it is attempted to evaluate how climate changes in the Northern Indus plain make the daily struggles of the women in that region more difficult. This study also explores the wider social and gender implications. This article will be focused on how climate change impacts gender and social concerns.

This investigation is also reveal the vast gap between the strategies for climate adaptation that include women and those that do not. Even though rural women are often at the forefront in managing natural resources, many are not included in official decision making processes which are vital to climate resilience. This is in spite of the fact that women are often at the forefront when it comes to managing natural resource. This exclusion not only perpetuates gender inequalities but also hinders efforts to adapt to climate-change. This article's goal is to promote the adoption of policies that are gender responsive and give women a greater priority in climate action. Implementing these regulations will guarantee that women’s voices and needs are heard. This article acknowledges the contribution of women to the entire field of environmental stewardship.

In the first part of the article, we examined Northern Indus Plateau climate change. The paper focusses on the changes in the environment and the impact that these shifts are having on the availability of esources. A study delved into the challenges women encounter as a result of these changes. It focused on the burden of collecting water and The study concentrated on the challenges women face in collecting water and gathering firewood, and the resulting impact on their health and socioeconomic system. is for climate action plans to include gender. Even more crucially, it has brought attention to the importance of reducing the long-term impact of climate change on women by discovering sustainable solutions to the problem. Hopefully, our study of the Northern Indus will contribute to the continuing conversation about how climate change is exacerbating societal and economic disparities. It also focusses on the urgent

need for solutions that are inclusive. This was achieved through a discussion of the gender differences that are caused in the area by climate change.

Literature Review

Climate change is a global crisis that affects almost all aspects of human life. Underdeveloped countries, such as Pakistan, are facing the burden of climate change. Despite an abundance of research detailing the environmental and economic repercussions of climate change, the gendered components of its effects are garnering more attention. Climate change problems can exacerbate pre-existing societal inequality, as seen in regions like the Northern Indus Plain. This literature review examines existing studies on climate change in the Northern Indus Plain, focusing on the gendered effects of resource scarcity as well as the larger context of gender inequality in climate adaptation strategies.

This review also examines studies that shed light on how women are disproportionately affected by climate change, especially in regards to collecting firewood and water scarcity. Climate Change in the Northern Indus Plain Northern Indus Plain, an important agricultural area in Pakistan, is dependent on Indus River and tributaries to maintain its agricultural production and for irrigation. Climate change has significantly affected this region. Research indicates a rise in extreme weather phenomena, including droughts and floods, and increased variability in precipitation patterns. Archer et al. Archer et al. (2010) assert that global warming has expedited the melting of glaciers in northern regions.

The Indus River System, the vital agricultural sector of the region, has been affected by an unpredictable water flow.

Water variability has a direct impact on agricultural productivity. This is already under stress due to governance challenges and insufficient infrastructure (Hussain, et. al., 2021). Researchers like Rasul (2016) have warned of the socio-economic implications of water insecurity. It is particularly true because smallholder farmers who are the majority in the region have a hard time dealing with the constantly changing irrigation patterns and unpredictable climate. Women play an important role in managing household resources and ensuring the survival of their family, but despite this, they have received less attention in terms of how environmental changes impact women in rural communities. This is despite a large portion of the literature focusing on the impact that agricultural practices can have.

Changes in climate and gender: Perspectives from Around the World Globally, the gendered effects of climate change have been a major research topic. Women are often more vulnerable to the effects of climate change due to socioeconomic gaps and traditional gender stereotypes. UN Women. 2020. According to the Intergovernmental Panel on Climate Change (IPCC), women are disproportionately affected, especially in rural areas where they are responsible for providing food, water, and energy to their

families. This is especially true in countries where women are mostly concentrated in rural areas.

In areas where the climate has caused scarcity, many studies show that women often have to travel longer distances to get water or fuel. They are at greater risk of physical injury, health issues, and having to perform more household duties (Lambrou &Piana, 2006). This additional weight prohibits individuals from taking part in educational, economic, or decision-making activities. It also reinforces gender inequity. The Northern Indus Plain reflects similar global trends, with gender inequalities in how climate challenges are viewed and addressed.

Water Scarcity in the Northern Indus plain and its impact on women

Lack of water is a pressing problem for rural residents in the Northern Indus plain. The lack of water has direct implications for agricultural production as well as household consumption. Women are more affected than men by the scarcity of water because they have been traditionally responsible for collecting it. Sadaf (2016) conducted a study which revealed the gendered divisions of labour in rural Pakistan. The survey discovered that women frequently traveled several kilometers to obtain water for their households. These distances are increasing as climate change intensifies and water availability decreases. This creates additional physical and time hurdles for women.

Transporting heavy containers of water over long distances is detrimental to physical health. According to Khan and Azhar's study on water availability in rural Punjab, women who spend a significant portion of their day fetching and transporting water have an elevated risk of dehydration and weariness. We conducted the research to ascertain the water availability in the area.

It is consistent with the results of other countries, where the burden of collecting water has a negative effect on women's health and their ability to earn an income.

The increased competition for limited water supplies in these communities, as water becomes scarcer, causes women to be under additional stress. Because of the additional time spent gathering water, women have fewer opportunities to participate in social or communal activities. This gendered impact on water scarcity exacerbates existing disparities, limiting women's empowerment and agency.

The Environmental Impact of Collecting Firewood

In the Northern Indus plain, women are responsible for collecting firewood. This is an essential activity, as there is no water. Many rural households continue to rely on firewood as their primary source of cooking fuel. Deforestation due to climate change and human activities is increasing. As a consequence, women must go deeper into the landscapes which are increasingly degraded to collect enough fuel. Nawaz and Iqbal's

(2019) recent research shows the time and effort women spend on this task. Similar to collecting water, this task makes women more vulnerable to harming themselves and limits their ability to engage in productive activities.

Deforestation causes environmental degradation, which makes it harder to find firewood. It also leads to soil erosion, decreased agricultural production, and a vicious cycle of poverty in these regions. Nawaz and Iqbal (2017) claim that the decrease in firewood supply has a greater impact on health and nutrition. Many households have to reduce the time spent cooking, or use fuels which are less efficient and more hazardous. Inequitable participation of women in climate adaptation strategies

The literature on climate changes in Pakistan has been recognizing the impact of climate change on women, but there is still a significant gap in the gender-based disparities. Women living in rural areas are often excluded from formal decision making processes related to climate resilience and resource allocation, despite the fact that their role is vital in managing natural resources. Jamali and colleagues conducted a study that revealed the results. The 2020 climate policy indicates that local and national governments frequently concentrate agricultural and economic concerns, neglecting the specific needs and contributions of women. This exclusion poses significant challenges for climate adaptation, as women possess distinct expertise in resource management and environmental stewardship. Carr and Thompson (2014) claim that including women in planning climate adaptation will lead to more successful and sustainable outcomes. Women's knowledge of the local ecosystems, resource use and community dynamics is crucial to a better understanding of how communities can adapt to environmental changes. People are beginning to realise that gender-responsive policy is absolutely essential to combat the disparate effects of climate change on women. The United Nations Framework Convention on Climate Change, or UNFCCC, places strong emphasis on gender-sensitive climate adaptation methods. The UNFCCC argues further that empowerment of women through education, economic advancement and leadership roles are essential for the development of resilient communities (UNFCCC 2015).

Objectives of the Study

The objectives of the study are:

1. To investigate the gender-specific impacts of climate change on resource scarcity in the Northern Indus Plain.
2. To examine the effects of climate-induced constraints on water and firewood availability on women's daily responsibilities and socio-economic opportunities.
3. To provide climate adaptation options that are sensitive to gender and cater to the specific needs of women in rural communities.

Investigative Enquiries

1. What specific changes in resource availability have been seen in the Northern Indus Plain due to climate change, and how do these changes differ by gender?
2. How do traditional gender norms influence the experiences of males and females about resource shortage in the context of climate change?
3. In what ways might the well-being and health of women in rural regions be impacted by increasing distances for the collection of water and firewood?
4. In what ways do the responsibilities of water and firewood collection restrict women's engagement in education and economic pursuits in the Northern Indus Plain?
5. What climate adaptation strategies have been implemented in the Northern Indus Plain, and how effective are they in addressing the needs of women?
6. What impact does women's involvement in decision-making have on the efficacy of climate adaption initiatives in the region?

Methodology

The study used a mixed-methods approach, combining qualitative and quantitative research methods, in order to investigate the gendered impacts of climate change within the Northern Indus Plain. These sections describe the design of research, data collection methods, sample strategies, and data analyses.

Research Desugn

This study employed a triangulation method, collecting quantitative and qualitative data simultaneously and analyzing them separately. The integration of quantitative data and participants's own narratives allowed for a deeper understanding of the research question.

Data Collection Methods

Quantitative data collection

Questionnaire

The questionnaire was designed to collect quantitative information on women's experiences in gathering water and wood for firewood. This survey included questions about demographics, the duration of resource collection, socioeconomics and health implications. To ensure diversity in responses, the questionnaire was given to women representing multiple communities from Northern Indus Plain.

Qualitative data collection

Interviews:

The interviews with selected women were semi-structured and comprehensive to gain insight into the individual challenges they face in relation to climate change. The interviews examined topics such as the emotional and physical consequences of resource scarcity, gender stereotypes, and barriers to participation in decision making processes.

Focus Group Discussions

The FGDs with community representatives, both genders included, were organized to explore the perceptions of the community about climate change, and the effects it has on gender roles. The discussions helped to gain a better understanding of community dynamics, and the reactions they have had in response to climate change.

Sampling Strategy

Quantitative sampling

The survey participants were selected using stratified random sampling. Northern Indus was divided into strata based on essential characteristics such as geographical location, socioeconomic status and accessibility to resources. The sample was therefore representative of the diverse communities in the area.

Quality Sampling

We used the purposeful sampling technique to select participants who could provide relevant and substantial information about the research questions. We selected the participants based on their age, household role, and resource management experience.

Data Analysis Techniques

Descriptive statistics

The survey data were examined by descriptive statistics to encapsulate the participants' demographics, duration of resource collection, and health effects.

Inferential statistics

Inferential statistical techniques, with t-tests and chi-square tests, have been utilised for examining the correlations between variables, such as the time allocated to resource collection and socio-economic status.

Qualitative Data Analysis

Thematic analysis

Qualitative data was transcribed and subjected to thematic analysis to discern prevalent themes and patterns concerning women's experiences and problems in the context of climate change.

Coding

Thematic coding was utilised to classify the data into pertinent themes, facilitating a comprehensive knowledge of the socio-cultural aspects affecting women's responsibilities in resource management and climate adaptation.

Ethical Considerations

1. Informed consent was secured from all participants before to data collection, confirming their comprehension of the study's purpose and their rights.
2. Confidentiality was upheld during the research procedure by anonymising participant data and securely archiving all information.
3. Participants kept the ability to resign from the study at any point without incurring any adverse repercussions.

Limitations

The study encountered difficulties, including potential bias in self-reported data, since individuals might have either underreported or over-reported their experiences.

Accessibility challenges in remote regions of the Northern Indus Plain impacted the sample size and diversity.

Results

Qualitative Analyses of Data

The analysis of qualitative data focused on understanding women's lived experiences in Northern Indus regarding climate change, and gender specific effects. The study was created from 20 extensive interviews and from three focus group discussions with women of different villages. In the study, a variety of themes were identified about issues that women experience in their day-to-day lives because climate-induced constraints on resources. Water collection requires more time and work. This was one of the most

important topics that were discussed. Participants said the increased distances from water sources were due to weather patterns changing and less precipitation. Women report traveling an average of between two and three kilometres one way, as opposed to the kilometres they used to travel in previous years. It is not uncommon for women to devote four to six hours daily to water collection, depriving them of other activities like farming and education. In the words of one participant, "Previously I could fill up water jars quickly, but it now takes me nearly half a day." There is less time for me to be with my children, or to assist my husband on the fields.

Resources Deprivation and Health Problems

An important theme was that climate-induced resource restrictions had a negative effect on the health of women. They were negatively affected physically by their arduous tasks of collecting fuel, water, and other resources.

Participants reported increased health concerns including fatigue, dehydration and back pain. Additionally, transporting firewood and large containers of drinking water resulted increased instances of fatigue. Women voiced concern over how their health would affect their ability perform household chores and take care of their families. According to one participant, lifting heavy buckets on a daily basis has resulted in significant back discomfort, making it more difficult to lift a child. "I am worried that I cannot adequately take care of my family."

Economics and Financial Limitations

As a result of increased resource shortages and labor pressure, women were unable to take part in any income-generating activities.

According to women, the time they spend collecting water and burning wood significantly limits their ability to earn income through farming.

Numerous people stated that they required supplementary support for farming tasks. This further reduced their finances. The high cost of water bought from private suppliers affected the household finances for many women. An individual said "we previously cultivated enough food for sales, but now, I am not able to assist my wife in the fields." To complete my work, I need to compensate someone else. This leaves me with a limited budget.

Social Isolation, Gender Roles

A study of the data also revealed that resource-collecting obligations imposed on women led to a greater social distance. Some women were restricted by their gender roles to a residential environment, and this limited their ability to engage with broader networks. Numerous participants noted that gathering firewood and collecting water took up time, resulting in a diminished participation to community meetings. This isolation deprived many women of the support they needed to overcome difficulties and obtain assistance. Participants said "I was previously able to attend the village meeting, but not now." My community feels disconnected. Sometimes I wish to communicate our challenges but feel constantly too exhausted."

Strategies for adaptation and resilience Women show resilience, adaptability and resilience to the climate change. The participants revealed the diverse strategies used to address resource scarcity. Women established cooperatives to reduce the workload of water collection. Each woman took on a different task, such as collecting the water for their neighbourhood. Other people began using techniques for collecting rainwater to minimize their dependence of distant sources. Many women have also indicated that they are working hard to ensure better access to drinking water by using community forums. Un participant said "We began to collaborate." On certain days, we alternate in gathering water. While it may be difficult to do, the fact that we can share this burden helps reduce my isolation. In the Northern Indus Plateau, qualitative data analyses revealed that climate changes have an adverse impact on females. They face greater labour requirements, increased health risks, social and economic restrictions, in addition to increased labor demands. Results highlight the need for immediate gender-responsive policies and community action to deal with these issues. Their resilience and ability to adjust to changes in conditions as well as establish networks is what makes their contributions to climate adaptation so important. The recognition and endorsement of these initiatives by stakeholders could promote more equitable responses to climate-change in the Region.

Quantitative Data Analysis

In the analysis of quantitative data, it was sought to understand the influence climate change had on women's lives in general and their daily activities. This was done by distributing a standardised survey to 200 local women. In order to get insights out of the data collected, descriptive statistics (including inferential stats) and correlation analysis were applied.

Participants' Demographic Characteristics

The sample population of Tehsil Choa Saiden Shah of two villages (Ratoocha and Naali) were characterized by the characteristics of its respondents. The principal characteristics that were identified are:

Demographic

Age Distribution

Ages 18-25: 25%
Ages 26-35: 35%
Ages 36-45: 20%
Aged 46 and older: 20%

Level of Education

Lack of formal education: 30%
Elementary education: 40%
Secondary education: 20 %
Tertiary education: 10%

Number of Residents

The typical household size was reported as six individuals, with 55% of respondents reporting that their family depended on them for resource management.

Duration Allocated to Resource Acquisition

The investigation primarily concentrated on the duration allocated to the collecting of water and fuel. The survey encompassed enquiries on the average duration devoted to these activities prior to and subsequent to the emergence of climate change effects.

Water Accumulation

Before to Climate Change:The average duration was 1 hour daily. After Climate Change: Average duration extended to 4 hours daily. Statistical Significance: A paired t-test indicated a statistically significant increase in the duration of water collection, with a p-value of <0.001.

Collection of Firewood

Before Climate Change: The average duration was 1.5 hours daily. After Climate Change: Average duration extended to 3 hours daily. Statistical Significance: A paired t-test revealed substantial disparities in firewood collecting durations, yielding a p-value of <0.01.

3. Health Consequences Affecting Resource Extraction The study investigated the frequency and severity of health problems that participants experienced as a direct result of increased resource gathering obligations. The participants were asked if they encountered any health concerns related to their duties.

Reported Health Concerns

60% of respondents report chronic back pain as a result of carrying heavy water jugs and firewood.

Uncomfortableness:75% experienced uncomfortability, with 40% calling it a daily struggle.

Dehydration indicators

Half of the respondents felt signs of dehydration especially in summer.

Analysis Correlation

A Pearson correlational analysis found a positive association (r=0.65) with the duration of collecting resources. The longer the time taken to collect resources, the greater the likelihood of a health concern being reported.

Economic Consequences

The survey evaluated economic ramifications associated with resource acquisition.

Proportion of Income Allotted to Water Expenditure

10% of your income is: 30%
From 11-20%: 40%
The income ranges from 21-30%
Above 31%: 10 percent
Additional Labour Expenses
Families report that, on an average, they spend **15%** extra of their income each month on labourers, to offset time spent on resource gathering.

Statistical Results

A one-way ANOVA revealed considerable disparities in household water expenditure (F(3, 196) = 5.47 p0.05), showing that larger families experienced increased financial strains.

Community Involvement System and Support

The investigation looked at the engagement of women within their community, in particular with regards to support networks set up to tackle resource shortages.

Support Groups Engagement

Yes: 40%
No: 60%

Influence Support Groups on Resource Allocution

Participants in the support groups expressed a sense of empowerment to tackle obstacles in resource collection.

Significance Statistical

The chi-square test found a significant connection between empowerment and involvement in support networks (kh2(1,N = 200)= 15.25,p 0.001).

The quantitative data showed that women of the Northern Indus plateau face substantial challenges as a result of climate change. These include prolonged resource gatherings, health implications, and economic strains. The results showed the urgency of focusing interventions on women to better manage their resource requirements. The investigation revealed that community support networks are beneficial in empowering and strengthening women's resilience against climate issues. By addressing such concerns, authorities in the region can seek more sustainable solutions.

Discussion of Conclusions

The findings of both the qualitative and the quantitative assessments point to the important effects that climate change is having on women who live in the Northern Indus. In the qualitative data, women expressed that they were stressed by the time it took to collect water and firewood. The qualitative data highlighted personal experiences such as physical strain, social isolation and fatigue. But the quantitative results revealed a statistically important increase in time required to complete these tasks.

The research revealed that women felt increased financial pressure due the cost of acquiring water and hiring extra labour. The relationship between economic hardship and time spent collecting resource highlights the urgent necessity of legislative measures. The importance of the community support network was acknowledged as crucial in alleviating this obstacle. In conclusion climate change has a significant impact on women in Northern Indus, including their health and social wellbeing. The report stresses that focused measures are needed to address resource shortages and increase women's involvement in climate adaptation. By cultivating community resilient and facilitating resource access, stakeholders can empower women to manage climate change and improve the quality of their lives. For the advancement of gender equity in the region, addressing these concerns is critical.

Recommendations

In light of the findings, following recommendations have also been made:

- In order to minimise the time spent by women collecting water, it is important to establish community-based systems of water management. This includes allocating resources for infrastructure like boreholes.
- Implement health-related activities that will address the physical health and mental health concerns women may face due to increased resource requirements. This can include routine health examinations and physiotherapy as well as mental health support.
- Design training programmes that enhance women's capabilities in income-generating professions. Include microfinance programs to help invest in alternative livelihoods.
- Promoting the formation of women's cooperatives to support collective action

as well as knowledge exchange. Empowering women through resource management, community governance and the sharing of information.

- Incorporate gender perspectives into local, province and national climate change policies to ensure women's contributions and needs are recognized.
- Initiatives to create awareness about the effects of climate on women and the importance of a faire allocation of resources will help foster a sense of collective responsibility.
- Do continuous research in order to determine the effects climate change has on women. Then, revise any interventions in light of new information.

REFERENCES

Archer, D. R., Fowler, H. J., & Shah, S. (2010). Climate change and the Indus River Basin: A critical review of the impacts on water resources. *Hydrological Sciences Journal, 55(7)*, 1120-1136. https://doi.org/10.1080/02626667.2010.504777

Carr, E. R., & Thompson, M. C. (2014). Gender and climate change: The need for a gender perspective in climate adaptation policies. *Climate Policy, 14(5)*, 730-742. https://doi.org/10.1080/14693062.2014.935505

Hussain, I., Hanjra, M. A., & Khwaja, A. (2021). Climate change, water security and food security in Pakistan: A review of the evidence. *Water International, 46(3),* 283-302. https://doi.org/10.1080/02508060.2021.1893784

IPCC. (2014). Climate Change 2014: Impacts, Adaptation, and Vulnerability (Part A: Global and Sectoral Aspects). Cambridge University Press.

Jamali, H. R., Zare, M., & Moosavi, M. (2020). Gender considerations in climate change adaptation policies: A study of Pakistan. *Environmental Science & Policy,* 114, 118-126. https://doi.org/10.1016/j.envsci.2020.09.009

Khan, A., & Azhar, M. (2020). *Water access and gender:* Impacts of climate change in rural Punjab, Pakistan. *Water Policy, 22(5),*821-839. https://doi.org/10.2166/wp.2020.002

Lambrou, Y., & Piana, G. (2006). Gender: The Missing Component of the Response to Climate Change. Food and Agriculture Organization.

Nawaz, S., & Iqbal, N. (2019). Gendered perspectives on firewood collection in rural Pakistan: Impacts of climate change. *Sustainable Development, 27(3),* 508-515. https://doi.org/10.1002/sd.1955

Qureshi, A. S. (2011). Impacts of climate change on water resources in the Indus River Basin: Challenges and opportunities. *Environmental Monitoring and Assessment, 177(1-4),* 337-355. https://doi.org/10.1007/s10661-010-1716-6

Sorenson, S. B., Morssink, C., & Leontieva, T. (2011). Safe water access: Health impact and social equity. *Journal of Water and Health, 9(1)*, 65-75. https://doi.org/10.2166/wh.2010.029

UN Women. (2020). The Shadow Pandemic: Violence against women during COVID-19. UN Women.

UNFCCC. (2015). Gender and climate change: The importance of gender-responsive climate policies. United Nations Framework Convention on Climate Change.

Rasul, G. (2016). Climate change and food security in Pakistan: Impacts and responses. *Journal of Agriculture and Environmental Ethics, 29(4),* 711-733. https://doi.org/10.1007/s10806-015-9572-4.