

## CLIMATE VARIABILITY AND ITS IMPACTS ON RURAL WOMEN LIFE IN PAKISTAN

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### **ABSTRACT**

*Climate change is among one of the most important issues for the Pakistani rural women's life. Always changing weather and unpredictable rain always impact the agriculture over which majority women are dependent. The ability of the rural women to plan crops production are affected by this abrupt change that impact the food availability. Climate change impacts the events like droughts and floods. Even the lack of water that is the effect of climate change impacts rural women as this was their duty to collect water for domestic activities. Now she has to walk farther to obtain water due to shifting water availability patterns, which adds to their workload and has an adverse effect on their health. The degradation of natural resources like forests and land due to climate change reduces women's access to essential resources for agriculture, fuel and fodder leading to increased tediousness and economic hardships. The effects of climate change on rural women in Pakistan are deep as they touch the various aspects of their lives from livelihoods. These impacts require comprehensive working to intermingle special risks that contribute to climate change with the intention to adopt the new policy.*

**Key Words:** *Climate change, Rural Women, Health risks, Livelihood, water scarcity, uncertain weather patterns, Floods, Adaptation policy, biodiversity, water scarcity*

### **Introduction**

Climate change has grave effects on each and every aspect of society like biodiversity, human and animal health, agriculture, water resources, and socioeconomic sector. Consequently it can be deduced that the effect of this global climate change had been more severe and important for underdeveloped nations. The financially deprived people would suffer from the disastrous consequences of climate change due to a lack of resources and knowledge.

The study tries to explore how climate change affects Pakistani rural women's lives, which is crucial for tackling the related issues of environmental degradation and gender inequality. By researching how Pakistani rural women are affected by climate change gives them a platform and a voice in international conversations on climate justice. Through highlighting the viewpoints of underrepresented groups, this study promotes increased consciousness and compassion, propelling group efforts towards fairer and more enduring resolutions.

Pakistan geographically comprises of cold and arid regions with little potential of development. The vast geographic diversity of the country affects the wide range of climates that can be found there. The north experiences nice winters and hot, dry summers, whereas the west and south experience semi-arid and desert zones. The lowland plains of the Indus River border the country to the south, west and coastal regions and the Himalayas border the country to the north and the

Sulaiman mountain ranges border it to the east. Pakistan makes about 60% of the total watershed area of the Indus basin. Climate change put these areas at risk of glacier retreat. There is a section of the Indus basin inside Pakistan's boundaries.

According to preliminary studies, big portion of Pakistan's population and its area are at danger from the effects of climate change.<sup>1</sup> It is the 12th most severely impacted country in terms of livelihoods and agriculture due to climate change. It is particularly at risk of the effects of climate change. The vast usage of fossil fuels generates Green House Gases (GHG) that contributes to heat retention in the upper atmosphere, is the main cause of the problem. The rise in global temperature exacerbated the phenomena of global warming, with the effects of climate change being felt globally. About 25 million people are labor in the field of agriculture, which is the backbone of Pakistan's economy.<sup>2</sup>

Pakistan has a varied range of climate zones, ecosystems, and topography. It faces challenges in finding a balance between the objectives of environmental preservation and economic growth, despite its abundance of natural resources, including mineral deposits, natural gas reserves, and productive agricultural land.

Cyclones, floods, droughts, heavy rains, earthquakes, and other natural disasters are common in Pakistan. The devastating floods of 2022 were largely caused by climate change, according to scientific research and which directly affects over 30 million people in Pakistan including the loss of lives, damage infrastructure, and displacement of many people from homes. The 2025 Flood again drastically affected the three provinces of the country namely; Khyber Pakhtunkhwa, Sindh and Baluchistan and the damage is much more than previously.

Due to changes in the monsoon season and the annual rainfall, Pakistan has faced increasingly greater risks over the past few years, causing severe floods and protracted droughts. Its agriculture industry, water security, energy security, and flood security are all gravely threatened due to these reasons. In particular, precipitation patterns are directly affected by climate change. Rising temperatures cause more surface evaporation, which raises the concentration of water. There are vapor in the atmosphere that intensifies downpours. Devastating floods can occur when it rains in mountainous locations.

According to a recent survey Pakistan is at eighteenth position out of one hundred and ninety-one countries according to Inform Risk Index, which indicates that it has some of the highest levels of disaster risk. The likelihood of internal instability and the country's susceptibility to earthquakes are the main factors influencing this risk ranking. Pakistan has a significant sensitivity to floods. It is also relatively vulnerable to tropical cyclones and the dangers associated with them and drought. The societal vulnerability of Pakistan raises the possibility of calamity in the nation. Pakistan's vulnerability ranking of 37<sup>th</sup> is attributed to its high rates of multidimensional poverty. Pakistan, ranked 59<sup>th</sup>, has a somewhat higher score for coping abilities.

In Pakistan, there is a known frequency of at least three droughts every decade.<sup>3</sup> Severe droughts have mostly impacted the provinces of Sindh and Baluchistan.<sup>4</sup> The issue of frequent unfavorable weather events is combined with the high-risk agricultural location.<sup>5</sup> The field of agriculture is also profoundly affected by climate change, as shifts in temperature and precipitation patterns alter growing conditions for crops and livestock. Changes in patterns of rainfall can lead to crop failures, while increased temperatures can reduce crop yields and diminish the nutritional value of staple foods. Furthermore, pests and illnesses that proliferate in warmer regions can spread, creating new difficulties for the security of food supplies.

Pakistan's rural economy is based primarily on agriculture, with women being integral to many aspects of farming. However, the unpredictable rainfall, protracted droughts, and extreme weather events brought on by climate change pose a danger to agricultural production, aggravating food insecurity and financial instability among rural women.

Even more because of their reproductive duties and limited access to healthcare, women are particularly vulnerable to the health concerns associated with climate change in rural areas. The transmission of waterborne infections, malnourishment, and maternal mortality is facilitated by rising temperatures, shifting precipitation patterns, and natural disasters; these issues disproportionately impact women and children living in rural areas.

Climate change-related environmental stresses, like crop failure and resource scarcity, exacerbate social tensions within communities and raise the risk of gender-based violence. In addition to being excluded within patriarchal organizations, rural women are more likely to experience forced relocation, exploitation, and domestic abuse; this diminishes their agency and resiliency even more.

### **Climate change impacts on rural women life**

Women in rural areas often bear the brunt of climate change due to their assigned traditional gender roles. They are primarily responsible for essential domestic tasks, such as collecting water and firewood. These tasks make women highly dependent on depleting natural resources, which are further affected by climate change.

According to the 2017 census, Pakistan has 208 million people in total, of which 101 million are women, or 49% of the total; this percentage also applies to 65 million people living in rural areas and 36 million people living in urban areas.<sup>6</sup> Few women work from home at small scale businesses like dressmaking and embroidery in such a patriarchal environment where it is forbidden for them to communicate with men outside of their immediate family in order to sustain themselves.<sup>7</sup> Women in rural areas engage in a variety of different income generating activities outside of agriculture, such as handicrafts, microfinance, and small scale businesses. These pursuits can be significant sources of both income and employment, especially in places with a dearth of conventional job possibilities. In addition, women in rural areas are vital in advancing political and social reform. Women have been able to fight for their rights, dispel gender stereotypes, and advance social cohesion by joining community-based groups.<sup>8</sup>

Previously providing almost 40% of Pakistan's GDP, agriculture now makes up around 20% of the country's GDP and employs 42% of the labor force (50% of whom are employed in rural regions, with 28% of them being women).<sup>9</sup> Women have played a crucial part in agriculture and will continue to do so in all facets of the industry. These days, women's primary responsibilities are in agriculture. Compared to male, females work harder and longer hours. Most notably, compared to men, they carry out more duties. They play a key and crucial part in the agriculture industry.<sup>10</sup>

In addition, women carry out domestic duties, animal care, and farming techniques more seldom, delicately, and effectively than males do.<sup>11</sup> In Pakistan, male and female farmers work together on the land. They help with fodder cutting, cotton picking, and rice cultivation. For instance, most women in Punjab work side by side with males in the rice and cotton fields. In addition, women have a significant role in animal care.<sup>12</sup>

There are still many obstacles standing in the way of rural women participating in development initiatives. These obstacles include social norms that restrict women's mobility and engagement in public life, as well as restricted access to education, financial means as well as the power to make decisions.<sup>13</sup>

Due to its direct effect on rural livelihoods, climate change has major ramifications for rural communities. Natural resources are the main source of income in semi-arid rural areas. A complex web of institutional, political, biophysical, and economic factors shape rural livelihoods.<sup>14</sup> It is frequently discovered that those who reside in rural areas of low and middle income nations are especially susceptible to the negative effects of climate change.<sup>15</sup>

For a variety of reasons, including their greater reliance on finite natural resources, women are more likely than males to be affected by the effects of climate change. Their capacity to cope is limited by social, political, and economic barriers in addition to psychological and physical ones. The poor rural residents of Pakistan are especially vulnerable to the effects of climate change. Particularly in regions that are still healing from violence or have lower levels of economic development, women are frequently denied access to material and financial resources and are frequently barred from positions of political and economic leadership. These factors may make them more vulnerable to the effects of climate change.

Women are crucial to both adaptation and mitigation of climate change, and this must be kept in mind while talking about these topics. Programs for catastrophe reduction, adaptation, and climate change prevention may benefit from the wealth of experience and expertise that women frequently possess. Additionally, women in families and communities are well-suited to assist in developing livelihood strategies that can keep up with the rapid changes in environmental conditions because of their position as custodians of natural and domestic resources.

Women-led families react differently to severe weather, but these tactics don't lower their risk. Households headed by women spend more money on their farming systems, and the amount of cattle they own during floods compared to households headed by men. This is probably because, compared to households headed by men, they lose out on more opportunities for off-farm income. However, because of heat stress and droughts, female-headed families see a significant decline in animal holdings and agricultural expenses in comparison to male-headed households. These tactics don't seem to be making female-headed households more resilient because these occurrences are linked to a notable relative decline in their total earnings.<sup>16</sup>

The summer heat is one of the environmental issues that Pakistani women, particularly those living in rural regions face. They can't put resources in place to lessen it. They have thus had to deal with a number of health issues that have severely affected them.<sup>17</sup>

It is expected that when weather patterns shift, women would be more at risk. While climate change is expected to affect all societal sectors, women are expected to be more severely affected because of their roles in productivity and reproduction. Previous natural disasters in Pakistan show that the first and largest group to be immediately affected was women.<sup>18</sup>

Women are often given the difficult task of retrieving water from remote regions. They suffer disproportionately from water scarcity during times of intensified droughts because their everyday activities are greatly disturbed and complicated by changes in water flow patterns.

When it comes to farming tasks like planting, weeding, harvesting, transplanting, and post-harvest activities, procedures like drying, storage, and threshing, off-farm transportation, and marketing, women are heavily involved. They raise livestock, gather fodder, groom the animals, prepare dung cakes, process animal food items like cheese, butter, and yogurt, and then sell the finished goods.

Due to severe weather strikes, women are not only forced to labor harder than males, but they also miss out on more prospects for money. Droughts and floods force rural women to work harder than males do. In comparison to males, they also put in a lot more hours each week at work. In contrast to males, women typically labor much longer on their own farms during floods

and droughts. In contrast, heat stress forces women to work comparatively longer hours away from their farms. They are becoming more employed, which highlights how crucial it is that they maintain their families' means of livelihood during inclement weather. But this additional labor likely adds to the disproportionate amount of work that rural women already do, especially in the absence of a major shift in gendered norms about women's roles in childcare and housework. Distinct socio economic levels of women have different experiences with climate change. Women from landless or small-farm households in the climates of Dera Ghazi Khan and Faisalabad are harsh very differently from women from better-off households with big landholdings.

Pakistan is experiencing the effects of climate change, particularly in the rural and coastal areas where women are disproportionately impacted by the rapidly changing weather and underprivileged people are growing increasingly susceptible. Access to food, water, and the limited natural resource has led to a reduction in life quality and the loss of livelihoods.<sup>19</sup>

The experiences of women during wartime can provide important insights into how women may feel more insecure due to climate change as a threat to peace and human security, even though much more research is required to define the correlation and potential causal links between climate change and violent conflict.

Pakistani rural women are remarkably resilient and resourceful in addressing the effects of climate change on their life. To adjust their farming methods to shifting climatic conditions, they rely on their vast traditional knowledge of the regional ecosystems. They preserve soil fertility and guarantee ongoing food production by employing strategies including crop rotation, intercropping, and the choice of drought-resistant cultivars. Their ability to adapt helps them maintain their way of life by reducing the negative effects that climate variability has on food output.

One important tactic used by rural women to counter the effects of climate change is community engagement. They actively engage in cooperative societies, neighborhood associations, and local decision-making procedures. Pakistani rural women are vital to the country's agriculture industry, greatly boosting both its sustainability and output. They are essential to every stage of crop production since they participate in a broad range of agricultural operations, from planting and weeding to harvesting and post-harvest processing. Their work is essential to timely farming operations, which impacts crop yields and the success of farming initiatives as a whole. In order to increase agricultural output and guarantee food security, it is imperative to acknowledge and encourage their work.

Rural women contribute to the economic stability and resilience of their households and communities through diversified livelihood activities. They participate in poultry farming, vegetable gardening, and small-scale processing of agricultural products, providing additional sources of income. Their entrepreneurial activities not only bolster household finances but also contribute to the local economy. Facilitating market access, providing microcredit, and offering entrepreneurial training can empower rural women to expand their economic activities and improve their livelihoods. Recognizing and addressing the roles and responsibilities of rural women in agriculture is crucial for fostering sustainable development and resilience in Pakistan's agricultural sector. Providing women with the tools, information, and ability to make decisions is essential for creating resilient systems and long-term fixes for climate change.

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