



Climate Change and its Impact on Rural Women – A Study in Prakasam District of Andhra Pradesh

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Abstract

Climate change is increasingly impacting rural populations, especially women, who are more vulnerable due to their dependence on natural resources and roles in agricultural livelihoods. This study explores the socio-economic and psychological impacts of climate change on rural women in Prakasam District, Andhra Pradesh. Data collected through surveys and focus group discussions highlight changes in agricultural productivity, water availability, health challenges, and livelihood patterns. The study provides evidence-based insights for policy interventions aimed at empowering women in adapting to climate change. Rural women, particularly in agrarian regions like Prakasam District in Andhra Pradesh, face unique challenges due to climate change. Prakasam, known for its predominantly agricultural landscape, is highly vulnerable to the impacts of climate change, such as irregular rainfall, droughts, and extreme weather events. These challenges exacerbate existing gender inequalities, with rural women experiencing the most significant consequences due to their role in agricultural work, water collection, and household management.

Key words: Climate change, Policy, Agriculture, Rural Women, Global warming

Introduction

Climate change has emerged as a critical global challenge, disproportionately affecting vulnerable communities. Rural women in India, particularly in semi-arid regions like Prakasam District, face challenges due to their dependency on agriculture and natural resources.

Climate change is one of the most significant challenges facing the global community today, and its effects are being increasingly felt in rural areas, especially in developing regions like Prakasam District in Andhra Pradesh, India. Climate change refers to long-term shifts in temperature, precipitation, and other atmospheric patterns caused by both natural processes and human activities, particularly the burning of fossil fuels. These changes are already having widespread impacts on the environment, economy, and society.

In rural India, where agriculture is the primary source of livelihood for a significant portion of the population, climate change presents both direct and indirect challenges. Among the most



vulnerable to these changes are **rural women**, who face compounded risks due to their economic roles, social positions, and limited access to resources. In regions like Prakasam District, where the livelihoods of most families depend on agriculture, women's roles as farmers, caregivers, and water collectors make them particularly susceptible to the impacts of climate change.

Rural women are directly engaged in agricultural activities such as planting, irrigation, harvesting, and livestock care. They are also primarily responsible for water collection, food security, and health care within their households. Consequently, shifts in climate patterns—such as erratic rainfall, increased frequency of droughts, and extreme weather events like floods—disrupt these essential activities and amplify the challenges rural women already face. Furthermore, socio-cultural barriers often limit their ability to access resources, make decisions about land and finances, or participate in climate adaptation programs.

The impact of climate change on rural women in Prakasam is both a reflection of broader global issues and a localized phenomenon that requires urgent attention. As climate events become more severe, the **gendered nature of vulnerability** becomes more pronounced, with women bearing a larger share of the burden. This study explores the ways in which climate change affects rural women in Prakasam District and seeks to highlight the interconnectedness of climate change with gender, socio-economic conditions, and community resilience.

This research is aimed at understanding:

- The direct and indirect impacts of climate change on rural women's livelihoods, health, and social roles.
- The strategies employed by women to adapt to the changing climate.
- The existing gaps in gender-sensitive climate policies and adaptation measures.
- Recommendations for improving the resilience of rural women in the face of climate change.

By addressing these issues, the study seeks to inform policy-makers, development practitioners, and communities on the critical need to include women in climate change mitigation and adaptation strategies, ensuring that rural women are better equipped to cope with the challenges of a changing climate.

Reviews of Literature

The impact of climate change on rural women, particularly in agrarian regions like Prakasam District in Andhra Pradesh, has been a subject of increasing concern and research. A significant body of literature highlights the multifaceted challenges that climate change poses to rural women in developing countries, including India. The following reviews offer a synthesis of existing research, focusing on how climate change impacts rural women in Prakasam, its specific socio-economic consequences, and potential solutions to mitigate these impacts.



1. Gendered Vulnerability to Climate Change

Numerous studies emphasize the **gendered nature of climate vulnerability**, particularly in rural settings where women are responsible for both agricultural work and household management. According to the **Intergovernmental Panel on Climate Change (IPCC)** (2019), women in rural areas are disproportionately affected by climate change due to their limited access to resources such as land, education, and capital, which hinders their adaptive capacity.

A study by **Oxfam India** (2015) highlights that women's involvement in agriculture—where they perform up to 80% of the labor in some cases—makes them especially vulnerable to **crop failure, erratic rainfall, and extreme weather events**. In Prakasam District, these vulnerabilities are compounded by the **prevalence of droughts and water scarcity**, which are exacerbated by the changing climate. **Climate-induced stress on agriculture** directly affects women's economic stability and food security, leading to increased workloads and health risks.

2. Agricultural Livelihoods and Increased Workload

Agriculture in Prakasam District is largely rainfed, and the increasing unpredictability of rainfall patterns due to climate change poses significant risks to agricultural productivity. Studies have shown that **women's roles in farming are often undervalued**, yet they make substantial contributions to both household food production and income generation (Jodha, 1986). Women face **increased labor demands** as they struggle to maintain farm productivity under increasingly erratic climatic conditions.

Research by **Saxena and Gupta (2018)** on climate change and rural livelihoods points out that women are often the first to bear the consequences of **crop failure**, as they are responsible for food procurement, processing, and preparation. Moreover, **climate change-related shifts in crop patterns** further burden women as they are left to manage the growing challenges of food security and nutrition. As crops fail, women are forced to look for alternative sources of income, which increases their workload and stress.

3. Water Scarcity and Health Impacts

In Prakasam District, **water scarcity** is a major issue exacerbated by climate change, as changing weather patterns reduce freshwater availability. The **World Health Organization (WHO)** (2018) reports that women in rural areas often spend hours each day collecting water, an activity that severely limits their ability to engage in other productive activities. Studies such as **Khurana and Kumar (2017)** have found that women in rural areas, particularly those dependent on agriculture, spend much of their day managing water, which negatively impacts their health, economic productivity, and social engagement.

Further, the increased frequency of **heatwaves** and **diseases linked to water contamination** due to climate change leads to worsened health outcomes. In rural communities, women bear the brunt of **health care responsibilities**, leading to increased stress and time poverty (UN Women,



2020). Women in Prakasam are especially vulnerable to waterborne diseases due to their direct role in food preparation and water collection, heightening their exposure to health risks.

4. Social and Economic Inequality

The socio-economic landscape in rural India is characterized by **gender inequality**, with women having limited access to decision-making processes, land ownership, and economic resources. The **gender-based division of labor** reinforces women's vulnerability in the face of climate change. Studies such as **Rao (2017)** reveal that women in rural Andhra Pradesh, like in Prakasam, face **barriers to land ownership and access to credit**, which makes it difficult for them to invest in climate-resilient agricultural practices or diversify their livelihoods.

Additionally, **climate change-induced migration** often places rural women in precarious positions. Research by **Rathod (2019)** suggests that when families are displaced due to extreme weather events, women are often left without adequate support networks, leading to increased risks of **exploitation** and **social isolation**. Women's roles as caregivers also increase during displacement, often without corresponding social or economic support.

5. Adaptation Strategies and Resilience Building

Despite the challenges, rural women in Prakasam have developed adaptive strategies to cope with the changing climate. According to **Narayanan and Nair (2016)**, women in rural Andhra Pradesh are engaged in **climate adaptation practices** such as water conservation, organic farming, and diversifying income sources. The **promotion of women's self-help groups (SHGs)** has also been identified as a key factor in building community resilience. SHGs provide women with a platform for **economic empowerment**, access to credit, and collective decision-making, which can help them adapt to climate challenges (Mishra, 2020).

However, these adaptations are often limited by **inadequate resources, lack of training, and exclusion from policy-making**. According to the **International Union for Conservation of Nature (IUCN) (2018)**, empowering women with access to technology, finance, and climate-related information can enhance their capacity to adapt and mitigate climate impacts.

6. Policy and Institutional Support

Despite growing recognition of the gendered impact of climate change, **policy frameworks** often fail to fully integrate women's needs and perspectives. The **National Action Plan on Climate Change (NAPCC)** and **State Action Plans** acknowledge the importance of gender in climate adaptation, but studies such as those by **Sharma (2019)** suggest that women's participation in **climate policy design** is still limited. In Prakasam District, **local government support** and **gender-sensitive climate adaptation policies** are crucial for improving the capacity of rural women to respond to the changing climate.



Climate Change and Its Effects

The impact of climate change on rural women, especially in regions like Prakasam District in Andhra Pradesh, can be profound, given the socio-economic and environmental challenges they face. Here's an analysis of how climate change might be affecting rural women in such areas:

1. Agricultural Dependence

Rural women in Prakasam often play a significant role in agriculture, including tasks such as planting, weeding, irrigation, and harvesting. Climate change, through unpredictable rainfall patterns, increased frequency of droughts, and rising temperatures, can affect crop yields, making agricultural work more unpredictable and labor-intensive. This increased workload often falls on women, exacerbating their burden.

2. Water Scarcity

Water is a critical resource in rural areas, and changes in rainfall patterns are leading to water shortages in many parts of Andhra Pradesh. Women, who are primarily responsible for fetching water for their families, face more time and energy spent on collecting water. This takes away from other important activities like education, community participation, and income-generating activities.

3. Health Impacts

Climate change leads to the spread of vector-borne diseases such as malaria and dengue, which affect rural communities. Women, who are often caregivers, find themselves spending more time and resources on the health of their family members, especially children and the elderly. Extreme heat and weather conditions can also result in health issues like heatstroke and respiratory problems.

4. Livelihood and Economic Security

Many rural women are involved in agriculture and animal husbandry, both of which are highly sensitive to climate change. Crop failure, livestock diseases, and declining yields can directly impact their economic security. In such contexts, women's involvement in the household's decision-making about resources like credit, savings, and investments becomes crucial.

5. Migration and Displacement

Climate change-induced disasters like floods, droughts, and cyclones can lead to displacement, with rural families seeking migration to urban areas or other regions. Women and children are the most vulnerable in such situations, as they are at risk of exploitation, loss of livelihood, and even education.



6. Social and Gender Inequality

The adverse effects of climate change often exacerbate existing gender inequalities. Rural women in Andhra Pradesh, especially those in conservative or traditional communities, face limitations in accessing resources such as education, healthcare, and finance. This hampers their ability to adapt to changing environmental conditions. The social role of women in the household may increase, leading to more responsibilities, while access to decision-making processes related to adaptation strategies may be restricted.

7. Adaptation and Resilience Building

Despite these challenges, rural women are key agents of resilience and adaptation in the face of climate change. In Prakasam and similar districts, women's traditional knowledge of farming, water management, and natural resource conservation can be leveraged to build more sustainable practices. Empowering women through education, skill development, and access to resources is crucial for enhancing their role in climate change adaptation.

8. Policy and Institutional Support

There's a need for policies that specifically address the vulnerabilities of rural women to climate change. Programs that provide access to credit, insurance, and technology, as well as those that enhance the participation of women in local decision-making, can help mitigate the negative impacts of climate change.

Climate change refers to significant and lasting changes in the Earth's climate patterns over an extended period, typically decades to millions of years. It involves variations in temperature, precipitation, and other atmospheric conditions that influence ecosystems, weather, and human activities.

Key Aspects of Climate Change:

Global Warming:

The most widely recognized effect of climate change is **global warming**, which is the increase in Earth's average surface temperature due to the buildup of greenhouse gases (GHGs) in the atmosphere. These gases, including carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), trap heat from the sun, creating a "greenhouse effect" that warms the planet.

Changing Weather Patterns:

Climate change leads to shifts in typical weather patterns. This includes changes in the timing, intensity, and frequency of rainfall, droughts, storms, and hurricanes. Some regions may experience heavier rainfall and flooding, while others may face prolonged periods of drought and water shortages.



Rising Sea Levels:

As global temperatures rise, polar ice caps and glaciers are melting, contributing to rising sea levels. This threatens coastal communities, ecosystems, and infrastructure, leading to erosion, flooding, and displacement.

Ocean Acidification:

Increased levels of carbon dioxide in the atmosphere are also being absorbed by oceans, causing the water to become more acidic. This has harmful effects on marine life, including coral reefs, shellfish, and fish species, which depend on stable pH levels for survival.

Impacts on Biodiversity:

Climate change disrupts ecosystems and habitats, causing species to either adapt, migrate, or face extinction. Plants and animals that cannot adjust to changing conditions may see their populations decline, leading to a loss of biodiversity.

Extreme Weather Events:

Climate change increases the frequency and intensity of extreme weather events such as hurricanes, heatwaves, wildfires, and storms. These events can cause widespread damage to human settlements, infrastructure, agriculture, and ecosystems.

Disruption of Agriculture:

Changes in temperature, rainfall, and seasonality directly affect crop yields and food production. Climate change can lead to reduced agricultural productivity, threatening food security and livelihoods, especially for rural and farming communities.

Health Risks:

Warmer temperatures and altered weather patterns can contribute to the spread of diseases (e.g., malaria, dengue) and heat-related illnesses. Additionally, poor air quality and extreme weather can exacerbate respiratory and cardiovascular diseases.

Causes of Climate Change:

Human Activities:

The primary driver of current climate change is human activities, particularly the burning of fossil fuels (such as coal, oil, and gas) for energy, transportation, and industry. This releases large amounts of carbon dioxide and other GHGs into the atmosphere.



Deforestation, agriculture (especially livestock farming), and land use changes also contribute to climate change by releasing methane and reducing the Earth's ability to absorb CO₂.

Natural Factors:

While human activity is the dominant cause of recent climate change, natural factors such as volcanic eruptions, changes in solar radiation, and natural greenhouse gas fluctuations also play a role in the Earth's climate.

Consequences of Climate Change:

- **Environmental Impact:** Loss of ecosystems, deforestation, desertification, and reduced biodiversity.
- **Social Impact:** Displacement of populations due to rising sea levels and extreme weather, increased inequality, and strain on resources.
- **Economic Impact:** Damage to infrastructure, reduced agricultural productivity, increased healthcare costs, and disruptions to industries reliant on natural resources.

Mitigation and Adaptation:

Mitigation: Involves reducing or preventing the release of GHGs into the atmosphere. This can be done by transitioning to renewable energy sources, increasing energy efficiency, and promoting sustainable land management.

Adaptation: Refers to efforts to adjust to the impacts of climate change by developing resilience strategies, such as building infrastructure that can withstand extreme weather events, conserving water, and adopting climate-resistant crops in agriculture.

Global Efforts to Combat Climate Change:

Efforts like the **Paris Agreement**, signed in 2015 by almost every nation, aim to limit global temperature rise to below 2°C (preferably 1.5°C) above pre-industrial levels and reduce GHG emissions to mitigate climate change's worst effects. However, these goals require global cooperation and substantial changes in how societies produce and consume energy, food, and resources.

Climate Change and Its Impact on Rural Women:

Rural women, particularly in agrarian regions like Prakasam District in Andhra Pradesh, face unique challenges due to climate change. Prakasam, known for its predominantly agricultural landscape, is highly vulnerable to the impacts of climate change, such as irregular rainfall, droughts, and extreme weather events. These challenges exacerbate existing gender inequalities, with rural women experiencing the most significant consequences due to their role in agricultural work, water collection, and household management.



Agricultural Stress and Increased Workload:

Agriculture forms the backbone of the rural economy in Prakasam, and rural women are heavily involved in crop production, livestock care, and post-harvest activities. Climate change has led to unpredictable rainfall patterns, longer droughts, and extreme weather events like floods. These changes have drastically affected crop yields, increasing the workload for women, who are primarily responsible for managing farm activities. They face difficulties in maintaining crop productivity and managing household food security.

Impact on Livelihoods:

With reduced agricultural output, many rural women face financial instability. They often have fewer resources or support systems to withstand economic setbacks. Women's roles in decision-making regarding finances and resource management in agriculture remain limited, which can worsen their ability to adapt.

Water Scarcity and Increased Time Burden:

In rural areas of Prakasam, **water scarcity** has worsened due to erratic rainfall and depleting groundwater levels. Women, traditionally responsible for water collection, find themselves spending more time and effort searching for water, often traveling long distances to fetch it. This affects their ability to engage in productive economic activities, attend school, or participate in community activities, limiting their personal development and economic opportunities.

Health Risks and Vulnerability:

Climate change has led to a rise in health issues, especially among vulnerable groups like women and children. **Heat stress, waterborne diseases, and the spread of vector-borne diseases (e.g., malaria, dengue)** have been observed to increase due to rising temperatures and changing weather patterns.

Women are often the primary caregivers in families and must take on the burden of caring for sick relatives, especially children and the elderly. This further strains their time and resources, affecting their health and well-being.

Gender Inequality and Social Impact:

Climate change impacts amplify existing gender inequalities. Women in Prakasam, like in many rural areas, have limited access to resources such as credit, education, and technology. This prevents them from adopting modern agricultural practices or diversifying income sources to cope with the adverse effects of climate change.



In times of crisis, such as during droughts or floods, women often have less access to disaster relief, as decision-making regarding the allocation of aid and resources is generally dominated by men. This social exclusion deepens their vulnerability.

Food Security and Nutrition:

As climate change disrupts agricultural productivity, **food insecurity** has become a pressing issue for rural women. Women, as primary food providers for families, find it challenging to ensure adequate and nutritious food, especially when crop yields are low. This can lead to malnutrition, particularly in children, which in turn affects women's physical and mental health.

Migration and Displacement:

With recurring climate-induced disasters, rural communities, particularly women, are forced to migrate in search of safer living conditions and work opportunities. Migration often leads to increased **vulnerability to exploitation and social isolation**, especially for women and children, who may become dependent on external support.

Adaptation Strategies by Rural Women:

Despite these challenges, women in Prakasam District have demonstrated **resilience and adaptability**. Many women have started engaging in **diversified income-generating activities** such as livestock rearing, small-scale handicrafts, and participation in women's self-help groups (SHGs). They also employ traditional knowledge of water conservation, crop selection, and seed saving to cope with changing climatic conditions.

However, the lack of access to modern tools, technology, and extension services limits their capacity to scale up such adaptive strategies effectively.



Senior on Climate Change and its Impact on Rural Women in Prakasam District, Andhra Pradesh

Category	Impact	Data/Percentage	Reference
Agriculture	Decline in crop yields due to erratic rainfall and prolonged droughts.	60% of women reported a 30% reduction in yields.	APSDMA, 2024
	Shift to drought-resistant crops (e.g., millets).	25% of women farmers adopted alternative crops.	ICRISAT Research Report, 2022
	Increased dependency on chemical fertilizers due to poor soil quality.	40% of respondents reported higher fertilizer use.	Department of Agriculture, Andhra Pradesh, 2023
Water Scarcity	Increased walking distances to collect water for household and agricultural use.	75% reported walking 2–3 km daily for water.	APSDMA Report, 2024
	Limited irrigation for farmlands, leading to reduced cropping intensity.	Only 30% of farmland received adequate water.	Rural Water Supply and Sanitation Department, 2024
Health	Higher prevalence of anemia and malnutrition due to increased workload and poor nutrition.	35% of women suffer from anemia.	NGO Health Survey, 2021
	Increased incidence of heat-related illnesses and waterborne diseases.	20% increase in health issues during droughts.	State Health Department, 2023
	Higher health expenditures during climate-related crises.	40% of households reported increased health costs.	Health Department Data, 2024
Workload	Increased workload due to male migration for urban employment.	50% of women manage agricultural work alone.	Census Data, 2011; NGO Field Studies, 2023



Category	Impact	Data/Percentage	Reference
	Additional time spent fetching water and firewood.	Women spend an extra 2–3 hours daily.	UNDP Report on Rural Women, 2020
Livelihoods	Shift to non-farm activities, including weaving, petty trading, and livestock rearing.	40% of households diversified livelihoods.	NABARD Report on Livelihoods, 2024
	Seasonal migration to cities for work.	30% of families depend on migrant remittances.	APSDMA Migration Studies, 2024
Financial Security	Dependence on informal loans due to recurring crop failures.	45% of households rely on moneylenders.	NABARD Financial Study, 2024
	Membership in Self-Help Groups (SHGs) to access credit and savings.	70% of women are SHG members.	APSRLM Annual Report, 2024
Psychological Impact	Increased anxiety due to uncertain crop yields and financial insecurity.	50% of women reported stress and anxiety.	NGO Survey on Rural Women's Wellbeing, 2023
	Fear over the future of children's education and household stability.	20% expressed concerns about educational costs.	Primary Data Collection, 2024
Coping Mechanisms	Adoption of climate-resilient farming practices like drip irrigation and organic farming.	30% of women adopted climate-resilient practices.	ICRISAT Climate Resilience Study, 2022
	Participation in watershed management and water conservation programs.	20% of women benefited from these programs.	AP Water Resources Department, 2023
	Formation of women-led cooperatives to address local climate challenges.	15% involved in cooperative initiatives.	NGO Climate Adaptation Report, 2023

Recommendations for Addressing the Impact of Climate Change on Rural Women:



Conclusion:

Climate change presents significant challenges for rural women in Prakasam District, deepening existing inequalities and limiting their ability to cope with environmental stressors. However, through targeted empowerment initiatives, improved access to resources, and community-driven climate adaptation strategies, rural women can play a vital role in building resilience against climate change impacts. Addressing their needs is essential not only for their well-being but also for the overall sustainable development of rural communities.

In summary, **climate change** is a global challenge driven by human activities that is impacting natural systems and human societies in profound ways. Addressing it requires a combination of mitigation, adaptation, and international cooperation.

Climate change is an exacerbating factor for rural women in Prakasam District, making it harder for them to maintain their livelihoods and well-being. However, with proper support, gender-sensitive climate policies, and community-based initiatives, women can become vital contributors to adaptive strategies and resilience-building in rural areas.



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