



Climate Change And Its Impacts On Gender Dimensions

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Abstract

The study aims to examine the impacts caused by climate change on gender dimensions of population. The study involves analysing the outcome based on the mixed methods and using the empirical analysis to derive at a conclusion. The population of the study involves the climate change analysts at various government and non- governmental organisations across the state of odisha. The study involves 85 male participants and 85 female participants which totals to 170 climate change analyst working in various government and NGOs. The collected data were analysed using the SPSS- AMOS. The path modeling was used for analysis the perception of climate change experts towards the impacts caused by climate change on gender. It is essential to achieve equality not just between the sexes, but also between different socioeconomic classes, ages, races, and species in order to modify the existing social contracts and find a solution to the climatic issue. The promotion of equality presents a challenge to the power relations that have been created, and as a result, it may be a challenging endeavor. It is only through the passage of time that will be able to determine whether or not the climate catastrophe offers significant opportunities for enabling systemic reform based on gender.

Keywords: Climate Change, Global Warming, Gender Gap, Gender Innovation and Gender Vulnerability.

Introduction

The need of combating climate change and the devastation it causes to the earth is one of the most significant issues that mankind must face. Due to the fact that they are a significant contributor to the emission of greenhouse gases and the creation of trash, businesses are being pushed by a variety of economic, political, and social actors to take steps to lessen their carbon footprint. The implementation of new solutions with the goal of lowering pollutant emissions and waste creation, as well as the use of resources, is one approach to react to the mounting demands that are being placed on the country. There

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has been a significant amount of study, both theoretical and empirical, that has started to address concerns of this kind. A considerable body of intellectual work has been generated by gender researchers who are employed in the fields of development studies, political science, sociology, geography, philosophy, cultural studies, and economics.

A significant body of research on the topic of climate change and gender relations demonstrates that gender relations are an essential component of the social alterations that are related with climate change. In particular, the gendered character of climatic effects and responses has been extensively recorded and subjected to theoretical and empirical analysis. The women who live in the global South are more susceptible to the risks that are associated with climate change and the lack of resources. The patterns of gendered adaptations to climate change, on the other hand, need to be understood as multifaceted and reflective of gender relations in specific socioeconomic and cultural settings. It is not enough to simply consider them a matter of women's inherent susceptibility. There seems to be a connection between emissions-intensive production and consuming activities all over the globe and gender disparity.

There is a need for more research to investigate this phenomenon. In the formal institutional responses to climate change, gender disparities are readily apparent; women are underrepresented in governing institutions, and climate policy may have a detrimental impact on groups of women. Furthermore, the manner in which we learn about climate change and take action on it are diversified along gender lines, including via new kinds of masculinity and femininity. This is the case because of the fact that we are diverse. In addition, there are significant discussions around the agency of women and the politics of climate change information that are taking place in this subject. This theories demonstrates, in general, that gender analysis is an important component of the work that is being done on gendered vulnerabilities and adaptations to greenhouse gas emissions. Despite the fact that these issues are intertwined both conceptually and practically, they are separated thematically in this review in order to extract lessons from the existing body of research concerning gender-related hazards as opposed to gendered adaptations in action. When we talk about vulnerability to climate change, we are referring to the likelihood of experiencing negative consequences and the challenges of dealing with those impacts. Adaptation is the process of taking measures to deal with the effects of climate change.

These activities are carried out in historically gender unequal circumstances, which in turn produce vulnerabilities along gendered lines, according to research on gender, which has demonstrated that these actions are carried out. In and of itself, adaptation techniques have the potential to generate new chains of gendered vulnerabilities. On the other hand, there is evidence that women are resilient in the face of stress brought on by climate change. In a limited number of research, gender disparity and patterns of greenhouse gas emissions were investigated. These findings have implications for more extensive discussions on the assignment of responsibility for climate change. An additional major set of concerns that have been highlighted in the literature are to gender disparities in climate governance. These inequalities may be found in the United Nations climate talks, national policies in Europe, and local adaptation and mitigation programs in financially disadvantaged communities in the South. Finally, the literature on climate knowledges and social action demonstrates a broad range of venues of gendered change. These sites

include social movements, the media, politics, new technology, and markets that are controlled by multinational corporations.

Inequalities that are associated with colonial histories and consumer capitalism are regularly brought to the forefront by scholars who study gender and climate. Societies in the global South are experiencing climate change that is referred to be "dangerous" with a considerably higher rate of occurrence and intensity. One thing that should be brought to your attention is the fact that scholars who have documented gender inequality in the South have traditionally been the ones to lead studies on climate and gender. Despite the fact that there is still more work to be done in order to challenge the dominant position of gender theory that originates from the global North, north–south difference has emerged as a major component of gender theory and research. A widespread understanding of the idea of gendered vulnerabilities to the effects of climate change has emerged in recent years. These vulnerabilities are not seen by researchers and development practitioners as being inherent or 'natural' traits of women; rather, they are interpreted as manifestations of gender inequities and power relations that are already present in cultures all over the globe.

Literature Survey

On a global and regional scale, scientific understanding of water and climate change is expanding, but on a local level, there is a dearth of equally varied information on the human aspects of these issues. The study revealed that the gendered effects of rising water stress and on the creative gendered adaptation tactics used at the local level in this area. For increased sustainability, it encourages a rethinking of adaptation planning based on local templates (*Singh, N., & Singh, O. P. (2015)*)². Existing gender-based health inequities might be exacerbated by climate change in India, a country experiencing fast environmental changes. To lessen the impact on people's health, current frameworks for reducing catastrophe risks, promoting sustainable development, and addressing climate change should include a gendered viewpoint. One way to enhance policy interventions for adaptation and mitigation is to empower women so they may be agents of social change (*Sorensen, C., et.al.,(2018)*)³. There is a correlation between the number of female-headed families and the likelihood that they would adopt CSAPs; however, this finding is limited to Bihar since there are less than 2 female-headed households in Haryana. One possible explanation for this is the lesser availability of male domestic workers in homes where the woman is the main breadwinner. Regardless of the gender of the household head, a greater land holding was positively associated with the chance of adopting CSAPs (*Aryal, J. P., et.al., (2014)*)⁴. The Maldharis' institutional, legislative, and social framework limits the climate adaptation paths that women in particular have historically used. Coping mechanisms for survival, livelihoods, and food security are triggered when standard adaptation routes are not used in response to climate vulnerability; these reactions create gendered costs, particularly for women's labor. As a result, women in oppressed pastoral

² Singh, N., & Singh, O. P. (2015). Climate change, water and gender: Impact and adaptation in North-Eastern Hills of India. *International Social Work*, 58(3), 375-384.

³ Sorensen, C., Saunik, S., Sehgal, M., Tewary, A., Govindan, M., Lemery, J., & Balbus, J. (2018). Climate change and women's health: Impacts and opportunities in India. *GeoHealth*, 2(10), 283-297.

⁴ Aryal, J. P., Farnworth, C. R., Khurana, R., Ray, S., & Sapkota, T. B. (2014). Gender dimensions of climate change adaptation through climate smart agricultural practices in India. *Innovation in Indian Agriculture: Ways Forward*. New Delhi: Institute of Economic Growth (IEG), New Delhi, and International Food Policy Research Institute (IFPRI), Washington, DC.

communities may better understand the effects of climate adaption barriers from a local point of view (Venkatasubramanian, K., & Ramnarain, S. (2018))⁵.

Factors including age, gender, caste, and socioeconomic status intersect to show how different groups adjust to new environments, how power is distributed at home and in the community, and how choices are impacted. In sum, the results show that when it comes to adapting to climate change, a feminist intersectional perspective seems to be helpful and warrants more investigation. More detailed examination of the intra-gender differences that influence adaptive capacity to climate change should be prioritized in future studies (Ravera, F., Martín-López, B., Pascual, U., & Drucker, A. (2016))⁶. Gender is mentioned as a facilitator of the susceptibility and resilience in the majority of subnational climate change strategies in India, but these policies operationalize this notion insufficiently and inconsistently. The study also considers the gender-blind, gender-inclusive, and gender-transformative methods to integrating and how these policies deal with gender-specific vulnerability (Singh, C., Solomon, D., & Rao, N. (2021))⁷. Because men and women experience the effects of climate change differently, based on their unique responsibilities, strengths, and experiences, there is a gender gap in this area. National Missions on Climate Change should listen to women's voices, address their concerns, and strengthen adaption strategies with gender-sensitive measures to help women thrive and advance (Parikh, J., Upadhyay, D. K., & Singh, T. (2012))⁸. Efforts should be made to identify knowledge gaps and comprehend CC concerns in relation to gender, since there continues to be a lack of gendering in these activities. The paper goes on to say that efforts to combat the negative impacts of CC are likely to be more successful if women are more actively involved in disaster risk management, adaption, and mitigation (Sardar, S., & Bhaduri, S. K. (2022))⁹. Livestock raising, seasonal or over time migration, subsistence or small-scale farming, and localised exploitation of natural resources comprise the bulk of the population's livelihood strategies. Everyone find that the local the community's sources of income are being eroded in gender-specific ways by climate change, in addition to the general challenges posed by temperatures rising, irregular precipitation and melting snow patterns, and altering biological cycles (Ogra, M. V., & Badola, R. (2015))¹⁰.

It is of equal importance to prioritize development concerns including poverty, adaptation, and justice as part of the broader climate strategy. The fundamental concept of climate change, the allocation of responsibility for mitigation, and several procedural concerns have nations split. In this complex web of tenuous agreement and long-established disagreement, it is very difficult to tackle gender inequality in a setting where the concept of gender itself is foreign (Parikh, J. (2007))¹¹. Most discussions of developing world concerns center on four main areas: climate change, poverty, gender inequality, and economic

⁵ Venkatasubramanian, K., & Ramnarain, S. (2018). Gender and adaptation to climate change: Perspectives from a pastoral community in Gujarat, India. *Development and Change*, 49(6), 1580-1604.

⁶ Ravera, F., Martín-López, B., Pascual, U., & Drucker, A. (2016). The diversity of gendered adaptation strategies to climate change of Indian farmers: A feminist intersectional approach. *Ambio*, 45, 335-351.

⁷ Singh, C., Solomon, D., & Rao, N. (2021). How does climate change adaptation policy in India consider gender? An analysis of 28 state action plans. *Climate Policy*, 21(7), 958-975.

⁸ Parikh, J., Upadhyay, D. K., & Singh, T. (2012). Gender perspectives on climate change & human security in India: An analysis of national missions on climate change. *Cadmus*, 1(4), 180-186.

⁹ Sardar, S., & Bhaduri, S. K. (2022). An exploratory analysis of the differential climate change impact on women in India. *Materials Today: Proceedings*, 60, 827-833.

¹⁰ Ogra, M. V., & Badola, R. (2015). Gender and climate change in the Indian Himalayas: Global threats, local vulnerabilities, and livelihood diversification at the Nanda Devi Biosphere Reserve. *Earth System Dynamics*, 6(2), 505-523.

¹¹ Parikh, J. (2007). Gender and climate change framework for analysis, policy & action.

empowerment. Studies can zero attention on particular weather occurrences, such as droughts, floods, or natural catastrophes affecting rural areas. Studies on gender and climate change often use the plight of rural, impoverished South Asian people as an example (Palanisami, K., et.al., (2015))¹². The greatest damaged ecological elements, including water and agriculture, have been women, making them more vulnerable to the anticipated environmental changes, such as high temperatures and low snowfall. Educating the local population, particularly women, about the dangers of climate change is essential. Water scarcity, flash floods, landslides, and earthquakes can have a significant impact on certain villages. To better implement programs and policies in the region, it is important to prioritize these villages (Khan, K., Chattopadhyay, A., & Ali, Iftikar (2022))¹³.

Research Gap

It has recently been demonstrated by researchers that gender based differences based on living in impoverished nations are subjected to unique stresses and hazards that are associated with the lack of resources caused by climate change. It is now more difficult for women to collect firewood because of the increased scarcity of natural resources brought about by climate change. There is a correlation between the shortage of gasoline and water and an increase in the amount of time spent on working, the amount of physical strain that they experience, and the danger that they face from gender-based violence. This is because of gender differences people are compelled to travel farther to satisfy the demands of their households. As a result of the interaction between these social elements, various people have diverse access to resources (such as water, land, and credit), which in turn leads to a variety of different options and tactics for coping with social and ecological disruptions and deficiencies. Because of the social position that they have, gender differences are more vulnerable to the dangers that are posed by natural catastrophes. They found that women face barriers in accessing information and communications that are necessary for safety in the context of disasters. They also found that gender differences are unlikely to be able to swim in flood emergencies and may not have access to resources that could help with adaptation, such as land title or irrigation technologies. These findings were derived from one-on-one conversations and group dialogues. In this burgeoning field of gender-focused research on climate change, there has been a debate regarding the most effective ways to conceptualize and illustrate the linkages between gender inequality and climate change. In particular, there is a common concern among scholars over the consequences that emphasizing on gendered vulnerabilities may have on the normative aspects of vulnerability. This study focus on the gender based differences related to the impacts faced based on unfolding of climate change based on the perception of sample participants.

Research Problem

In rural communities, studies of gendered adaptations to climate change give valuable empirical insights into the numerous aspects of change in a variety of situations that are influenced by climate change. The evidence of women's social reactions to climate change demonstrates that the actual

¹² Palanisami, K., Haileslassie, A., Kakumanu, K. R., Ranganathan, C. R., Wani, S. P., Craufurd, P., & Shalander, K. (2015). Climate Change, Gender and Adaptation Strategies in Dryland Systems of South Asia: A Household Level Analysis in Andhra Pradesh, Karnataka and Rajasthan States of India; Research Report No. 65.

¹³ Khan, K., Chattopadhyay, A., & Ali, Iftikar (2022). Gender differences in perception and awareness of climate change in the Suru valley of Western Himalayas, India. *Current World Environment*, 17(1).

adaptations that women and men perform are diverse and particular to the socioeconomic and cultural circumstances in which they find themselves. Inequalities between the sexes continue to exist and often become more pronounced in dynamic environments. It is possible that power dynamics may shift in new ways as a result of the efforts that are being made to adapt to climate change measures. Under the influence of environmental stress, rural families often attempt to diversify their earnings by having one of the parents pursue paid employment outside the household.

The changes that have occurred as a consequence of gender relations and work structures are contradictory. It is possible for climate-related drought and shortages to have similar socioeconomic repercussions in the Northern regions of the world, but with notable distinctions, such as the greater acceptability of women in formal sectors and the availability of paid labor for them in such sectors. Concerns about vulnerability and adaptation to the negative effects of climate change are among the most important environmental issues that many developing nations, such as India, have to deal with. In spite of the fact that women in the majority of nations have a higher average life expectancy than men, the quality of health that women experience in their families and communities is worse to that of males throughout the same time period. The gender division of labor places women in a position where they are more likely to be exposed to health hazards than males. This is despite the fact that the health concerns associated with global warming continue to exist.

Due to the fact that they come into close touch with conventional fuels, they are susceptible to respiratory difficulties that are brought on by the pollution that is present within their homes. The study focus on the gender differences oriented differential opinions towards the impacts created by the climate change on the study area. The levels of impacts caused on the areas of gender gap, gender vulnerability and gender innovation are evaluated based on the perception.

Significance

It is necessary to do further study in order to determine the gender implications of climate policy. When compared to climate policies of wealthier countries in the North, the South is more likely to include gender into adaptation and mitigation initiatives. This is due to the fact that there are many compelling reasons for this. It is important to note, however, that gender plays a role in the distribution of power in the actions of governments and corporations to climate change all over the globe. It is necessary to do further research on the process by which state and corporate entities choose their representatives in climate governance due to the fact that gender and political representation are both important factors.

There was a silence on gender in the texts that outlined the purposes of these entities, despite the fact that there is an overall gender balance among the workforce of administrative and political institutions that are responsible for government policy regarding climate and energy. The area has benefited greatly from the conceptual and political criticism of the main climate knowledge that have been developed to far. The same is true for the outstanding work that has been done to record gender and differences in adaptations in rural civilizations all around the globe. In a wide range of political, economic, and cultural circumstances, there are groups of women who are at a significant risk of being affected by climate change. The impacts of climate change are often detrimental, and new chains of gender vulnerabilities are formed

as the process of climate change continues to evolve and responses become essential. As women and men adjust to new circumstances, there is also the possibility that gender hierarchy may be disrupted simultaneously. In addition, the study that has been done so far on adaptations demonstrates the agency and inventiveness of various groups of women.

The extant data of gender relations under circumstances of climate change presents a challenge to too simplistic interpretations of gender vulnerability and ought to motivate more effective policymaking. The practice of integrating a gender lens into any political response in order to prevent the maintenance of gender inequities via institutional methods is referred to as gender mainstreaming. The process of gender mainstreaming has, to some degree, been beneficial; yet, it has also led to the watering down of radical gender and feminist ideas, which explains why it has only a limited influence in reality. In addition, the dominant positivist epistemology in climate change adaptation places restrictions on the use of qualitative and feminist research methodologies. Consequently, a significant number of academics investigate gender without interacting with feminist epistemology, which leads to the proliferation of negative gendered assumptions in climate policy responses.

Objectives

- To evaluate the impacts caused by the climate change on gender dimensions of population.

Research Methodology

The rationale for the mixed-methods strategy that was used for this study may be broken down into three categories. In the first place, the pragmatic research paradigm is compatible with the use of mixed methodologies. It is the belief of pragmatism that natural reality exists apart from human perceptions, but that societies and social conventions modify and co-create that reality, both consciously and unconsciously. As a result, pragmatism is the paradigm that is most pertinent to the notion of fostering connections between technological and social solutions to the problem of climate change mitigation. The second advantage of the mixed-approaches approach is that it promotes the concept of complementarity between the quantitative methods that are employed in mainstream evaluations of the relationships between SDG and the qualitative methods that are used by feminists and gender scholars. In conclusion, the mixed-methods approach is an effort to circumvent the drawbacks that are associated with both qualitative and quantitative techniques when they are employed alone. These drawbacks include the tendency of qualitative approaches to lack generality and the tendency of quantitative approaches to produce outcomes that might be deceptive. The study involves analysing the outcome based on the mixed methods and using the empirical analysis to derive at a conclusion. The population of the study involves the climate change analysts at various government and non- governmental organisations across the state of odisha. The study involves 85 male participants and 85 female participants which totals to 170 climate change analyst working in various government and NGOs. The collected data were analysed using the SPSS- AMOS. The path modeling was used for analysis the perception of climate change experts towards the impacts caused by climate change on gender.

Analysis and Interpretations

A number of procedures, including authentication and the elimination of distortion, were carried out on the data that was acquired in order to make it eligible for examination inside the program. The information that was acquired was associated with the effects that climate change has had on gender inequality, gender vulnerability, and gender innovation. These consequences are assessed based on the perceptions of climate change analysts working for a variety of government agencies and non-governmental organizations.

Path Modelling – Impact of Climate Change on Gender Dimensions

With the aid of modeling, it is feasible to bring out the direct link between the damages produced by warming temperatures on the elements of gender dimensions in climate change analysts. This is something that may be done. To undertake an analysis of the many components and aspects that are included in the study, the perspectives of climate change analysts who are working in government and non-governmental organizations in the area where the research is being conducted are used. The modeling will be of aid in acquiring knowledge of the causal relationship that exists between the consequences induced by climate change on gender dimensions. This understanding will be gained when the modeling is used. In order to carry out the analysis, the following gender-related factors are taken into consideration:

Table – 1
Variables Overview

Variable Counts	Count
Overall variables	28
Observed Variables	11
Unobserved Variables	17

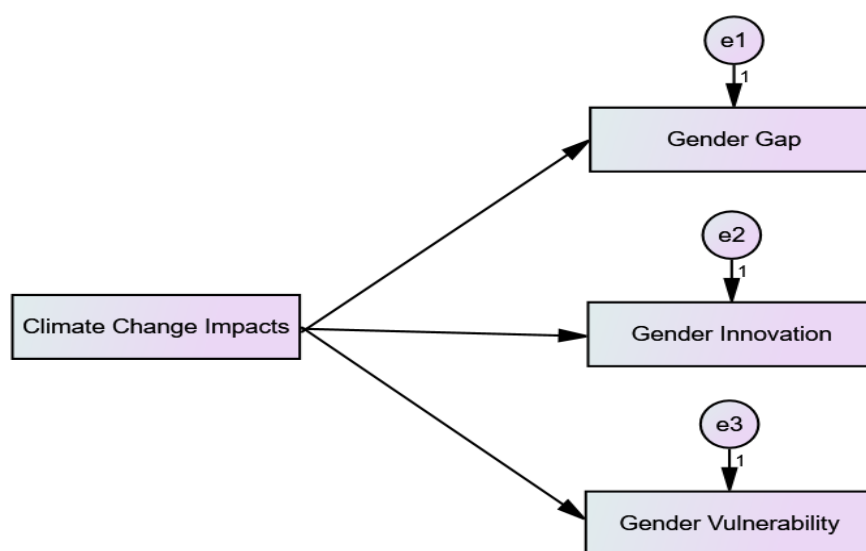


Chart – I – Theoretical Model - Climate Change and its Impacts on Gender Dimensions

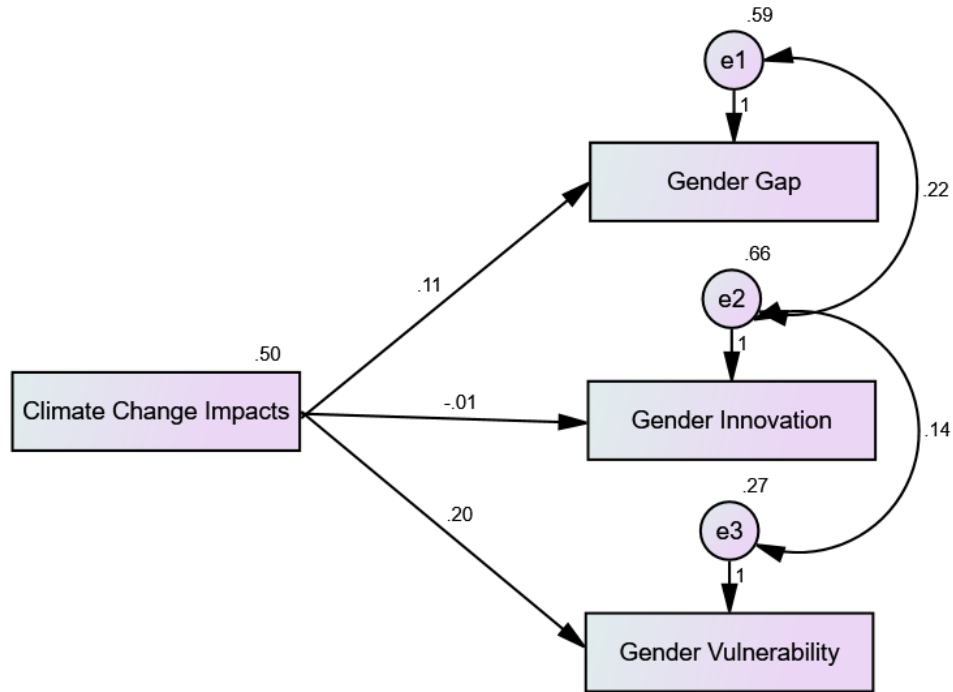


Chart – II –Fit Model - Climate Change and its Impacts on Gender Dimensions

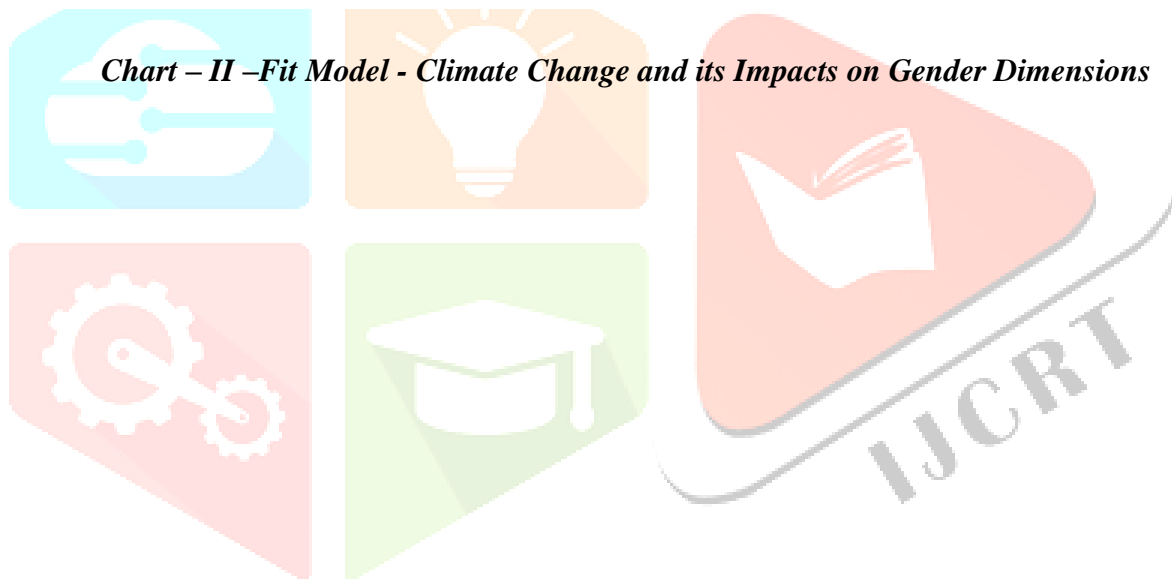


Table - 2
Model Outcome – Beta Values

			Estimate	S.E.	C.R.	P
Gender Gap	<---	Climate Change Impacts	0.112	.084	1.336	***
Gender Innovation	<---	Climate Change Impacts	0.012	.089	-.131	***
Gender Vulnerability	<---	Climate Change Impacts	0.200	.057	3.494	***

(***-Relationship Accepted @ 1% Level)

The regression weights provide an explanation for the link between the elements that are used in the model that predicts the effects that are caused by the climate change on the gender gap, gender innovation, and gender vulnerability in the workplace. On the basis of the effects that climate change has brought about, there are positive correlations between the gender dimensions. As a result of the working impacts of climate change, the components that pertain to gender dimensions are experiencing a favorable influence. The model concludes that climate change has a major impact on several aspects of gender, including gender innovation, gender vulnerability and gender gap.

Table - 3
Summary of Model Parameters

Indices	Actual Value	Suggested value
Chi-square/Df(CMIN)	1.117	< 5.00 (Hair et al., 1998)
GFI	0.998	> 0.80 (Joreskog and Sorbom, 1981)
AGFI	0.976	> 0.80 (Joreskog and Sorbom, 1981)
NFI	0.952	> 0.80 (Joreskog and Sorbom, 1981)
CFI	0.983	> 0.90 (Daire et al., 2008)
RMR	0.004	< 0.08 (Hair et al. 2006)
RMSEA	0.010	< 0.09 (Hair et al. 2006)

(GFI – Goodness of Fit, AGFI – Adjusted Goodness of Fit, NFI- Normed- Fit Index, CFI – Comparative Fit Index, RMR – Root Mean Squared Residual , RMSEA – Standardised Root Mean Squared Residual)

The purpose of this study is to analyze the effects that climate change has had on gender inequality, gender innovation, and gender vulnerability based on the perceptions of climate change analysts who are employed by a variety of organizations. The perspective demonstrates that the effects of climate change have major consequences on the gender aspects that are present in the workplace. An explanation of the validity and reliability of the model is provided in the summary of the model fit. Due to the fact that the values of the model fit are statistically significant, it can be concluded that the model is successful in determining the effects that climate change has on gender dimensions.

Discussions

An explanation of how more gender equality is revealing of fairer societies' organization, which is essential to creating sustainable futures, was provided by the qualitative analysis that was carried out as part of this study. The analysis demonstrated the contribution that gender equality makes toward climate protection and social justice. The critical eco-conservationists lens, pragmatic paradigm, and mixed-methods approach that were utilized in this study posed a challenge to the conventional evaluations of the gender-climate nexus. Additionally, it enabled the development of methodological recommendations concerning the incorporation of gender in environmental research projects while simultaneously investigating the impact on policy. The qualitative interviews that were conducted for the purpose of this study brought to light the fact that gender inequality, along with other types of inequality, was inherited from the Enlightenment and that it is one of the most important problems that has to be solved in order to overcome the climate catastrophe. In addition to the fact that the effects of climate change are not evenly felt, voices that carry potential answers to these effects are not equally heard in political discussions, but also in academic discourse. In addition, despite the fact that it is widely acknowledged that technology solutions have limits in terms of comprehensively addressing the situation, they continue to be the dominant approach. It is essential to achieve equality not just between the sexes, but also between different socioeconomic classes, ages, races, and species in order to modify the existing social contracts and find a solution to the climatic issue. The promotion of equality presents a challenge to the power relations that have been created, and as a result, it may be a challenging endeavor. It is only through the passage of time that will be able to determine whether or not the climate catastrophe offers significant opportunities for enabling systemic reform based on gender.

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