



Women's Leadership in Climate-induced VUCA Environments: Challenges and Opportunities

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ABSTRACT

Across the globe, communities have been confronted by severe climate shifts, which have brought Volatile, Uncertain, Complex and Ambiguous (VUCA) environments. The VUCA environments have therefore called for more inclusive, flexible leadership that incorporates gender equity. This paper looked at the challenges and opportunities of women leadership in such VUCA environments. To achieve this objective, the paper applied the PRISMA framework. In this view, 80 peer reviewed journal articles from different scholarly databases that includes Google Scholar were included. For the quality assessment in the determination of challenges and opportunities of women leadership in VUCA environments, the study applied PRISMA and the Mixed Methods Appraisal Tool (MMAT). The study was hinged on Transformational Leadership Theory and Intersectionality Theory. The results of the study revealed that patriarchal governance systems, limited access to climate finance, and the 'glass cliff' phenomenon are the major challenges that hinder women's leadership in a climate-induced VUCA environment. Women leadership opportunities in such climate induced VUCA environments included the capacity for a collaborated governance system which strengthens community climate change resilience and climate responses. In this view, the study recommended that practitioners give a high priority to initiatives of capacity building that increase women's leadership participation in initiatives to foster and build climate change resilience. The study concluded that the advancement of women leadership is normatively imperative and thus a practical necessity to the creation of more equitable and sustainable climate resilience futures.



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1. Introduction

Climate changes have resulted in societies living in environments that are harsh and thus characterized by volatile, uncertain, complex, and ambiguous (VUCA). Such VUCA environments are characterised by climate hazards such as floods, wildfires, and hurricanes (Behera et al., 2025). As a result, the health systems, food security, means of livelihoods, and governance systems are equally affected by such changes in climate. This therefore worsens the socio-economic vulnerabilities, hence affecting the ecosystem stability (Putsoane, Bhanye, & Matamanda, 2024). Effective leadership requires adaptability, inclusivity as necessary ingredients (Haq et al., 2024). Women's leadership has provided

such a valuable, yet underutilised, resource for the improvement of climate governance. It is through such leadership by women that there is an advance in sustainable development because women provide traits such as risk sensitivity, empathy, as well as collaborative decision making (Chakraborty, 2025). Although the Sustainable Development Goals (SDGs) have shown a global commitment to ensuring gender equity, women still remain underrepresented in top and senior climate leadership roles (Wray et al., 2023). The underrepresentation has continued despite overwhelming evidence of the notion that gender balanced leadership breeds a more inclusive, equitable, and effective adverse climate shift response (Faugoo, 2024). Patriarchal norms, institutional discrimination, limited access to financing and technology are amongst the various structural barriers that constrain and hinder women's participation in climate leadership, thereby constraining their mobility, voice, and agency (Tyagi & Tyagi, 2021).

In addition, through their low adaptation capacity, women are disproportionately affected by the negative effects of climate change (Allen, 2022). As a result of a disrupted livelihood, food security systems, health facilities, and weakened governance structures, climatic shifts have resulted in VUCA environments that seriously affect ecosystems and societies (Loucks, 2021). This points out that for effective climate change leadership, there is a need to incorporate women for further resilience, adaptability, and inclusivity (Esenyel, 2024). Despite their strengths in being risk resilient, social innovativeness, and collaborative decision making, women have still remained underutilised in climate governance (Cornejo-Abarca, Ugarte, & Martin-Caballero, 2025). In order to ensure that gender and climate issues are integrated, the SDGs have created a normative framework highlighting the significance of women's complete and effective involvement at all levels (Castelo, Antunes, & Ashrafuzzaman, 2024). There is, however, limited synthesis of gender and vulnerability or leadership in stable contexts, and studies on women's leadership in climate-induced VUCA environments still remain scant (Miao & Nduneseokwu, 2025a). There appears to be limited literature on women leadership opportunities and challenges brought through climate-induced VUCA environments (Davis et al., 2024). In pursuit of the agenda for SDGs and other international frameworks on climate, there is need to further advance and narrow the knowledge gap on women leadership under climate induced VUCA environment. This systematic review closes the knowledge gap on women leadership in a climate induced environment by having a multidisciplinary literature synthesis. Through this way, there is a creation of a more inclusive and a gender responsive climate resilience strategy which recognises and offers more support to women leadership for more resilient futures.

2. Literature Review and Theoretical Framework

Literature has showed the importance of women leadership in such climate induced VUCA environments hence also women's contribution and being drivers to sustainable development in and climate resilience strategies. In this way, women in leadership have responded to the shocks brought by climate shift by building resilience besides being in the midst of several challenges such as limited access to climate finance and limited access to technology (Awiti, 2022). According to Adongo, Dapaah and Azumah (2023) there is a challenge of patriarchal communities whose beliefs, norms and values inhibits women's mobility and their decision in climate induced VUCA environments. Women in climate induced VUCA environments have often demonstrated various transformational traits that includes empathy, inclusivity and systemic thinking. These transformational traits make women suitable for leadership needed in climate induced VUCA environments (Thelma & Chitondo, 2024). Similarly, evidence from Sub Saharan Africa, Southeast Asia and Latin America shows that women at the low levels in climate leadership have been deemed critical in building locally adaptive responses to climate induced VUCA environments (Nkengla-Asi et al., 2017). Under an inclusive, collaborative and reflective leadership approach, women leaders are able to navigate through climate induced VUCA environments. As evidenced during the COVID 19 pandemic, emphasis was placed the importance of more inclusive leadership approaches in the response to crises (Rimita, 2019). Empirically, literature has suggested that leadership by women bears a positive influence on climate governance that include climate policies and an enhanced social equity (Gupta et al., 2024; Roy, 2025). Although there is much studies conducted on women leadership in a climate induced VUCA environment, scanty literature exists on women

leadership challenges and opportunities under climate induced VUCA environments (Langjord, 2024). These environments require adaptive, inclusive leadership that is also forward thinking. Women leaders are best suited for leadership in climate induced VUCA environments as they possess key leadership traits such as emotional intelligence and collaborated and inclusive decision making (Kapse et al., 2024). Women have however realized their full potential to lead under climate induced VUCA environments caused by institutional barriers, systemic barriers and limited access to climate financing (Moon, 2024). These challenges faced by women in a climate induced environment, can be navigated if researchers develop more inclusive strategies that advance women leadership and more climate resilience strategies.

In addition, empirical studies have supported the notion that women leadership is important in a climate induced VUCA environment which leads to more sustainable and equitable outcomes (Miao & Nduneseokwu, 2025a). In substantiating this notion, Prajapati and Chauhan (2025) alludes that women leadership fosters community level resilience strategies, indigenous knowledge integration and are able to demonstrate consistency in climate shock response strategies. Similarly, studies have made emphasis of women leadership cooperation over competition and engagement with different stakeholders in order to navigate climate induced VUCA environments. Communities in the Rural Nepal have women leadership that has shown resilience and commitment to forestry resource conservation that made communities adaptable and resilient to climate induced VUCA environments (Gautam et al., 2024).

Women-led climate projects get less funding than men-led ones, and venture capital and climate financing mechanisms are rarely set up to help women-led projects (Gannon et al., 2022). The "glass cliff" phenomenon, in which women are put in charge during times of crisis, makes it more likely that they will fail in such volatile organizations (Mashele, 2021). Intersectionality makes these problems harder to solve. For example, women from Indigenous, rural, or marginalized ethnic communities face different types of exclusion that make it harder for them to be leaders (Nwafor & Aghaebé, 2025). Although women are good community leaders as well as having soft leadership traits, they are often left out of official efforts to craft strategies to mitigate climate shifts leadership (Parekh & Parekh, 2023). Evidently, women have in the past led early stages of climate change disaster preparedness networks which resulted in less damaging disastrous climate induced VUCA environments (Delina et al., 2025). There has however less recognition to women through policy, funding and technical training (Meri Crespo, Navas Saurin, & Abiétar López, 2024).

Regardless of the various challenges that might confront women leadership, there is need to utilise their potential to navigate climate induced VUCA environment (Mashapure et al., 2025). Initiatives and approaches by the UNDP Gender and Climate Resilience have shown the capacity of institutional frameworks to support women leadership (Mohammed, Najjar, & Bryan, 2022). These initiatives have enabled women under climate induced VUCA environments contribute more to climate shift early warning systems and adaptative climate change management by incorporating gender equity training into the national climate adaptation frameworks (UNDP, 2022). Waema and Njue (2020) indicates that if women are supported with technical skills and given opportunity to be in climate leadership, they become climate change ambassadors and mentor their fellows on climate induced VUCA environments mitigation strategies. Lau et al. (2021) points out that policy frameworks that show support of a more climate inclusive governance and gender balance in climate leadership yields more plausible results. In this view, geographies with more women in climate leadership positions have a higher likelihood of adopting progressive environmental policies, thus reporting a high level of public participation in climate change and climate leadership programs (Amorim-Maia et al., 2024). These results show that for the successful incorporation of women into leadership roles within the mainstream of climate response, institutional change is needed. Scholars have thus called for a change from gender sensitive to a more gender transformative approach, which therefore requires a dismantling of such patriarchal models of climate governance and power, structural redistributive strategies such as land rights, cooperative ownership, and gender quotas (Cerise et al., 2024). Partnering with women to co-design climate adaptation programs and having them firmly grounded in the feminist principles, which prioritize autonomy, equity, and recognition of caregiving, researchers may yield more equitable and sustainable outcomes. Scholarly literature indicates that women-led climate change initiatives result in mindset change in

gender norms, thereby challenging male-dominated community leadership structures, resulting in enhanced ecosystem sustainability (Prakash, Engheepi, & Sinha, 2024). Utilization of women's leadership capabilities and potential in communities creates sustainable and resilient communities.

The systematic exclusion of women from leadership pipelines in climate governance and innovation can be addressed with the support of focused education and mentorship initiatives. According to research, STEM-focused climate education can enhance young women's chances of pursuing environmental science and advocacy careers, especially when paired with female scientist mentorship (Escap et al., 2025). If climate issues are interwoven into the everyday needs and livelihoods of local young women communities, such women are high likely to see themselves as climate change agents rather than victims of climate change (Tanjeela, 2025). In an effort to promote a shift from a theory centred to a more practical climate leadership, scholars have put more emphasis on the need for more robust police that provides a seamless link between education and climate leadership through training, digital inclusion and climate change skills development (Miao & Nduneseokwu, 2025b). In the absence of such interventions, those in the elites and in leadership who may fail to comprehend the realities of those affected by climate change issues, who are mostly women of the marginalised communities, run the risk of formulating wrong policies and strategies to navigate climate induced VUCA environments. If women are supported by gender inclusive laws and non-gender discrimination laws, they become too positioned to participate in roles driving mitigations to challenges of climate shift induced VUCA environments (Doan, Doan, & Nguyen, 2025). Setyowati et al. (2025) argues that if women are included during the planning and management of climate resilience projects, such systems tend to be effective and socially accepted by their communities (Setyowati et al., 2025).

In addition, the effectiveness of these strategies lies in the degree of involvement of such women not only as employees however as leaders, key decision makers and being co-creators that bears access to the roles in ownership and climate governance. In support of this notion, Cerise et al. (2024) posits that having a gender equitable transition needs a rebalanced economic value and not a mere creation of new job roles. Although there has been growing literature on women climate leadership, a gap exist between theory and practice (Lyness & Grotto, 2018). Although gender inclusion is mentioned in many climate action plans, no legally binding pledges or accountability systems are provided to guarantee women's meaningful participation at all governmental levels. Adaptive, relational, and non-hierarchical leadership styles, which are typically practiced by many women, are frequently subordinated to technocratic, masculinist ideals, which are reflected in this institutional inertia (Magazoni Gonçalves, 2023). Leadership styles based on compassion, empathy, and iterative decision-making are crucial in VUCA environments, where uncertainty is the norm. However, not valuing these traits in the formal climate institutions creates a structural misalignment between what is required and what is legitimate in terms of the law, thus effectively excluding many women from climate leadership positions in spite of their demonstrated effectiveness.

The way humans talk about leadership in the media and public discourse has a profound impact on how they perceive women in leadership roles. Literature has shown that women are often regarded as climate change leaders through their emotional narratives, such as their roles as mothers, community servants, and or sacrificial figures (Husain-Naviatti, 2025). Contrastingly, male leaders are often seen as effective, innovative, and knowledgeable individuals. This therefore reinforces the notion that women's leadership is naturally limited to moral and caregiving realms, rather than being strategic and powerful domains. This resembles gendered framing, which has a profound effect on young women's goals and self-perception, effectively limiting their ambitions and reducing the realisation of their maximum potential (Jabbaz, Samper-Gras, & Díaz, 2019). Through a redefined look at what leadership entails, scholars can work to challenge such symbolic aspects of leadership and create a more inclusive and equitable understanding of what leadership entails. This can be achieved through educational, media, and public storytelling interventions that highlight the relational, cooperative, and systems-oriented approaches that many women bring to leadership roles. Also, the opening of new avenues for women leadership in climate-induced VUCA environments places more burden on women who already bear a

large burden related to food insecurity and climate-induced hazards. Although in societies, women are regarded as lacking the abilities of leadership, scholarly work has shown that women can become de facto leaders in post-climatic disasters relocation camps through the coordination of community resources and advocacy for support (Ide, 2023). However, such 'leadership crisis' strategies are not often included in the formal systems of governance and may sometimes be exploitative if not institutionally formalized and harnessed. The notion of 'resilience fatigue' indicates the need for a structural transformation and not just to expect women to be adaptive and lead in times of crisis. Overcoming these challenges requires a shifted mindset towards what leadership entails in a climate-induced VUCA environment, eschewing tokenism and inclusion metrics in favor of a radical reorganization of climate governance grounded in feminist ideals of justice, care, and interdependence. Multi-scale cooperation is necessary for successful transformation, connecting national policy frameworks, international funding sources, and scientific knowledge systems with grassroots women's movements (Koc et al., 2024). The resulting policies are more likely to be politically viable, ecologically sound, and socially just when women's leadership is integrated into all levels of decision-making. However, this requires bridging the divides between formal and informal knowledge, and recognizing that knowledge and leadership reside not only in elite or Western institutions, but also in communities, households, and lived experience.

Two complementary theoretical frameworks—Transformational Leadership Theory and Intersectionality Theory—form the basis of this systematic literature review. Transformational leadership strongly emphasizes the value of intellectual stimulation, personal attention, and inspirational motivation, especially during times of crisis when systemic innovation and group resilience are essential (Saleem, Sultan, & Ali, 2025). Studies have indicated that female leaders frequently demonstrate these attributes by embracing stakeholder-engaged and empathy-led strategies that encourage cooperation and creativity (Rudyanto, Rahayuningsih, & Susanto, 2024). According to Cho, Crenshaw and McCall (2013), intersectionality theory offers a critical lens through which to view how overlapping identities—such as gender, race, class, and rurality—intersect to produce distinct experiences of marginalization or exclusion. Intersectional analysis is important in determining which women have access to climate leadership opportunities, the circumstances, the opportunities, and the challenges in climate-induced VUCA environments. In order to have an in-depth understanding of the challenges faced by women in the advancement of their climate leadership roles, a magnified look at the intersection between policy structures, organisational policies, and community values (Jean, 2025) is required. This significantly helps build more robust strategies that promotes women's leadership and address challenges they may face in a climate-induced VUCA environment.

3. Data and Methodology

The current systematic literature review used the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) research methodology in order to evaluate the opportunities and challenges that confronts women the leadership roles in a climate induced VUCA environment. During the search strategy, researchers incorporated search terms that includes terms and expressions such as 'women leadership', 'climate change', 'VUCA environments' and 'sustainable development'. In terms of the inclusion criteria only English articles were included that were published between 2015 and 2024. Scholarly databases that include Scopus, Web of Science and Google Scholar were explored. At first search, 780 articles popped out which were then assessed for relevancy and eligibility. Further screening resulted in 80 articles. The 700 articles dropped were found to lack the scope of climate VUCA and women's leadership. The quality of the papers and abstracts included in the current systematic review was assessed using the Mixed Methods Appraisal Tool (MMAT). The narrative synthesis approach incorporated the findings, which showed themes and patterns from the reviewed literature. It was through this PRISMA methodology that researchers were able to identify challenges and opportunities for women's leadership in climate-induced VUCA environments.

4. Results and Discussion

4.1. Women's Leadership Challenges in Climate-induced VUCA Environments

The literature highlighted and exposed significant challenges women leaders face in a climate-induced VUCA environment. It was through the literature review that it was pointed out that women are often excluded from the national and international policy forums where most high-level climate decisions are made (Humayra, Uddin, & Pushpo, 2024). As such, a significant barrier exists to women's structural exclusion in high decision-making spaces. Such an exclusion compromises the efficacy of climate interventions and thus undermines gender equity. The other challenge, as exposed through literature, is limited access to climate financing due to, at times, the ingrained prejudices within some financial institutions. Also, a mostly visible phenomenon in the climate-induced VUCA contexts is the "glass cliff" phenomenon whereby, at times, women are appointed into leadership positions during times of crisis, only to be used as scapegoats when recovery fails (Beigi Nasrabadi et al., 2025). Women in climate leadership in a climate induced VUCA environment faces symbolic and cultural barriers (Miao & Nduneseokwu, 2025a). This is caused by the belief that men are regarded as innovators and corporate strategists whereas women are deemed as emotional vessels (Audretsch & Kariv, 2025). This implies that for the generation of young women, their leadership aspirations are framed by culture and societal values (Burkinshaw & White, 2020) however, this undermines their climate leadership abilities and ability to build community climate resilience strategies.

4.2. Women's Leadership Opportunities in Climate-induced VUCA Environments

The review of literature has showed that several opportunities exist for women leaders in climate induced VUCA environments. These opportunities have the potential to revolutionise women leadership in the mitigation and governance of climate change shocks. An equally important opportunity is the trait of transformational leadership which women leaders exhibit under climate induced VUCA environment (Miao & Nduneseokwu, 2025b; Sahiwal & Gupta, 2025). Enhancing women leadership in climate induced VUCA environments may be facilitated by bringing change in institutional mechanisms, having gender equity, capacity building workshops and having female quotas in climate leadership. This viability, support and usefulness of the gender transformative strategies that helps in the redistribution of power and reshape societal perceptions towards female leadership. This view suggests that efforts to have inclusive leadership that involves women in climate governance must go beyond just representation to bring equity at societal and organisational operational level. In order to unleash and realise women's full leadership potential in climate induced VUCA, there is need for adoption of gender transformative approaches, render institutional support, the identification and recognition of women leadership capabilities. The initiative by the UNDP Gender and Climate Resilience Initiative through targeted women training in climate governance increased women's influence in climate policy formulation ((UNDP's Gender and Climate Resilience Initiative, 2022).

5. Conclusion

In conclusion, the "glass cliff" phenomenon emerged as a key challenge faced by women leadership in climate induced VUCA environments. This means that so often women get appointed into leadership positions in moments of crisis so that they can be blamed and scapegoated when path fails to recover. The study also concludes that as cultural barriers, societal values and norms pose as challenges to women leadership in a climate induced VUCA environment. This is essentially through the societal view that women are only emotional vessels while men are regarded as strategist and innovators. In terms of opportunities, the study concludes that women posses' soft leadership traits that are transformational that hence help in the navigation of climate induced VUCA environments. In this view, adaptive leadership in climate induced VUCA environments requires empathy, inclusivity as well as forward and long-term strategic thinking (Miao & Nduneseokwu, 2025b; Sahiwal & Gupta, 2025).

5.1. Recommendations

Policy Recommendations

The study recommends that in order to facilitate leadership by women in a climate induced VUCA environment, there is need by policymakers and governments to take a gender inclusive approach in building climate shift resilience strategies. This implies that policies must be designed that gives more access by women to climate leadership positions. Legal changes are also essential, such as granting women land tenure and acknowledging unofficial leadership positions in disaster management.

Recommendations for Practice

All levels of organizations need to acknowledge and develop women's relational, adaptive, and intersectional leadership skills. This entails funding mentorship programs, training in participatory governance, and cross-sectoral leadership fellowships that connect formal institutions with grassroots movements. Development organizations, non-governmental organizations, and climate actors must update their operational frameworks to prioritize women-led innovations, allocate funds, and modify the standards for evaluating risk and success. Women's knowledge systems should be incorporated into climate adaptation projects as essential technical planning and implementation elements.

Recommendations for Theory

This study emphasizes how intersectional and gender perspectives must be incorporated into VUCA and transformational leadership research. The masculinist presumptions predominate in leadership literature should be challenged by future theoretical models that put women's lived experiences in climate-affected contexts front and center. To create comprehensive, context-sensitive leadership frameworks appropriate for VUCA realities, interdisciplinary discussion between organizational studies, feminist theory, and climate science is crucial. According to this perspective, improving women's leadership in VUCA environments brought on by climate change necessitates a fundamental shift in theory, practice, and policy. By working together, the global climate community can build governance systems capable of withstanding uncertainty based on equity, plurality, and care principles.

Author Contributions

Admire Mthombeni: Manuscript typing, recommendations and conclusions

Cecile Gerwel Proches: Authorship, relevant literature search

Macdonald Kanyangale: Study background and methodology

Conflict of Interests/Disclosures

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