

**The Role of Women Leaders in Developing Green Learning Communities in Higher
Education**

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Abstract

Higher education institutions are increasingly recognized as key actors in advancing sustainability and supporting the global transition toward a green economy. As universities face rising expectations to embed environmental responsibility into teaching, research, and governance, green learning communities have emerged as a strategic framework for institutionalizing sustainability within academic culture and practice. Despite growing scholarship on sustainability in higher education, the role of women leaders in shaping and sustaining green learning communities remains underexamined.

This paper adopts a conceptual and theoretical approach to explore how women's leadership contributes to the development, implementation, and cultural integration of green learning communities. Drawing on feminist leadership theory, transformational leadership, and sustainability leadership frameworks, the study examines how leadership practices characterized by collaboration, inclusivity, relational governance, ethical responsibility, and long-term vision support sustainability-oriented institutional transformation.

The paper synthesizes illustrative global practices from Europe, the United States, and the Middle East to demonstrate how women leaders foster interdisciplinary collaboration, participatory governance, experiential sustainability learning, and community-based environmental engagement. The analysis highlights that women leaders play a pivotal role in embedding sustainability into institutional culture, strengthening sustainability competencies

among students and faculty, and aligning university practices with broader green economy objectives.

The study contributes an integrated conceptual framework positioning green learning communities as mediating structures linking women's leadership practices to sustainable institutional outcomes. It argues that expanding women's representation in higher education leadership is not only a matter of gender equity but also a strategic imperative for enhancing institutional resilience, advancing sustainability agendas, and accelerating green economic and social transformation.

Keywords: Women's Leadership, Sustainability, Higher Education, Green Learning Communities, Gender Equity, Transformational Leadership, Green Economy

1. Introduction

Higher education institutions are increasingly recognized as critical actors in addressing global sustainability challenges. As centers of knowledge production, innovation, and social transformation, universities are uniquely positioned to contribute to the achievement of the United Nations' Sustainable Development Goals (SDGs). The urgency of climate change, environmental degradation, and the global transition toward a green economy has placed higher education under growing pressure to embed sustainable and environmentally responsible practices into teaching, research, and institutional governance. Universities are therefore expected not only to prepare graduates with the skills and knowledge necessary to navigate a rapidly changing world, but also to model sustainable practices within their own operations and communities (United Nations, 2015).

Within this broader sustainability landscape, the concept of green learning communities has emerged as a promising framework for fostering sustainable transformation in higher education. Green learning communities are participatory and collaborative environments in which students, faculty, administrators, and external stakeholders engage collectively in integrating ecological responsibility into curricula, research, and campus life. These communities emphasize interdisciplinary collaboration, experiential learning, and community engagement, creating spaces where sustainability is embedded as a shared institutional practice rather than treated as an isolated or peripheral initiative. By cultivating green learning communities, universities can move beyond symbolic commitments and accelerate the development of sustainable institutional cultures that contribute meaningfully to societal and economic transformation.

Despite growing scholarly and institutional attention to sustainability in higher education, one critical dimension remains underexplored: the role of women leaders in shaping green learning communities. Leadership within higher education has historically been dominated by men, and women continue to face structural and cultural barriers to advancement into senior leadership positions. Yet evidence increasingly suggests that women leaders play a pivotal role in advancing sustainability agendas and ensuring that institutional reforms are inclusive and socially responsive. As noted in UNESCO (2025), women's leadership is increasingly recognized as essential for equitable and sustainable institutional transformation.

The intersection of gender and sustainability leadership offers a critical lens for understanding how universities can more effectively embed ecological responsibility into their organizational cultures. Women leaders frequently challenge hierarchical governance structures and promote inclusive decision-making processes that prioritize community building,

interdisciplinary collaboration, and the empowerment of marginalized voices. Examining women's leadership in this context therefore provides valuable insight into how gender equity can strengthen sustainability-oriented learning environments and support long-term institutional change.

The central problem addressed in this paper is the limited integration of gender perspectives into sustainability leadership within higher education. While the existing literature on sustainability in universities has expanded considerably, much of this work focuses on institutional policies, curricular reforms, or technological innovations. Far fewer studies explicitly examine how women leaders influence the development and governance of green learning communities or how gendered leadership practices shape sustainability outcomes. This gap is significant, as it overlooks the strategic potential of women's leadership to drive inclusive, effective, and socially just sustainability transformations within higher education institutions. Addressing this gap is essential for understanding how inclusive leadership can accelerate sustainability transitions in higher education.

The aim of this paper is therefore to analyze the contribution of women leaders in developing green learning communities within higher education. By foregrounding the gender dimension in sustainability debates, the study seeks to enrich academic discussions and offer practical insights for policymakers and institutional leaders. The central research question guiding this inquiry is: In what ways do women leaders influence the development, implementation, and cultural integration of green learning communities in higher education institutions?

To address this question, the paper adopts a conceptual and theoretical approach grounded in feminist leadership theory, transformational leadership, and sustainability leadership

frameworks. These perspectives provide a lens for examining how women's leadership styles shape collaborative, inclusive, and environmentally conscious learning environments. The analysis also draws on illustrative global practices and case examples in which women leaders have advanced green innovation, integrated sustainability into curricula, and fostered positive environmental behaviors among students and faculty. Through this examination, the paper identifies pathways through which women leaders can strengthen green learning communities and support universities' contributions to the green economy.

The significance of this research lies in its potential to bridge two critical areas of inquiry: gender equity and sustainability in higher education. By highlighting women leaders as central agents of sustainable transformation, the paper contributes to a more nuanced understanding of how leadership practices shape institutional sustainability outcomes. It also offers practical recommendations for policymakers, university administrators, and educators seeking to promote gender-responsive leadership and advance sustainability agendas. Ultimately, this research underscores the importance of recognizing and supporting women leaders as strategic contributors to the future of higher education and its role in addressing global environmental challenges.

This paper offers a novel conceptual framework linking women's leadership to green learning communities, thereby providing new theoretical insight into sustainability leadership and institutional transformation. In addition, the study offers timely and policy-relevant insights for multiple stakeholders in higher education. For policymakers, it demonstrates how expanding women's leadership can strengthen sustainability governance and accelerate green economy transitions. For university leaders, it provides a conceptual roadmap for embedding green learning communities into institutional strategy, leadership structures, and campus culture. For

researchers, it provides a foundation for future empirical investigation into gender-responsive sustainability leadership in higher education.

2. Conceptual and Theoretical Background

2.1 Green Economy and Sustainability in Higher Education

The concept of the green economy has gained significant prominence as governments, institutions, and societies seek pathways for economic development that are environmentally sustainable and socially inclusive. Broadly, the green economy emphasizes low-carbon growth, resource efficiency, and the integration of environmental considerations into economic and organizational decision-making (United Nations Environment Programme [UNEP], 2011). Within this framework, sustainability is no longer understood solely as an environmental concern, but as a multidimensional approach that balances economic viability, social equity, and ecological responsibility. As key knowledge-producing institutions, universities are increasingly recognized as strategic actors in advancing the green economy by shaping research agendas, educating future leaders, and modeling sustainable organizational practices (Lozano et al., 2015; Sterling, 2016). As labor markets continue to demand sustainability competencies, universities play a crucial role in preparing graduates who can contribute meaningfully to green economic transitions (Brundiens et al., 2021).

In the context of higher education, sustainability has evolved from isolated environmental initiatives toward more comprehensive institutional strategies. Universities contribute to the green economy not only through scientific innovation and technological development, but also by fostering sustainability-oriented learning environments and governance structures (Leal Filho et al., 2019). This includes embedding sustainability into curricula, promoting interdisciplinary

collaboration, and aligning institutional missions with broader societal and environmental goals. However, despite this growing commitment, many institutions continue to approach sustainability through fragmented programs rather than integrated cultural transformation. This limitation highlights the importance of organizational frameworks—such as green learning communities—that connect sustainability principles with everyday teaching, leadership, and institutional practice (Sterling, 2016).

Beyond curricular innovation and skills development, sustainability in higher education increasingly requires a shift in institutional governance and organizational culture. Universities operate as complex systems in which leadership, policy frameworks, and institutional norms shape how sustainability priorities are enacted and sustained over time (Kezar & Holcombe, 2017). Effective contributions to the green economy therefore depend not only on technological solutions or individual initiatives, but also on coherent governance structures that integrate sustainability into decision-making processes, resource allocation, and long-term strategic planning. This institutional perspective underscores the need for leadership approaches that can navigate complexity, foster collaboration across departments, and align sustainability goals with broader academic and societal missions (Lozano et al., 2015).

Despite widespread commitments to sustainability, many universities continue to face challenges in translating strategic objectives into everyday institutional practice. Sustainability initiatives are often implemented through short-term projects or isolated units, limiting their impact and long-term viability (Leal Filho et al., 2019). These challenges highlight the importance of institutional mechanisms that encourage participation, shared ownership, and cross-disciplinary engagement. In this context, green learning communities emerge as a critical organizational response, offering a structure through which sustainability principles can be

embedded into teaching, leadership, and institutional culture. By situating sustainability within collaborative learning environments, universities can strengthen their capacity to contribute to green economic transitions in ways that are both durable and inclusive (Wenger, 1998; Brundiens et al., 2021).

2.2 Green Learning Communities in Higher Education

Green learning communities have emerged as an important organizational and pedagogical response to the growing demand for sustainability-oriented transformation in higher education. Unlike traditional instructional models that treat sustainability as a standalone topic or elective area, green learning communities integrate environmental responsibility into the core structures of teaching, learning, and institutional engagement. These communities bring together students, faculty, administrators, and, in many cases, external partners to collaboratively address sustainability challenges through interdisciplinary learning, experiential projects, and shared governance (Wenger, 1998; Kezar & Holcombe, 2017; Kuh, 2008). By fostering sustained interaction around sustainability goals, green learning communities support deeper learning and promote collective ownership of institutional change.

Within higher education, green learning communities function not only as pedagogical spaces but also as mechanisms for cultural and organizational transformation. They enable universities to move beyond fragmented sustainability initiatives by embedding ecological values into everyday academic practice. Through project-based learning, community engagement, and cross-disciplinary collaboration, green learning communities connect theory with practice and create opportunities for students and educators to apply sustainability principles in real-world contexts (Brundiens et al., 2021; Leal Filho et al., 2019). By integrating sustainability into shared governance structures, green learning communities help institutionalize long-term cultural

change, ensuring that sustainability becomes an institutional priority rather than a temporary initiative.

In addition to supporting institutional transformation, green learning communities play a critical role in developing sustainability competencies that are increasingly valued within the green economy. These competencies include systems thinking, collaborative problem-solving, ethical reasoning, and the ability to address complex socio-environmental challenges (Brundiers et al., 2021). By situating sustainability learning within collaborative and practice-oriented environments, universities strengthen their capacity to prepare graduates who can contribute meaningfully to green economic transitions while reinforcing their broader social and environmental responsibilities.

Despite their potential, the implementation of green learning communities is not without challenges. Universities often encounter institutional resistance, fragmented governance structures, and limited resources that can constrain the long-term sustainability of such initiatives. In some contexts, sustainability efforts remain dependent on individual champions rather than being fully embedded within institutional systems (Lozano et al., 2015; Sterling, 2016). These challenges highlight the importance of supportive leadership, clear institutional commitment, and inclusive governance structures to sustain green learning communities over time. When effectively supported, green learning communities can move beyond short-term projects and become enduring platforms for organizational learning, cultural change, and institutional alignment with green economy goals.

2.3 Women's Leadership and Sustainability

Leadership has been widely recognized as a central driver of sustainability initiatives within higher education institutions. As universities navigate complex environmental, social, and economic challenges, leadership practices increasingly shape how sustainability agendas are defined, implemented, and sustained over time (Lozano et al., 2015; Sterling, 2016). Within this context, women's leadership has gained growing scholarly attention for its potential to support more inclusive, collaborative, and values-driven approaches to institutional change. However, despite this emerging recognition, women remain underrepresented in senior leadership positions across higher education systems globally, limiting the influence of their perspectives on sustainability governance and decision-making (UNESCO, 2025).

Research on women's leadership highlights leadership orientations that align closely with the principles of sustainability. Feminist leadership theories emphasize relationality, shared power, inclusivity, and attentiveness to social justice, challenging traditional hierarchical and managerial models of leadership (Batliwala, 2010). Similarly, transformational leadership frameworks underscore the importance of ethical responsibility, collective vision, and long-term institutional commitment in fostering organizational change (Shields, 2010; Bass & Riggio, 2006).

In the context of higher education, women leaders often play a critical role in advancing sustainability initiatives that extend beyond technical or policy-driven solutions. Their leadership approaches emphasize community building, interdisciplinary collaboration, and participatory decision-making, creating conditions conducive to the development and sustainability of green learning communities (Kezar & Holcombe, 2017). Such communities rely on trust, shared responsibility, and relational governance—elements that are often marginalized in traditional leadership models but foregrounded in women's leadership practices. As a result, women leaders

are uniquely positioned to support sustainability initiatives that are not only environmentally effective but also socially inclusive and institutionally embedded.

Despite these contributions, the continued underrepresentation of women in academic leadership constrains sustainability efforts within universities. When women's voices are absent from senior decision-making spaces, opportunities to integrate gender-responsive and inclusive sustainability strategies are reduced (UNESCO, 2025). This underrepresentation is not solely an issue of equity; it also limits institutions' capacity to address sustainability challenges holistically. Understanding how women leaders contribute to sustainability leadership is therefore essential for strengthening green learning communities and advancing more inclusive and effective sustainability transformations in higher education.

2.4 Linking Women's Leadership to Green Learning Communities

Linking women's leadership to the development of green learning communities provides a critical integrative perspective for understanding sustainability transformation in higher education. While the green economy framework highlights the need for institutions to align economic, social, and environmental priorities (UNEP, 2011), and green learning communities offer organizational mechanisms for embedding sustainability into teaching and institutional practice (Wenger, 1998; Kezar & Holcombe, 2017), leadership functions as a connective force enabling these elements to coalesce into sustained institutional change. In this context, women's leadership emerges as particularly relevant for fostering the collaborative, participatory, and values-driven environments required for effective green learning communities.

Women's leadership approaches, as articulated in feminist and transformational leadership theories, emphasize relational governance, shared power, and ethical responsibility

(Batliwala, 2010; Shields, 2010). Unlike hierarchical leadership models that may prioritize efficiency or compliance, women's leadership practices often foreground dialogue, inclusion, and long-term vision—qualities that support the cultivation of trust and engagement across diverse institutional actors (Eagly & Carli, 2007). As a result, women leaders are well positioned to create the organizational conditions under which green learning communities can thrive.

Within higher education institutions, green learning communities require leadership that can navigate organizational complexity and bridge traditionally siloed academic units. Women leaders frequently play a key role in facilitating cross-departmental collaboration, integrating sustainability into shared governance structures, and encouraging participatory decision-making processes (Kezar & Holcombe, 2017). By fostering inclusive leadership practices, women leaders help institutionalize sustainability beyond isolated projects or individual initiatives.

Moreover, the relationship between women's leadership and green learning communities has important implications for advancing sustainability competencies aligned with the green economy. Green learning communities emphasize experiential learning, systems thinking, and collective problem-solving—competencies that are increasingly valued in sustainability-oriented labor markets (Brundiers et al., 2021). Through their leadership roles, women leaders promote pedagogical practices that connect environmental theory with real-world application, community engagement, and social justice. This integrative approach strengthens universities' capacity to prepare graduates who can contribute meaningfully to green economic transitions while also advancing institutional commitments to equity and inclusion.

Despite this potential, the underrepresentation of women in senior leadership positions continues to constrain the development and sustainability of green learning communities. When leadership structures exclude women's perspectives, opportunities to integrate gender-responsive

and inclusive sustainability strategies are diminished (UNESCO, 2025). This limitation underscores the importance of addressing gender equity not only as a matter of representation but also as a strategic dimension of sustainability leadership. Strengthening women's leadership within higher education institutions can therefore enhance the effectiveness, durability, and inclusivity of green learning communities.

By linking women's leadership to green learning communities, this study highlights leadership as a central mechanism through which sustainability transitions can be institutionalized in higher education. This integrative perspective provides the foundation for the conceptual framework developed in the following section, which illustrates how women's leadership practices interact with organizational structures and pedagogical strategies to support sustainable institutional transformation and contribute to broader green economy goals.

3. Conceptual Framework

This study adopts a conceptual framework that explains how women's leadership contributes to the development and sustainability of green learning communities within higher education institutions, and how these communities, in turn, support broader green economy outcomes. The framework is grounded in the theoretical perspectives discussed in Section 2, including feminist leadership theory, transformational leadership, sustainability leadership, and organizational learning approaches. Together, these perspectives provide an integrated lens for understanding sustainability as both a leadership-driven and institutionally embedded process.

At the core of the framework is women's leadership, conceptualized not merely as formal authority but as a set of leadership practices characterized by collaboration, relational governance, inclusivity, ethical responsibility, and long-term vision (Batliwala, 2010; Eagly &

Carli, 2007; Shields, 2010). These leadership orientations challenge traditional hierarchical models and emphasize shared power, participatory decision-making, and social justice, aligning with principles of sustainability and inclusive institutional transformation (UNESCO, 2025).

Green learning communities occupy a central mediating position within the framework. Drawing on organizational learning and communities of practice theory, green learning communities are understood as collaborative structures through which leadership values and sustainability priorities are translated into everyday academic practice (Wenger, 1998). Within higher education, these communities integrate sustainability into curricula, research activities, and shared governance processes, embedding ecological responsibility into institutional culture (Kezar & Holcombe, 2017; Sterling, 2016).

The framework highlights several key processes through which women's leadership strengthens green learning communities. These include fostering interdisciplinary collaboration across academic units, empowering students and faculty to participate in sustainability-related decision-making, and promoting pedagogical practices that connect environmental theory with real-world application (Brundiens et al., 2021).

In addition to shaping learning environments, the conceptual framework emphasizes the role of green learning communities in developing sustainability competencies aligned with the green economy. Through experiential and collaborative learning, students develop systems thinking, ethical reasoning, and collective problem-solving skills that are increasingly demanded in sustainability-oriented labor markets (Brundiens et al., 2021; Leal Filho et al., 2019). Women's leadership practices strengthen this connection by ensuring that sustainability education remains inclusive, socially responsive, and aligned with broader institutional missions and societal needs.

The framework also acknowledges contextual and structural constraints that can limit the effectiveness of green learning communities, including fragmented governance structures and the persistent underrepresentation of women in senior leadership positions within higher education (UNESCO, 2025; Lozano et al., 2015). These constraints can hinder the long-term sustainability of institutional initiatives. However, the framework posits that strengthening women’s leadership—through inclusive governance arrangements, leadership development, and institutional support—can mitigate these barriers and enhance universities’ capacity to sustain transformative sustainability practices.

Overall, this conceptual framework positions leadership as a driving force connecting sustainability goals, organizational structures, and learning practices within higher education. By clarifying the relationships between women’s leadership, green learning communities, and sustainability outcomes, the framework provides a foundation for analyzing global practices and identifying strategies that support inclusive, durable, and effective contributions to the green economy. The following section builds on this framework by examining illustrative cases and practices that demonstrate how these relationships operate in diverse higher education contexts.

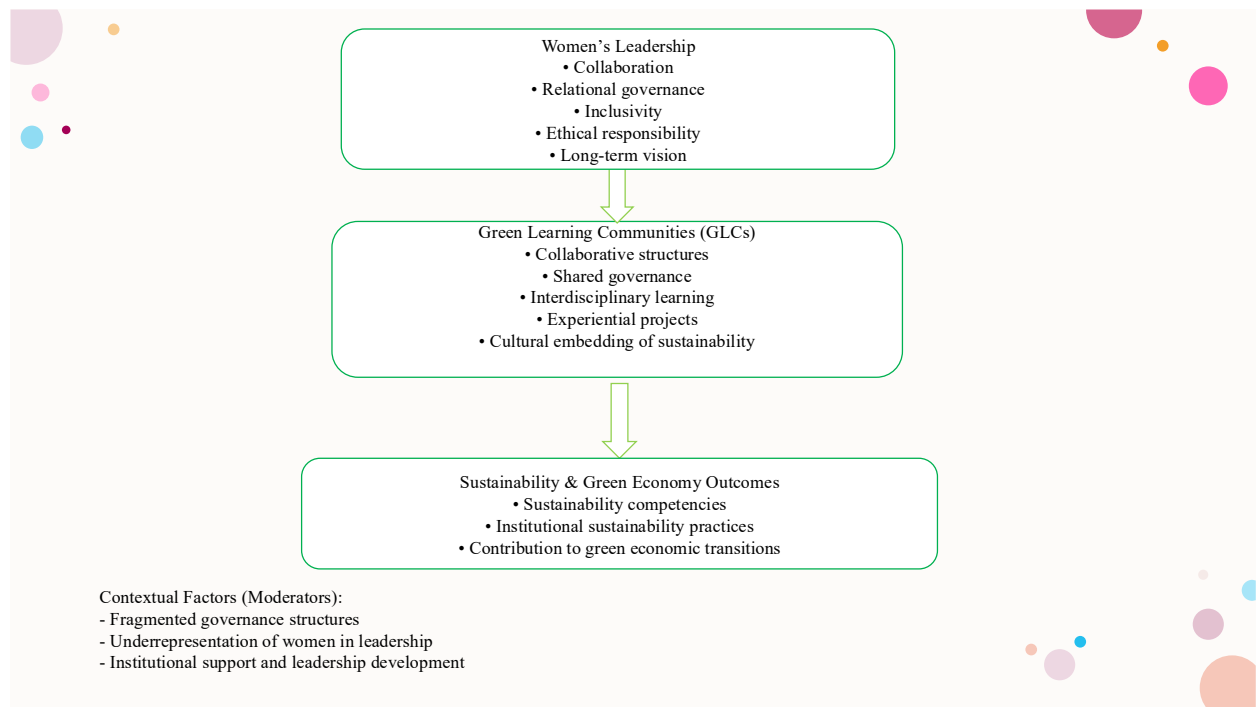


Figure 1. Conceptual framework linking women’s leadership, green learning communities, and sustainability outcomes

This conceptual framework illustrates how women’s leadership—characterized by collaboration, relational governance, inclusivity, ethical responsibility, and long-term vision—functions as a driving force in strengthening green learning communities within higher education institutions. Green learning communities operate as mediating structures that translate leadership values into collaborative learning environments, shared governance practices, and embedded sustainability initiatives. These processes, in turn, contribute to the development of sustainability competencies and broader green economy outcomes. The framework also acknowledges contextual constraints, including fragmented governance structures and the underrepresentation of women in leadership, which may shape the effectiveness of these relationships.

3.1 Approach and Scope

This paper adopts a conceptual and illustrative approach to examine how women’s leadership can strengthen green learning communities (GLCs) within higher education and support broader sustainability and green economy outcomes. Rather than offering an empirical comparison across countries or ranking regions, the paper synthesizes practice-informed insights and selected examples from Europe, the United States, and the Middle East. These cases are used to highlight context-sensitive leadership strategies, governance pathways, and institutional conditions that enable sustainability to become culturally embedded through collaborative learning structures. By emphasizing variation in policy environments, institutional capacity, and governance arrangements, the analysis demonstrates how women’s sustainability leadership is locally shaped while retaining broader relevance across global higher education systems (Wals, 2014; Sterling, 2016; Leal Filho et al., 2019).

4. Global Practices, Theoretical Implications, and Institutional Impact of Women’s Leadership on Green Learning Communities

4.0 Global Practices and Illustrative Cases

Across global higher education systems, sustainability initiatives increasingly depend on organizational and cultural change—not only technical innovation or isolated environmental programs. In this context, green learning communities (GLCs) offer a practical structure through which sustainability can be embedded into teaching, shared governance, and campus culture. Emerging scholarship suggests that sustainability efforts are most effective when supported by leadership approaches that prioritize inclusivity, shared ownership, and long-term institutional commitment (Wals, 2014; Leal Filho et al., 2019). This section synthesizes illustrative global practices to demonstrate how women leaders can strengthen green learning communities through collaborative governance, interdisciplinary engagement, and community-connected sustainability

work. The cases are selected as illustrative examples based on prominence in sustainability scholarship and relevance to the study's conceptual framework. They demonstrate how women's leadership orientations can translate sustainability values into institutional practices that support green economy outcomes (Sterling, 2013; UNESCO, 2025).

4.1 Europe: Women's Leadership and Green Learning Communities in European Higher Education

Across European higher education systems, women leaders have played an increasingly influential role in advancing sustainability agendas and fostering institutional cultures supportive of green learning communities. European universities have been at the forefront of integrating sustainability into teaching, research, and governance, often aligning institutional strategies with the European Green Deal and the United Nations' Sustainable Development Goals (Lozano et al., 2015; Sterling, 2016). For example, institutions such as the University of Gothenburg in Sweden have been recognized for integrating sustainability across curricula, research, and campus governance, offering a concrete institutional model for green learning communities. Within this context, women in leadership positions have contributed to embedding sustainability as a core academic and organizational priority rather than treating it as a peripheral or project-based initiative.

In several European institutions, women-led sustainability initiatives have emphasized interdisciplinary curriculum design, participatory governance, and experiential learning models that connect environmental theory with real-world practice. Women academic leaders have supported the development of sustainability-focused programs that integrate climate education, environmental ethics, and responsible innovation across disciplines, strengthening students' sustainability competencies and systems thinking skills (Leal Filho et al., 2019; Brundiens et al.,

2021). These efforts support green learning communities by promoting collaboration among faculty, students, and external stakeholders in addressing complex environmental challenges.

Moreover, women leaders in European higher education have been instrumental in promoting inclusive and relational governance structures that support the long-term institutionalization of sustainability. By fostering shared leadership, community engagement, and cross-departmental collaboration, they have helped create organizational environments in which sustainability becomes embedded within everyday academic practice rather than confined to isolated administrative units (Kezar & Holcombe, 2017; Wenger, 1998). Such governance approaches strengthen green learning communities by reinforcing collective ownership of sustainability goals and encouraging sustained participation across institutional levels.

European research further suggests that sustainability initiatives are most effective when supported by leadership approaches that emphasize ethical responsibility, long-term vision, and social equity—qualities frequently associated with women’s leadership styles (Eagly & Carli, 2007; Shields, 2010). These leadership orientations contribute to building institutional trust, supporting interdisciplinary collaboration, and ensuring that sustainability strategies address both environmental and social dimensions of development. As a result, women leaders are well positioned to advance sustainability transitions that align with the broader objectives of the green economy and inclusive societal transformation.

Despite these advances, women remain underrepresented in senior leadership roles across many European higher education systems, limiting their potential influence on institutional sustainability strategy and governance (Morley, 2013; UNESCO, 2025). Addressing these structural barriers is therefore essential not only for advancing gender equity but also for strengthening universities’ capacity to develop robust green learning communities and contribute

meaningfully to regional and global sustainability goals. Expanding women's leadership in European higher education represents a strategic opportunity to enhance institutional resilience, deepen sustainability integration, and accelerate progress toward green economic and environmental transitions.

4.2 Global Practices in the United States: Women's Leadership, Sustainability, and Green Learning Communities

In the United States, higher education institutions have played a leading role in advancing sustainability initiatives that align with green economy objectives, climate action, and environmental responsibility. Many American universities have adopted comprehensive sustainability strategies that integrate environmental goals into curriculum development, campus operations, research agendas, and community partnerships (Lozano et al., 2015; Leal Filho et al., 2021). For example, Arizona State University has been widely recognized for embedding sustainability across academic programs, research initiatives, and community partnerships, demonstrating how institutional leadership can support green learning communities at scale. Within this context, women leaders have increasingly contributed to shaping sustainability-driven institutional cultures through collaborative leadership, interdisciplinary engagement, and inclusive governance practices.

Several U.S. universities have implemented campus-wide sustainability programs led or coordinated by women in senior academic and administrative roles. These initiatives often emphasize experiential learning, student-centered sustainability projects, and cross-departmental collaboration to embed sustainability into teaching and institutional practice (Brundiers et al., 2021). Women-led sustainability offices and academic programs have promoted climate literacy,

renewable energy research, sustainable business education, and green campus operations, illustrating how leadership can translate sustainability goals into tangible institutional outcomes.

In addition to operational sustainability, women leaders in U.S. higher education have played a critical role in fostering green learning communities that connect sustainability education with civic engagement and community-based environmental action. Through service-learning, participatory research, and partnerships with local governments and non-profit organizations, these leaders have expanded sustainability learning beyond classroom boundaries and into real-world contexts (Wals, 2014; Kezar & Holcombe, 2017). These practices support systems thinking, ethical reasoning, and collective problem-solving.

Women's leadership in the U.S. context has also been associated with efforts to integrate diversity, equity, and inclusion into sustainability initiatives. Recognizing that environmental challenges intersect with social inequality, women leaders have promoted sustainability strategies that address environmental justice, equitable access to green opportunities, and the inclusion of marginalized communities in decision-making processes (UNESCO, 2025; Morley, 2013). This intersectional approach strengthens green learning communities by ensuring that sustainability education remains socially responsive and culturally inclusive.

Despite these advancements, structural barriers continue to limit women's representation in senior leadership positions across American higher education institutions. Persistent gender gaps in executive roles may constrain the broader institutional adoption of inclusive sustainability leadership models (Morley, 2013; Eagly & Carli, 2007). Nonetheless, emerging evidence suggests that expanding women's leadership within U.S. universities can enhance the effectiveness of sustainability initiatives by reinforcing participatory governance, long-term strategic planning, and institutional commitment to green innovation.

Overall, the U.S. context demonstrates how women's leadership can strengthen green learning communities by aligning sustainability education, institutional governance, and community engagement with green economy goals. These global practices provide valuable insights into how inclusive leadership can support environmentally sustainable, socially equitable, and institutionally embedded sustainability transformations within higher education.

4.3 Global Practices in the Middle East: Women's Leadership, Sustainability, and Green Learning Communities

Across the Middle East, higher education institutions are increasingly engaging with sustainability agendas in response to environmental challenges such as climate change, water scarcity, energy transition, and sustainable urban development. Governments and universities in the region have launched national and institutional strategies aligned with green economy objectives, renewable energy goals, and sustainable development frameworks (United Nations, 2015; UNESCO, 2020). For example, King Abdullah University of Science and Technology (KAUST) in Saudi Arabia has advanced sustainability research and interdisciplinary education in areas such as renewable energy and environmental science, illustrating how institutional leadership can contribute to the development of green learning communities in the region. Within this evolving sustainability landscape, women leaders have begun to play a growing role in shaping sustainability initiatives, educational innovation, and green institutional transformation.

In several Middle Eastern countries, women in academic leadership positions have contributed to integrating sustainability into higher education curricula, research programs, and community engagement initiatives. These efforts often emphasize interdisciplinary collaboration, environmental awareness, and capacity-building for sustainable development. Women-led

initiatives in universities across the Gulf region have supported research in renewable energy, sustainable business, climate resilience, and green entrepreneurship, demonstrating how leadership can connect academic knowledge with national sustainability priorities (Leal Filho et al., 2021; Lozano et al., 2015).

Women leaders in the Middle East have also contributed to the development of green learning communities that link sustainability education with civic responsibility and community-based environmental action. Through service-learning programs, sustainability-focused student organizations, and partnerships with local communities, women academic leaders have fostered participatory learning environments that encourage students to apply environmental knowledge to real-world challenges (Wals, 2014; Brundiers et al., 2021). These initiatives reflect the core principles of green learning communities by promoting experiential learning, shared governance, and collective problem-solving.

Importantly, sustainability initiatives led by women in the Middle East frequently intersect with broader goals related to social inclusion, youth empowerment, and women's participation in economic and civic life. By advocating for gender equity in sustainability governance and promoting women's representation in environmental leadership, women academic leaders contribute to more inclusive and socially responsive sustainability strategies (UNESCO, 2025; Morley, 2013). This intersectional approach strengthens green learning communities by embedding sustainability within broader frameworks of social justice, equity, and community resilience.

Despite these advances, women leaders in Middle Eastern higher education continue to face cultural, institutional, and structural barriers that limit their access to senior leadership positions. Gendered norms, organizational hierarchies, and policy constraints may restrict

women's influence over sustainability strategy and institutional governance (Eagly & Carli, 2007; Morley, 2013). However, expanding leadership pathways for women—through policy reforms, leadership development programs, and institutional support—holds significant potential to strengthen sustainability initiatives and accelerate green transformation in the region.

Overall, global practices in the Middle East illustrate that women's leadership can serve as a critical catalyst for advancing sustainability education, strengthening green learning communities, and aligning higher education with green economy goals. By fostering collaborative governance, interdisciplinary learning, and inclusive sustainability approaches, women leaders in Middle Eastern universities contribute to environmentally responsible, socially equitable, and future-oriented institutional transformation.

4.4 Context-Sensitive Insights on Women's Leadership and Sustainability

Women's leadership in sustainability initiatives operates within diverse institutional, cultural, and socio-economic contexts that shape both opportunities and constraints for institutional change. Rather than assuming a universal model of effective leadership, this study emphasizes context-sensitive approaches that recognize how women leaders adapt sustainability strategies to local institutional structures, governance systems, and societal priorities. Across regions, women's leadership practices reflect varying degrees of institutional support, resource availability, and policy alignment, all of which influence the development and sustainability of green learning communities.

In contexts where higher education institutions benefit from strong governance frameworks and dedicated sustainability infrastructure, women leaders often leverage formal leadership roles to institutionalize sustainability through strategic planning, curricular reform,

and cross-sector partnerships. In contrast, in settings characterized by limited resources or fragmented institutional systems, women leaders may rely more heavily on informal leadership, grassroots organizing, and community-based initiatives to advance sustainability goals. These variations highlight that women's leadership does not follow a single trajectory but rather evolves in response to contextual realities and institutional capacities.

Importantly, a context-sensitive perspective underscores that sustainability leadership should not be evaluated solely through standardized benchmarks or externally imposed models. Instead, women leaders' contributions to sustainability must be understood in relation to the structural conditions they navigate, the communities they serve, and the socio-cultural norms shaping their leadership pathways. This approach allows for a more equitable and nuanced understanding of how women drive sustainability transformations in diverse higher education environments.

By adopting a context-sensitive lens, this study reinforces the adaptability of the proposed conceptual framework across multiple institutional and regional settings. Rather than prescribing a singular pathway for advancing sustainability, the framework recognizes that effective green learning communities emerge through leadership practices that are responsive to local needs, inclusive of diverse voices, and aligned with broader social and environmental objectives. This perspective strengthens the global relevance of the study by demonstrating that women's leadership in sustainability is both locally grounded and globally significant.

4.5 Theoretical Implications

This study offers several important theoretical contributions to the literature on sustainability in higher education, leadership studies, and green economy frameworks. First, it

extends existing scholarship on sustainability leadership by foregrounding women's leadership as a central theoretical driver of green institutional transformation. While prior research has examined sustainability governance, institutional policies, and technological innovation in universities (Leal Filho et al., 2019; Sterling, 2013), fewer studies have explicitly theorized how gendered leadership practices shape sustainability-focused learning environments. By integrating feminist leadership theory, transformational leadership, and sustainability leadership frameworks, this paper advances a more nuanced and inclusive theoretical model for understanding institutional sustainability change.

Second, this research contributes to leadership theory by highlighting the alignment between women's leadership orientations and the relational, collaborative, and participatory structures required for effective green learning communities. Feminist leadership scholarship emphasizes shared power, ethical responsibility, inclusivity, and social justice (Blackmore, 2013; Fletcher, 2004), while transformational leadership theory underscores vision-building, collective motivation, and long-term institutional commitment (Bass & Riggio, 2006). This study synthesizes these perspectives to theorize how women's leadership styles can serve as enabling conditions for sustainability-oriented organizational cultures, thereby extending leadership theory into the domain of environmental and institutional transformation.

Third, the study contributes to conceptual understandings of green learning communities by positioning them as mediating structures that translate leadership values into institutional practice. Existing literature on learning communities has emphasized their role in student engagement, interdisciplinary learning, and student success (Kuh, 2008; Zhao & Kuh, 2004). Building on this foundation, this research theorizes green learning communities as organizational mechanisms that embed sustainability into governance, pedagogy, and campus culture. By

linking leadership theory with learning community frameworks, the paper advances a conceptual model that explains how sustainability becomes institutionalized through relational leadership and collective learning processes.

Finally, this research enriches sustainability theory in higher education by integrating gender equity as a core analytical dimension rather than a peripheral concern. As sustainability increasingly encompasses social justice, equity, and ethical responsibility alongside environmental priorities (UNESCO, 2020; Wals, 2014), this study demonstrates that inclusive leadership is not only normatively desirable but also theoretically necessary for effective sustainability transitions. Addressing this gap contributes to a more comprehensive theoretical framework that connects leadership, gender, learning communities, and green economy outcomes within higher education institutions.

4.6 Implications for Higher Education Leadership

The findings of this study carry important implications for leadership in higher education, particularly in relation to sustainability, institutional transformation, and inclusive governance. As universities confront complex environmental, social, and economic challenges, leadership approaches that prioritize collaboration, equity, and long-term vision are necessary to guide meaningful and durable institutional change. This research suggests that women's leadership offers valuable approaches for advancing sustainability agendas through relational, participatory, and values-driven leadership practices.

First, the study underscores the need for higher education institutions to recognize and support leadership models that move beyond traditional hierarchical and managerial frameworks. Women leaders often emphasize shared governance, collective decision-making, and community

engagement—approaches that align closely with the collaborative structures required for effective green learning communities (Blackmore, 2013; Fletcher, 2004). Institutional leaders can leverage these leadership orientations by promoting distributed leadership models that empower faculty, students, and staff to participate actively in sustainability initiatives and organizational innovation.

Second, the findings highlight the importance of expanding women’s representation in senior leadership positions as a strategic priority for universities. Persistent gender inequities in academic leadership not only limit diversity in decision-making but also constrain institutions’ capacity to implement inclusive and socially responsive sustainability strategies (Morley, 2013; UNESCO, 2025). Higher education leaders are therefore encouraged to adopt targeted policies that address structural barriers to women’s advancement, including mentorship programs, leadership development initiatives, transparent promotion processes, and institutional accountability mechanisms.

Third, this research points to the critical role of leadership in embedding sustainability into institutional culture rather than treating it as a peripheral or short-term initiative. Leaders who integrate sustainability into mission statements, strategic plans, curriculum frameworks, and governance structures can facilitate deeper organizational alignment with green economy goals (Leal Filho et al., 2021; Sterling, 2013). Women’s leadership practices—often characterized by ethical responsibility, long-term commitment, and social justice orientations—can support the institutionalization of sustainability as a core academic and organizational value.

Additionally, the study suggests that leadership development programs in higher education should explicitly incorporate sustainability competencies and gender-responsive leadership training. Preparing current and future leaders to navigate sustainability challenges

requires cultivating systems thinking, ethical reasoning, and collaborative problem-solving capacities (Wals, 2014; Wals & Benavot, 2017). Integrating these competencies into professional development initiatives can strengthen universities' ability to respond effectively to environmental challenges while promoting inclusive leadership cultures.

Finally, this research emphasizes that effective sustainability leadership in higher education is not solely a matter of individual capacity but also of institutional commitment. Creating supportive organizational environments—through inclusive governance frameworks, equitable leadership pathways, and sustained investment in sustainability initiatives—is essential for enabling women leaders to exert meaningful influence on institutional strategy and transformation. By embracing leadership approaches that value collaboration, equity, and long-term impact, higher education institutions can strengthen their capacity to foster green learning communities and contribute to broader sustainability and green economy objectives.

4.7 Implications for Sustainability and the Green Economy

This study also offers important implications for sustainability policy, institutional strategy, and the broader transition toward a green economy. As governments and industries increasingly prioritize low-carbon growth, resource efficiency, and sustainable innovation, higher education institutions play a strategic role in preparing graduates with the competencies required for green economic transitions (Leal Filho et al., 2021; UNESCO, 2020). Universities are not only knowledge producers but also critical incubators for sustainability-focused mindsets, skills, and leadership capacities.

By demonstrating how women's leadership strengthens green learning communities, this research highlights leadership diversity as a key lever for advancing sustainability outcomes at

both institutional and societal levels. Green learning communities foster systems thinking, ethical reasoning, interdisciplinary collaboration, and collective problem-solving—competencies that are increasingly valued within emerging green labor markets (Wals, 2014; Sterling, 2013). These competencies enhance workforce readiness in sectors related to renewable energy, sustainable business, environmental governance, and social innovation.

Furthermore, this study suggests that sustainability transitions are more likely to succeed when leadership structures reflect inclusive, participatory, and socially responsive values. Women leaders' emphasis on collaboration, long-term vision, and social justice contributes to sustainability strategies that extend beyond environmental performance toward broader socio-economic transformation. This aligns with global sustainability frameworks that emphasize the interconnectedness of environmental integrity, economic resilience, and social equity (UNESCO, 2020; United Nations, 2015).

From a policy perspective, the findings underscore the importance of investing in gender-responsive leadership development and institutional reforms that expand women's representation in sustainability governance. Supporting women leaders in higher education can enhance universities' capacity to generate green innovation, strengthen institutional sustainability practices, and contribute meaningfully to national and global green economy goals (Leal Filho et al., 2021; Morley, 2013).

Ultimately, this research reinforces the argument that sustainability and green economic transitions are not only technological or financial challenges but also leadership and governance challenges. By positioning women's leadership and green learning communities as interconnected drivers of sustainable transformation, the study contributes a framework for

understanding how inclusive leadership can accelerate progress toward environmentally resilient, socially just, and economically sustainable futures.

4.8 Practical Implications for Policymakers and University Leaders

The conceptual insights in this study carry important practical implications for policymakers, higher education leaders, and institutional decision-makers seeking to strengthen sustainability efforts and accelerate green economy transitions. By highlighting the role of women's leadership in fostering green learning communities, this research underscores leadership diversity as a strategic lever for embedding sustainability into institutional culture, governance, and academic practice.

For policymakers, the findings suggest the need to prioritize gender-responsive leadership frameworks within national higher education and sustainability strategies. Expanding women's representation in senior academic and administrative roles can enhance the effectiveness of sustainability governance, support inclusive policy design, and strengthen universities' alignment with national and global green economy objectives. Investments in leadership development programs, equitable promotion pathways, and accountability mechanisms are essential to ensure that women's leadership potential is fully realized in sustainability-related decision-making.

For university leaders, the study provides actionable guidance on institutionalizing green learning communities as platforms for sustainability innovation. Embedding sustainability into strategic plans, curriculum frameworks, faculty development initiatives, and shared governance structures can help ensure that sustainability moves beyond isolated projects toward long-term institutional transformation. Leaders are encouraged to adopt collaborative and distributed

leadership models that empower students, faculty, and staff to participate actively in sustainability initiatives and green innovation.

Additionally, institutional leaders can leverage women's leadership strengths—such as relational governance, inclusivity, ethical responsibility, and long-term vision—to foster organizational cultures that support interdisciplinary collaboration, experiential learning, and community-engaged sustainability work. By doing so, universities can strengthen sustainability competencies among graduates, enhance institutional resilience, and expand their contributions to environmentally sustainable and socially equitable economic development.

Overall, this study suggests that advancing women's leadership and strengthening green learning communities are mutually reinforcing strategies that can enable higher education institutions to play a more transformative role in shaping sustainable, innovative, and inclusive futures.

5. Discussion

This study advances understanding of how women's leadership can serve as a strategic driver for sustainability transformation in higher education through the development of green learning communities. By integrating feminist leadership theory, transformational leadership, and sustainability leadership frameworks, the paper highlights how leadership approaches grounded in collaboration, relational governance, inclusivity, and long-term vision can strengthen institutional capacity to embed sustainability into teaching, governance, and organizational culture.

The findings suggest that women leaders are uniquely positioned to foster the participatory and interdisciplinary structures required for effective green learning communities.

Their leadership orientations align closely with the relational and community-centered processes necessary to support collective problem-solving, experiential learning, and shared responsibility for sustainability goals. In this sense, green learning communities function as mediating spaces that translate leadership values into tangible institutional practices, bridging the gap between sustainability commitments and everyday academic operations.

At the same time, the discussion underscores that structural barriers—particularly the continued underrepresentation of women in senior leadership roles—limit universities’ ability to fully leverage inclusive leadership for sustainability transformation. This constraint represents not only an equity issue but also a strategic challenge for institutions seeking to accelerate progress toward green economy objectives. When women’s voices and perspectives are marginalized within decision-making structures, opportunities to implement holistic, socially responsive, and environmentally effective sustainability strategies may be diminished.

Importantly, this study reframes sustainability leadership in higher education as both an environmental and social endeavor. By foregrounding gender as a central analytical dimension, the paper contributes to emerging scholarship that recognizes sustainability as encompassing ethical responsibility, equity, and long-term institutional resilience. The conceptual framework developed in this research offers a foundation for future empirical studies and provides a lens through which universities can critically examine how leadership structures, governance models, and learning environments shape their contributions to sustainable development.

Overall, the discussion positions women’s leadership and green learning communities as interconnected mechanisms through which higher education institutions can advance sustainability transitions and strengthen their role in supporting green economic and social transformation.

6. Limitations and Directions for Future Research

Despite its conceptual contributions, this study is subject to several limitations that should be considered when interpreting its findings. First, the research adopts a conceptual and illustrative approach rather than an empirical design. While this enables theoretical integration and broad analytical insight, it reduces the ability to establish causal relationships or generate statistically generalizable conclusions regarding the impact of women's leadership on sustainability and green learning communities (Leal Filho et al., 2021; Wals, 2014).

Second, the paper draws on selected global examples and secondary literature to illustrate leadership practices rather than relying on systematic cross-national or institutional datasets. Consequently, the discussion may not fully capture the diversity of sustainability initiatives or leadership dynamics across all higher education contexts, particularly in underrepresented or resource-constrained regions (Sterling, 2016; Morley, 2013). The cases presented are intended to illuminate emerging patterns and conceptual possibilities rather than provide comprehensive or representative coverage.

Third, while the study foregrounds gender as a central analytical lens, it does not fully account for intersecting dimensions of leadership such as race, ethnicity, socioeconomic status, nationality, and disciplinary background. Leadership experiences and sustainability engagement are shaped by multiple, overlapping identities and structural conditions, suggesting the need for more explicitly intersectional approaches in future research (Blackmore, 2013; Eagly & Carli, 2007).

In addition, the conceptual framework proposed in this paper has not yet been empirically tested across diverse institutional settings. Future research should validate and refine this

framework through qualitative case studies, comparative cross-institutional research, large-scale surveys, and longitudinal analyses to examine how women's leadership practices influence sustainability outcomes over time (Brundiens et al., 2021; Wals & Benavot, 2017).

Finally, the rapidly evolving landscape of sustainability policy, climate governance, and higher education reform suggests that leadership practices and institutional strategies may shift over time. Continued empirical and theoretical inquiry will therefore be essential to ensure that conceptual models remain relevant, context-sensitive, and responsive to emerging environmental, social, and educational challenges (UNESCO, 2025; United Nations, 2015).

Acknowledging these limitations does not diminish the significance of this study; rather, it enhances its scholarly rigor by clarifying the boundaries of its claims while identifying meaningful directions for future research and theoretical advancement.

7. Future Research Directions

While this study offers a conceptual contribution to understanding the role of women's leadership in advancing sustainability through green learning communities, several avenues remain open for further research. First, empirical studies are needed to test and refine the proposed conceptual framework by examining real-world cases of women-led sustainability initiatives across diverse higher education contexts (Leal Filho et al., 2021; Wals, 2014). Longitudinal research could further explore how women's leadership influences the long-term institutionalization of sustainability practices and the durability of green learning communities over time (Sterling, 2016).

Second, comparative studies across regions, institutional types, and governance systems would provide deeper insight into how cultural, political, and organizational factors shape the

effectiveness of women's sustainability leadership (Morley, 2013; UNESCO, 2025). Future research could also examine intersectional dimensions of leadership, including how gender interacts with race, ethnicity, socioeconomic status, and disciplinary background in shaping sustainability outcomes (Blackmore, 2013; Eagly & Carli, 2007).

Finally, mixed-methods and participatory research approaches could amplify the voices of women leaders, faculty, and students engaged in sustainability work, generating practice-informed knowledge that bridges theory and institutional application (Brundiers et al., 2021; Wals & Benavot, 2017). Expanding empirical evidence in this area will strengthen both scholarship and policy development, supporting more inclusive, effective, and context-responsive sustainability leadership in higher education.

8. Conclusion and Recommendations

This paper has examined how women's leadership can serve as a strategic driver for advancing green learning communities within higher education and strengthening universities' contributions to sustainability and the green economy. By integrating feminist leadership theory, transformational leadership, and sustainability leadership frameworks, the study developed a novel conceptual framework that explains how women's leadership practices translate sustainability values into institutional culture, governance, and learning environments.

The conceptual framework represents a key theoretical contribution by positioning green learning communities as mediating structures linking leadership orientations to sustainability outcomes. It advances existing scholarship by demonstrating that women's leadership—characterized by collaboration, inclusivity, relational governance, ethical responsibility, and long-

term vision—is not only normatively valuable but also structurally effective in supporting institutional sustainability change.

In the context of academic and policy-focused conferences, this study offers a timely and relevant lens for understanding how gender-responsive leadership can enhance sustainability governance in higher education. The framework provides a foundation for scholarly dialogue, institutional reflection, and cross-sector learning among researchers, university leaders, and policymakers concerned with environmental responsibility and equitable leadership.

Beyond theoretical insight, the findings hold clear practical relevance. For higher education leaders, the study highlights pathways for embedding green learning communities into institutional strategy, curriculum design, shared governance structures, and community engagement initiatives. For policymakers, it underscores the importance of expanding women’s representation in leadership roles as a strategic lever for strengthening sustainability policy, accelerating green economy transitions, and fostering inclusive institutional innovation.

Ultimately, this research argues that empowering women leaders and institutionalizing green learning communities are mutually reinforcing strategies that can transform higher education into a more sustainable, equitable, and future-oriented sector. By bridging conceptual theory, institutional practice, and policy relevance, this study contributes a meaningful framework for shaping leadership-driven sustainability change in higher education and beyond.

Recommendations

Based on the conceptual analysis, this paper offers the following recommendations for policy, institutional practice, and future research:

1. Strengthen gender-responsive leadership pathways

Higher education institutions should invest in targeted leadership development programs that support women's advancement into senior academic and administrative roles, particularly in sustainability-related fields and institutional innovation initiatives.

2. Institutionalize green learning communities

Universities should embed green learning communities within formal governance structures, curricular frameworks, and strategic planning processes to ensure that sustainability initiatives achieve long-term impact beyond short-term or project-based efforts.

3. Integrate sustainability into leadership and governance systems

Institutional leaders should align sustainability objectives with decision-making processes, budgetary planning, performance evaluation systems, and accountability mechanisms to position sustainability as a core organizational priority.

4. Promote interdisciplinary and community-based partnerships

Universities should expand collaborations with local communities, industry partners, policymakers, and civil society organizations to strengthen experiential learning opportunities and amplify the real-world impact of sustainability initiatives.

5. Advance empirical and comparative research

Future research should empirically test and refine the conceptual framework proposed in this study by examining women-led sustainability initiatives across diverse institutional and regional contexts, assessing their long-term influence on green learning communities and sustainability outcomes.

Final Reflection

Ultimately, this research argues that empowering women leaders is not only a matter of social justice but also a strategic imperative for higher education institutions committed to sustainability and green economic transformation. By fostering inclusive leadership and strengthening green learning communities, universities can play a transformative role in shaping more sustainable, equitable, and resilient futures.

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