



The Role of Leadership in Sustainability and Conservation of Natural Resources and Biodiversity

Haitham M. Altaany¹, Qasem Abdelal², Shamsa Saeed Alameri³,
Hanin alshraiedeh⁴, Salem Hasan Alshehhi⁵, Khalifa Saif khalifa⁶,
Doaa Jamal Alsayadi⁷, Mohammed Matar Al Ali⁸,
Reem Hamid Alameri⁹, & Dana Eissa Al-Shenaini¹⁰

Abstract

This comprehensive study delves into the role of leadership in promoting sustainability and conservation efforts and focuses on resource conservation and biodiversity protection. Researchers have developed substantial knowledge about the environmental outcomes of leadership behaviors by examining peer-reviewed studies from 2012 to 2025. The results show that leadership is key to creating and shaping sustainability projects and conservation initiatives across all economic sectors. The transformational leadership style has been seen to be of great significance in bringing about positive results for the environment through visionary thinking, empowerment, and cultural innovation. In the approaches to ethical leadership (or some of its characteristics), the commitment to sustainability rather than short-term rewards and accountability systems that were accountable to the environment were critical and representative in pursuing programs. The review identified some leadership skills that have specific characteristics and qualities to support sustainable outcomes, such as communication and planning systems and skills to interact with stakeholders and understand systems analysis. Decentralized decision-making and individual organizational involvement in leadership led to improved environmental innovation-related results and better overall performance. Co-management and adaptive governance organizations have been able to provide much more effective resource management and equity in complex systems and in connected ecosystems. The study found several challenges, with positive research results on the importance of leadership in bringing about sustainability and conservation results. Political resistance, strong preferences of powerful stakeholders, lack of funds, and public engagement were significant challenges to environmental leadership. The COVID-19 pandemic not only accelerated the need to handle challenges in the current environment but also foreshadowed the importance of leader adaptability and operational resilience to effectively manage the challenges that are already global.

Keywords: leadership, sustainability, biodiversity, decision-making, stakeholder.

¹ Assistant Prof. of Sociology, Umm Al Quwain University. UAE, Faculty of Science and Art,*
Corresponding Author: Email: drhaitham.mo@uaqu.ac.ae, <https://orcid.org/0009-0003-7733-3938>

² Professor of Civil and Environmental Engineering, German Jordanian University,
qasem.abdelal@gju.edu.jo, <https://orcid.org/0000-0002-3303-1079>,

³ Student in Sociology, Umm Al Quwain University, UAE. Email: shamsaajman121@gmail.com

⁴ Student in Sociology, Umm Al Quwain University, UAE Email: haninnabil@icloud.com

⁵ Student in Sociology, Umm AlQuwain University, UAE. Email: salem.laha@hotmail.com

⁶ Student in Law, Umm AlQuwain University, UAE. Email: Khalifa432@gmail.com

⁷ Sociology student, umm alquwain university, UAE. Email: doaajamal1020@gmail.com

⁸ Sociology student, Umm AlQuwain University, UAE. Email: mohammedmatar351@gmail.com.

⁹ Sociology student, Umm AlQuwain University, UAE. Email: elreem408@gmail.com

¹⁰ Student in Sociology, Umm AlQuwain University, UAE. dana.eissa2006@gmail.com

Introduction

In today's fast-paced world, the problems that are facing us are environmental problems, like climate change, habitat loss, and the loss of species, and we have to address them sustainably; otherwise, we cannot do so. Leadership is still the key to developing sustainable policies while it fosters teamwork and mobilises sustainable action to achieve the goal (Altaany et al.,2025). The many faces of leadership play a crucial role in redefining ecological attitudes and patterns of behaviour and key planetary management decisions.

Leadership is to be achieved by a wide range of people, from government officials to business leaders, to social activists, to the environmentalists of the local communities, with a stake in achieving sustainability. Success in an environmental leadership effort is evident through the vision, values, and stakeholder buy-in to a shared environmental goal (Donny, 2018).

Leadership embodies single person effort systems and filters organizational infrastructure and systemic elements that can influence public environmental policies and values. Liao and Y (2022) said that business leaders in positions of authority are at a critical juncture to integrate sustainability into their business plans, organization, and supply chains.

Leaders have a wide degree of influence over environmental regulations and governance systems at all local, national, and international levels. Sustainability efforts worldwide and biodiversity conservation receive vital momentum from political leaders thanks to the Paris Agreement and the United Nations Sustainable Development Goals (SDGs) (McCowan et al.,2021). Additionally, the leadership of environmental conservation includes a variety of actors, such as scientists, conservationists, indigenous communities, and non-governmental organizations (NGOs) (Boiral & Heras-Saizarbitoria, 2017).

These leaders are of unparalleled importance in scientific research, in the implementation of conservation projects, and in policy actions that protect ecosystems, conserve threatened species, and promote sustainable land use (Altaany et al.,2024). Proactive leadership and innovative policies led to unprecedented and resumed reforestation and restoration of biodiversity by visionary environmental leaders around the country of Costa Rica (GGBP, 2014). The issues of sustainability and biodiversity are prevailing with leadership, sustainability in the form of an intergenerational "web" of environmental and social systems and economic factors (Fallah Shayan et al.,2022). To achieve transformative change for people and planet, we need leadership that fosters innovation and collaboration, holds leadership accountable, and ensures that it is appropriate (Jun & Lee, 2023). The review examined the different aspects of leadership for sustainability advancement through direct implications for the management of natural resources and the protection of biodiversity.

Literature Review

There are examples in the literature of how perspectives on leadership and actions affect the emergence and implementation of sustainable initiatives and conservation practices. Transformational leadership, which builds

cultures of innovation, empowers followers, and is grounded in visionary thinking, is an amplifier of environmental change (Mansaray, 2019).

The results acquired by the researchers Averina et al. (2023) show that by implementing transformational leadership, the leader can motivate and empower employees to improve their willingness to perform external sustainability practices, resulting in greater success in implementing them.

In the literature, ethical leadership is considered a prerequisite to being an agent for the stewardship of the environment, as it is a prerequisite to responsible decision-making. Ethical leaders consider the common good as their top priority and are transparent and accountable in their behaviour and management of environmental effects (Nguyen et al., 2021). The literature reviewed focuses on the leadership competencies and specific skills that result in sustainability effects. Muff (2021) states that there are four general capabilities of environmental leadership: stakeholder engagement, strategic thinking, good communication, and systems thinking.

Groups with leaders who have these skills are more effective in addressing complex environmental issues. They build relationships with allies and leverage organisation resources to achieve their sustainability objectives.

The study focused on the effect of the various elements of organizational leadership structures on sustainability performance.

The study examined how the different components of organizational leadership structures shape levels of sustainability performance. According to Iqbal et al. (2020), the decentralized decision-making structure and participatory leadership systems are tied to organizational success in environmental leadership. Organizations achieve environmental adaptability and performance improvement due to their ability to empower employees and build a sustainable organizational culture.

In the literature, multi-stakeholder partnerships with trans-sectoral cooperation are recommended as a means to support sustainability and conservation goals. Sustainability leadership is created by establishing collaborative partnerships to effectively share knowledge across governments, within the business sector, in education, and amongst civic organisations (Guttermann, 2023). According to Hasselman (2016), co-management and adaptive governance leadership can result in better resource management with greater equity, since they can prove to be effective in complex ecosystems.

Present-day societies know the importance of leadership in terms of sustainability and conservation; however, there are obstacles to the effective implementation of it. Political opposition, special interests, insufficient resources, and a lack of awareness or commitment are challenges to effective environmental leadership (Woo & Kang, 2020). The COVID-19 pandemic added further complexities and uncertainties that necessitated resilient behaviours on the part of leaders in the face of ecological crises in the world (Alkailanee et al., 2024).

The literature review highlights the diverse and nuanced ways leadership influences sustainability and conservation outcomes. Transformational, ethical, and collaborative leadership styles, relevant competencies, and organizational structures play pivotal roles in driving environmental change. However, addressing persistent challenges and

fostering effective leadership at all levels remains essential for realizing a more sustainable and biodiverse future.

Methodology

The method used for research on leadership towards sustainability, conservation of natural resources, and biodiversity was the method of literature search system. The search was conducted in PubMed, Web of Science, Scopus, and Google Scholar using Boolean operators to narrow the search and find related articles. The search terms in the research were leadership, sustainability, conservation, natural resources, and biodiversity. The team hand-searched reference lists of published articles and books to identify additional sources.

Studies for review needed to concentrate on leadership roles for sustainability programs and conservation work, as well as natural resource protection and biodiversity support, to be selected. The information presented in this review is drawn from peer-reviewed literature in English in the past year, from 2012 to 2025. Research not directly concerning leadership and research lacking empirical evidence were eliminated. To ensure the high level of research provided in the review, literature that was categorized as gray material and literature in languages other than English were not included.

The researchers used thematic analysis to analyze the data collected from selected studies. The analysis yielded thematic categories that focused on sustainability outcome effects of leadership, leadership methods and conduct, leadership development capabilities, organizational and administrative models, and teamwork leadership components. The gathered data comprised vital results along with research methods and conclusions so that researchers could gain in-depth knowledge about the research.

The analysis included the major findings and the key concepts and insights from the investigations that were reviewed, and the main results were integrated. This research reviewed literature for overall patterns, trends and contradictions. This review aimed to put together the research results to be utilized for an integrated explanation of the impact of leadership on sustainability conservation and the opportunities and obstacles associated with it.

There are several limitations to this review that need to be noted. The review was limited to studies only in English, resulting in a language bias in that seemingly relevant scientific documents in other languages were potentially neglected. Also, this review may have been limited to only include primary peer-reviewed literature, which may have led to non-inclusion. The inclusion criteria for utilizing research from only the last decade may have resulted in losing older research that is still useful to the topic. Thematic analysis and data synthesis can be subjective, introducing potential bias in results from the researcher. The authors aimed to be very methodological both in their approach and in the process of reviewing.

Results

The outcome of the thorough review was a rich and diverse body of literature on the dimensional aspect of leadership in relation to sustainability

and conservation activities. The systematic review process of multiple studies helped to establish some key themes and ideas regarding the role of leadership in achieving environmental outcomes, the implications of different leadership styles and behaviours, and organizational arrangements and collaborative working for sustainability.

Leadership was one of the identified prime influences and shapers of sustainable outcomes in different business sectors and in different contexts. It was found that positive environmental outcomes were observed when the underpinning transformational leadership model was applied to leadership styles that were classified as 'transformational' (Mansaray, 2019). Transformational leaders are perceived to be good at creating inspiring visions and sustainable visions getting buy-in from stakeholders, and initiating change towards sustainable environmental outcomes.

The most critical among all the practices of ethical leadership was its importance to environmental sustainability and responsible decision-making. Environmental responsibility is one of the main ethical responsibility priorities of leadership since leaders show transparency in their actions and responsibility for their individual and organizational environmental impacts (Nguyen et al., 2021). As stated by Muff (2021), a trust-based culture within an organisation can be developed through ethical leadership, which leads to environmental sustainability.

The evaluation also revealed critical skills and leadership that lead to sustainable outcomes. Strategic planning, effective communication, systems thinking, and stakeholder engagement came into focus as key characteristics of environmental leaders (Muff, 2021). These skills help leaders work more effectively on addressing complex environmental challenges and building coalitions to mobilize resources to achieve sustainability goals.

The organisational leadership structure and processes are important elements for the outcomes of sustainability performance. The results of decentralized decision systems and participatory leadership approaches allow organizations to do better on environmental innovation and operational performance (Iqbal et al., 2020). Empowerment of staff members and support for sustainability in the organization create an environment where environmental leadership can flourish.

Co-management systems and adaptive governance have proven effective leadership systems to sustain initiatives. Collaborating with multiple partners is essential for good resource management, especially in complex environmental systems (Hasselman, 2016). Shared leadership models, based on a traditional sector separation between government, business, academia, and civil society, can be achieved by achieving joint success in environmental goals and sharing knowledge as a collective.

We discovered that there are a lot of obstacles and restrictions in studying the positive impacts of leadership on sustainability and conservation. Political hurdles, resource and interest tensions, and commitment and awareness barriers are all environmental challenges faced by environmental leaders (Woo & Kang, 2020). In recent years, there has been a notable improvement in leadership skills resulting from the uncertainties caused by

the COVID-19 pandemic and the difficulties it has introduced in the world (Alkailanee et al., 2024).

The results of the thorough review have generally confirmed the significance of leadership for conservation and sustainability. The impact of transformative leadership and ethical leadership styles, skills related to these styles, and organizational structures on environmental sustainability outcomes is expected to be positive. Despite this, we do struggle with challenges, and we do live out a form of authentic leadership at every level, but we have a long way to go to make our future more sustainable and more biodiverse.

Discussion

In the discussion section, we can critically reflect on the results and analyses of the research, summarize key implications for theory and practice, and put forth several suggestions for enhancing environmental leadership and sustainability initiatives.

The evidence has shown that leadership is crucial to inform starting sustainability and conservation actions across disciplines. Since ethical and transformational leadership practices are associated with environmental successes, it can be seen that this achievement fosters loyal staff and creative professionals, and improves the processes of making responsible decisions. Transformational and ethical leadership are approaches that can be recognised and supported by decision makers and organisations, as they are effective for sustainability management due to competent leaders.

The review illustrates how organisations need to identify decentralised decision-making within them and participatory leadership styles to increase environmental performance. An organisation that gives its employees empowerment and encourages a culture of sustainability taps into the combined capacity of the employees to solve environmental problems and also benefits from performance improvement.

Co-management and adaptive governance processes are fundamental leadership models to advance sustainability projects that require collective action from actors. Governments, businesses, NGOs, and communities should all work together to establish common environmental goals, create systems of mutual trust, and share resources to reach the common goals. The sharing of knowledge and strengthening of their capacities to create common solutions through platforms that promote collaboration between leaders can help them achieve more sustainable and inclusive results.

The push for environmental leadership must respect the need to pass on vital changes to organizational structures, incentive systems, and policy reforms. Business operations should look at sustainability in the overall strategy, operational targets, and in the measurement of business performance to achieve the environmental targets. Educational programs for environmental leader development should prioritize learning environmental competencies through real-world experiences, guidance from peers and mentors, and collaboration with other professionals.

Policy-level regulation for sustainable practices should be encouraged and supported by rules, tax incentives, and subsidies. The current political

leadership must continue to demonstrate their commitment and capacity to set ambitious environmental goals to meet national and international sustainability goals. Investment in green infrastructure, renewable energy installations, and environmental restoration projects should be budgeted for the creation of sustainable communities.

Such initiatives that create environmental awareness and education programs develop environmentally conscious leaders who will lead us into the future. Environmental education should be included in the teaching programs at all schools, universities, and training institutions, because it promotes the conservation of biodiversity and equity issues in the environment. Public awareness and outreach, as well as giving individual responsibility to leaders and institutions to keep them accountable for their environmental impact, enable community action.

The review identifies possible future pathways for sustainable leadership and conservation, even in our public response to climate change. Leaders demonstrate a transformational, ethical, and collaborative leadership style, and have the competencies and organizational structures that make sense of the complex environmental context and positively affect change through their actions in what can be deeply entrenched, multifaceted problems. Investing in leadership development, inter-sectoral partnerships, and enabling architectures will ensure that environmental leaders of the future can grow in this favorable environment and thrive toward a sustainable future with abundant biodiversity.

Recommendations

Based on the discussions and findings in this review, the following recommendations emerged to promote environmental leadership and enhance sustainability and conservation.

1. Leadership education programs on skills of environmental conservation related to sustainability and interdisciplinary problem-solving should be funded by business groups, educational institutions, and governmental institutions. Programs should provide education that involves mentorship with collaborative interdisciplinary teams for leaders to be effective in developing knowledge to solve environmental problems.

2. Governments should encourage inter-sectoral collaboration and multi-stakeholder cooperation to achieve the environment goal commonly, through sharing of knowledge. There must be collaboration across sectors between government institutions, businesses, non-profit organizations, academic institutions, and community representatives to address common environmental issues.

3. Organizations need to embed sustainability in their business approach, including in their operations and decision-making. This can only be a truly sustainable approach if meaningful environmental targets are set and sustainable practices are undertaken throughout the supply chains, and full transparency is achieved in environmental reporting. Incorporating sustainability into the organisation creates long-term value and reduces environmental impact.

4. Government authorities should implement regulatory frameworks and incentives/subsidies for sustainable practices. Decisive political leaders are crucial for sustainable environmental agendas to have effective policies in place and collect sufficient resources to meet national and international sustainability goals.

5. There should be more specific and complete environmental education in society, which includes awareness at all levels of society. The knowledge of environmental literacy for students needs to be incorporated in all educational settings, including schools and universities, and training to convey an understanding of sustainability, preservation of diversity, and principles of environmental equity. Public awareness programs and community outreach programs are where individuals act and where individuals are empowered, and it's up to the leaders and the organizations to be responsible.

6. Leaders recognise that environmental conditions are constantly evolving, and that they need to adopt approaches to adaptive leadership if they are to be able to embed resilience, flexibility, operational resilience and continuous learning within their systems. Leaders who are concerned about getting good outcomes will bring changes, try out new methods, and adapt plans for changing environmental conditions and the expectations of others. Cultural and mindset resilience builds the capacities of organisations to effectively respond to the new, not-so-certain situations that are being generated by the new environmental risks.

By taking action on the recommendations in the preceding paragraphs, stakeholders can improve the conditions for environmental leadership to emerge and catalyze progress towards a more sustainable and biologically diverse future. Leadership and collaborative action, supported by enabling policies, will be crucial to addressing the pressing environmental challenges confronting us and fostering a positive and resilient future for all.

References:

- Alkailanee, K. K., Haitham M Altaany, Alakash, M. A. N., Abed ALhamed Darawsheh, S., Darawsheh, N. A. H., & Alrashdan, H. (2024). Navigating Crisis: Leadership Styles and Strategies During the COVID-19 Pandemic: A Comprehensive Review. *Kurdish Studies*, 2, 2766–2779. <https://doi.org/10.58262/ks.v12i2.202>.
- Altaany, H. M., Sakr, A. M. K., Abdelbary, O., & Abadel, R. T. (2025). Social legislation and its role in enhancing social development. *Journal of Ecohumanism*, 3(8). <https://doi.org/10.62754/joe.v3i8.5727>.
- Altaany, H., & Abdelbary, O. (2024). Civic education and its role in social stabilization: A comprehensive review. *Pakistan Journal of Criminology*, 16(3), 1173–1184. <https://doi.org/10.62271/pjc.16.3.1173.1184>.
- Averina, W., Irawanto, Dodi & Kurniawati, Desi. (2023). The effect of transformational leadership on sustainable employee performance with organizational commitment and green motivation as the mediators. *International Journal of Research in Business and Social Science* (2147- 4478). 12. 160-170. 10.20525/ijrbs.v12i9.3020.

- Boiral, Olivier & Heras-Saizarbitoria, I. (2017). Managing Biodiversity Through Stakeholder Involvement: Why, Who, and for What Initiatives? *Journal of Business Ethics*. 10.1007/s10551-015-2668-3.
- Fallah, S. N., Mohabbati-Kalejahi, N., Alavi, S., & Zahid, M. A. (2022). Sustainable Development Goals (SDGs) as a Corporate Social Responsibility (CSR) Framework. *Sustainability*, 14(3), 1222. <https://doi.org/10.3390/su14031222>.
- Green Growth Best Practice (GGBP), (2014). https://www.greenpolicyplatform.org/sites/default/files/downloads/resource/Green-Growth-in-Practice-GGBP_0.pdf.
- Gutterman, A. (2023). *Sustainable Leadership*. [https://www.researchgate.net/publication/351093977 Sustainable Leadership](https://www.researchgate.net/publication/351093977_Sustainable_Leadership).
- Hasselman, L. (2016). Adaptive management, adaptive co-management, adaptive governance: what is the difference? *Australasian Journal of Environmental Management*. 24. 1–16. 10.1080/14486563.2016.1251857.
- Iqbal, Q., Ahmad, N & Abdul-Halim, H. (2020). How Does Sustainable Leadership Influence Sustainable Performance? Empirical Evidence From Selected ASEAN Countries. *SAGE Open*. 10. 1-16. 10.1177/2158244020969394.
- Jun, K & Lee, J. (2023). Transformational Leadership and Followers' Innovative Behavior: Roles of Commitment to Change and Organizational Support for Creativity. *Behavioral Sciences*, 13. 10.3390/bs13040320.
- Alkailanee, K., Altaany, H., Alakash, M. A., Darawsheh, S. A., Darawsheh, N. A., & Alrashdan, H. (2024). "Navigating Crisis: Leadership Styles and Strategies During the COVID-19 Pandemic: A Comprehensive Review", 12 (2), pp.2766–2779, 10.58262/ks.v12i2.202.
- Liao, Y. (2022). Sustainable leadership: A literature review and prospects for future research. *Front Psychol*. 7 (13):1045570. doi: 10.3389/fpsyg.2022.1045570. PMID: 36420377; PMCID: PMC9676637.
- Mansaray, H. (2019). The Role of Leadership Style in Organisational Change Management: A Literature Review. *Journal of Human Resource Management*. 7. 18. 10.11648/j.jhrm.20190701.13.
- McCowan, T., Filho, W., Brandli, L., Salvia, A., Ruiz Vargas, V., Muthu, N., Edwin, G., Liu, J. & Pretorius, R., Newman, J. (2021). *Universities Facing Climate Change and Sustainability*.
- Muff, K., Delacoste, C. & Dyllick, T. (2021). Responsible Leadership Competencies in Leaders around the World: Assessing stakeholder engagement, ethics, values, systems thinking and innovation competencies in leaders worldwide. *Corporate Social Responsibility and Environmental Management*. 29. 10.1002/csr.2216.
- Nguyen, N.T., Nguyen, N. P., & Thanh, H. T. (2021). Ethical leadership, corporate social responsibility, firm reputation, and performance: A serial mediation model. *Helvion* 7(4):e06809. doi: 10.1016/j.helivon.2021.e06809. PMID: 33898855; PMCID: PMC8060600.

- Susilo, D. (2018). Transformational leadership: a style of motivating employees. *Management and Economics Journal (MEC-J)*. 124. 10.18860/mec-j.v0i1.5222.
- Woo, E & Kang, E. (2020). Environmental Issues As an Indispensable Aspect of Sustainable Leadership. *Sustainability*. 12. 7014. 10.3390/su12177014.