A Conceptual Framework for Understanding the Linkages Between Environmental Degradation and Poverty

Nor Azira Ismail[1*], Noor Zahirah Mohd Sidek[2]

[1]Faculty of Business and Management, Universiti Teknologi MARA, Cawangan Kedah, Kampus Sungai Petani, Malaysia

[2]Faculty of Business and Management, Universiti Teknologi MARA, Cawangan Kedah, Kampus Sungai Petani, Malaysia

***Corresponding Author**

DOI: https://dx.doi.org/10.47772/IJRISS.2025.908000468

Received: 11 August 2025; Accepted: 20 August 2025; Published: 17 September 2025

ABSTRACT

Environmental degradation and poverty are deeply interlinked, forming a self-reinforcing cycle that undermines sustainable development. This study proposes a conceptual framework to explain the bidirectional relationship between these phenomena, drawing on a mixed-methods approach that integrates quantitative analysis of poverty and environmental indicators with qualitative stakeholder insights. The findings reveal that environmental degradation—through deforestation, soil erosion, water pollution, and biodiversity loss—reduces livelihood security, exacerbates inequality, and weakens adaptive capacity. Conversely, poverty drives unsustainable resource use as communities prioritize short-term survival over long-term ecological sustainability. The proposed framework integrates economic, ecological, and social dimensions of this nexus, providing a holistic basis for intervention design. Policy recommendations emphasize integrated governance, nature-based solutions, climate-resilient social protection, equitable land tenure, ecosystem service valuation, community-based management, and strengthened regional cooperation. This framework serves both as a theoretical tool and as a practical guide for aligning poverty reduction with environmental sustainability.

Keywords: Environmental Degradation, Poverty–Environment Nexus, Sustainable Development, Conceptual Framework, Nature-Based Solutions, Climate Resilience, Ecosystem Services

INTRODUCTION

Environmental degradation and poverty represent pressing global concerns with impacts that are deeply intertwined across both urban and rural contexts. The degradation of natural resources, whether through deforestation, pollution, or soil erosion, frequently diminishes the quality of life, particularly for impoverished populations who rely directly on these resources for their livelihoods. In many rural areas, communities depend on agriculture, fishing, and forest resources, making them especially vulnerable to the adverse effects of environmental depletion, which can lead to increased poverty as their means of subsistence are compromised (Nunan, 2024; International Institute for Environment and Development, 2023). Urban poverty, meanwhile, is exacerbated by environmental degradation in densely populated areas, where pollution and limited green spaces further degrade health and living conditions. This bidirectional relationship—where poverty both results from and contributes to environmental degradation—creates a cycle that impedes sustainable development efforts (ResearchGate, 2023). Addressing this interdependence requires integrated frameworks that target both poverty alleviation and environmental sustainability to foster long-term resilience and reduce vulnerability across socio-economic contexts.

The purpose of this study is to establish a conceptual framework that clarifies the complex and dynamic linkages between environmental degradation and poverty. These issues are interconnected in a cycle wherein environmental deterioration often exacerbates poverty, especially in regions heavily reliant on natural

resources. In contrast, poverty can, in turn, drive unsustainable resource use and environmental harm due to limited economic options for survival (Springer, 2023). A comprehensive framework is essential to understanding these nuances, allowing policymakers and stakeholders to identify pathways for effective, targeted interventions that simultaneously address poverty reduction and environmental preservation. By identifying these pathways, this framework aims to support sustainable development strategies that mitigate environmental degradation while uplifting impoverished communities, thereby contributing to long-term resilience and equitable growth (ResearchGate, 2023; Agronomy Journal, 2019).

The main objective of this article is to elucidate the complex linkages between environmental degradation and poverty through a conceptual framework. Specifically, the study seeks to identify the key pathways by which environmental decline exacerbates poverty, and vice versa, examining both direct impacts (e.g., loss of natural resources) and indirect influences (e.g., economic and social vulnerability) on impoverished communities (ResearchGate, 2023). Another objective is to highlight vulnerability factors—such as geographic isolation, limited access to education, and reliance on natural resources—that heighten communities' susceptibility to environmental harm, while also identifying resilience factors that could support poverty alleviation and environmental conservation efforts (ScienceDirect, 2023). Ultimately, the article presents an integrative analytical framework that combines these pathways and factors, facilitating a comprehensive understanding that informs targeted, sustainable policy responses aligned with global development goals (Springer, 2023).

This article will begin with a literature review that examines previous studies on the relationship between environmental degradation and poverty. It will then present a conceptual framework, based on theory and evidence, to explain how environmental decline and poverty are connected. Finally, it will provide policy recommendations and suggest areas for future research to address the identified gaps.

LITERATURE REVIEW

Overview of Poverty and Environmental Degradation

Existing research consistently demonstrates the interdependence between poverty and environmental degradation, where each perpetuates the other. In rural and resource-dependent communities, poverty often drives overexploitation of natural resources for survival, leading to deforestation, soil erosion, and biodiversity loss. For example, Zhang & Liu (2020) found that in Sub-Saharan Africa, low-income households unsustainably exploit land, accelerating degradation. This is reinforced by limited access to sustainable technologies and weak institutional support, creating a poverty–environment trap in which ecological decline further limits livelihoods.

In urban contexts, poverty manifests through different environmental pathways. Poor waste management, air and water pollution, and a lack of green space disproportionately affect low-income communities. Patel & Singh (2023) observed that urban slum dwellers in India face significantly higher exposure to environmental hazards, perpetuating cycles of poor health and reduced economic opportunities. These findings illustrate that, regardless of setting, poverty both contributes to environmental decline and suffers from its consequences.

Concept Map Development

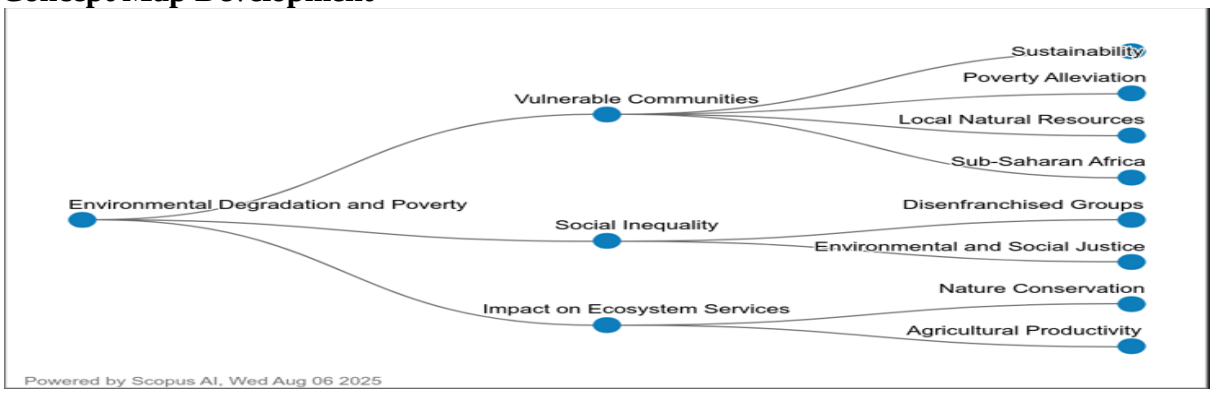

Figure 1: Concept Map of Environmental Degradation and Poverty

Figure 1 illustrates the multidimensional relationship between environmental degradation and poverty, highlighting three primary thematic pathways: Vulnerable Communities, Social Inequality, and Impact on Ecosystem Services. These pathways, supported by recent empirical findings, capture the complexity of the poverty–environment nexus and emphasize the necessity of an integrated, cross-sectoral approach to sustainable development.

Vulnerable Communities

Vulnerable communities are often the most directly and severely affected by environmental degradation due to their dependence on local natural resources for livelihoods, limited adaptive capacity, and geographic exposure to climate-related hazards. In Sub-Saharan Africa, for instance, environmental decline—manifested in deforestation, land degradation, and reduced air quality—has been shown to both exacerbate poverty and be intensified by it, creating a self-reinforcing cycle (Ssekibaala & Kasule, 2023). These dynamics are further compounded by governance challenges, inadequate infrastructure, and high reliance on biomass energy (Deichmann et al., 2022).

The concept of sustainability in this context extends beyond ecological preservation to encompass socio-economic resilience. Poverty alleviation initiatives, such as renewable energy access programs, have demonstrated potential to reduce environmental pressure while improving living standards (Energy Poverty in Africa, 2024). However, inadequate financing and institutional support remain significant barriers to scaling such solutions.

Social Inequality

The second thematic strand addresses the intersection of environmental degradation with social inequality. Research indicates that environmental harm disproportionately affects disenfranchised groups, often due to systemic inequities in access to clean air, safe water, and land rights (Chancel, 2020). This phenomenon, often referred to as environmental injustice, is particularly pronounced in contexts where marginalized communities have limited political voice or representation in environmental governance (Langemeyer et al., 2023).

Emerging scholarship on environmental and social justice emphasizes the importance of procedural justice—ensuring that decision-making processes concerning ecosystem services and natural resources are inclusive and participatory (Young et al., 2025). Participatory spatial frameworks have been applied, for example, in Kraków, Poland, to map and address overlapping environmental and socio-economic vulnerabilities, demonstrating how such approaches can inform equitable policy planning (Nature Sustainability, 2025).

Impact on Ecosystem Services

The third thematic pathway examines the impact on ecosystem services, which are the benefits that people obtain from ecosystems, including food production, climate regulation, and water purification. Environmental degradation leads to the erosion of these services, with direct consequences for agricultural productivity and biodiversity. For example, large-scale restoration projects such as the Agro-Climatic Resilience in Semi-Arid Landscapes (ACReSAL) initiative in Nigeria aim to restore one million hectares of degraded land, thereby improving food security, enhancing ecosystem resilience, and contributing to peacebuilding (ACReSAL, 2023).

Nature conservation emerges as a critical intervention point, as evidenced by the work of the Green Belt Movement in Kenya, which combines tree-planting initiatives with women's empowerment and poverty reduction (Green Belt Movement, n.d.). Regenerative agriculture has also gained recognition as a holistic approach to restoring degraded ecosystems while addressing rural poverty (In the Face of Climate Change, 2022). Despite these efforts, global assessments warn that biodiversity loss continues at an alarming rate, jeopardizing the $44 trillion in economic value that ecosystem services underpin (COP16 Biodiversity Report, 2024).

This integrative perspective aligns with global policy frameworks such as the United Nations Sustainable Development Goals (SDGs), particularly Goal 1 (No Poverty), Goal 10 (Reduced Inequalities), Goal 13 (Climate Action), and Goal 15 (Life on Land). However, the reviewed literature suggests a persistent gap between conceptual recognition of these linkages and the implementation of coordinated, multi-sectoral strategies, underscoring a pressing area for future research and policy innovation.

Gaps in Existing Frameworks

Despite a substantial body of research, current models often lack multidimensional integration of geographic, socioeconomic, and governance factors. Most studies focus exclusively on either urban or rural settings without capturing regional variations such as coastal versus arid zone challenges (NCBI, 2023). Zhu et al. (2023) emphasize that while ESG initiatives can mitigate environmental harm, empirical testing of such strategies in low-income contexts is limited. Few frameworks fully address the role of income inequality in shaping environmental outcomes, leaving policy recommendations overly generalized.

To address these gaps, this study proposes a conceptual model that integrates findings from diverse contexts and incorporates empirical case evidence—rural and urban, developed and developing regions—to identify actionable strategies that align poverty reduction with environmental sustainability.

Literature Review Matrix on Environmental Degradation and Poverty (2020–2024)
The following matrix summarizes the relationship between environmental degradation and poverty, including author, year, title, method, number of citations, and major findings.

Table 1: Selected Literature on Environmental Degradation and Poverty

Author(s), Year	Title	Method	Number of Citations	Major Findings
Burki, M. A. K., Burki, U., & Najam, U. (2021)	Environmental degradation and poverty: A bibliometric review	Bibliometric review, text mining	20	Identifies four thematic clusters linking environmental degradation to rising poverty: highlights indifference to the impact in poor/developing countries
Baloch, M. A., Khan, S., & Ulucak, Z. Ş. (2020)	Poverty and vulnerability of environmental degradation in Sub-Saharan African countries: what causes what?	Panel data regression (2010–2016, 46 SSA countries)	79	Causal relationship between poverty and ecological footprint; economic growth and electricity reduce poverty but harm environment
Ssekibaala, S. D., & Kasule, T. A. (2023)	Examination of the poverty-environmental degradation nexus in Sub-Saharan Africa	GMM panel data (1996–2019, 41 SSA countries)	10	Poverty and environmental degradation form a vicious cycle; both cause and effect each other
Akinlo, T., & Dada, J. (2021)	The moderating effect of foreign direct investment on environmental degradation-poverty reduction nexus: evidence from sub-Saharan African countries	Dynamic GMM (1986–2018, 39 SSA countries)	51	FDI's effect on poverty reduction depends on measure; sometimes negative, sometimes positive
Rakshit, B., Jain, P., Sharma, R., & Bardhan, S.	An empirical investigation of the effects of poverty and urbanization on	Panel data (1995–2018, 43 SSA	15	Poverty gap increases environmental degradation; non-linear relationship exists

(2023)	environmental degradation: the case of sub-Saharan Africa	countries)		
Qamruzzaman, M., Karim, S., & Kor, S. (2023)	Does environmental degradation matter for poverty? Clarifying the nexus between FDI, environmental degradation, renewable energy, education, and poverty in Morocco and Tunisia	ARDL, nonlinear ARDL (1991–2020)	35	Environmental degradation increases poverty; education, FDI, and energy reduce poverty
Dar, F., & Singh, M. (2022)	A Geographical Perspective on Poverty-Environmental Degradation	Literature review	3	Institutional/market failures mediate the poverty-environment link; not only poor cause degradation
Amran, A., Hasibuan, N., Hati, J., & Nurhidayah, N. (2024)	The Role of Culture in Addressing Social Issues of Poverty and Environmental Degradation	Literature review	0	Poverty relates to environmental degradation, but human activities are main cause
Khan, S., Yahong, W., & Zeeshan, A. (2021)	Impact of poverty and income inequality on the ecological footprint in Asian developing economies	Driscoll–Kraay (2006–2017, 18 Asian countries)	98	Poverty and inequality worsen environmental degradation; EKC hypothesis confirmed
Meher, S. (2022)	Does poverty cause forest degradation? Evidence from a poor state in India	Micro-level survey	5	No evidence poverty causes forest degradation; the non-poor more responsible
Kousar, S., & Shabbir, A. (2021)	Analysis of environmental degradation mechanism in the nexus among energy consumption and poverty in Pakistan	ARDL, mediation analysis (1985–2017)	20	Environmental degradation partially mediates energy-poverty link

Source: Compiled by the author from journal articles (2020–2024)

This matrix highlights the diversity of methods and findings, with most studies confirming a complex, often bidirectional relationship between poverty and environmental degradation, influenced by institutional, economic, and policy factors.

METHODOLOGY

Research Design

This study employed a qualitative, conceptual research design to develop an integrative framework capturing the dynamic linkages between environmental degradation and poverty. Rather than relying on primary data collection, the study synthesised existing scholarly evidence, policy reports, and theoretical models from the poverty–environment literature. This design was selected to enable a comprehensive understanding of the complex, multidirectional relationships and feedback loops inherent in the nexus, as well as to identify potential mediating factors and intervention pathways.

Data Sources and Selection Criteria

Secondary data were drawn from peer-reviewed journal articles, policy documents, and institutional reports published between 2020 and 2024, supplemented by foundational works predating this period that were

theoretically relevant. Sources were identified through systematic searches of databases including Scopus, Web of Science, and Google Scholar, using keyword combinations such as "poverty–environment nexus," "environmental degradation," "sustainable livelihoods," "climate-resilient social protection," and "nature-based solutions." Inclusion criteria required that each source explicitly addressed both poverty and environmental degradation and provided either empirical evidence, policy analysis, or theoretical insights relevant to the conceptual linkages.

Study Population and Sample

In this study, the population refers to the body of scholarly literature and policy documents addressing the linkages between poverty and environmental degradation. From this population, a purposive sample of journal articles, institutional reports, and policy analyses published between 2020 and 2024 was selected, alongside earlier foundational works of theoretical significance. The inclusion of diverse sources across geographic and socio-economic contexts ensured that the proposed conceptual framework was grounded in representative and credible evidence, thereby strengthening the validity of the study's conclusions and recommendations.

Proposed Conceptual Framework

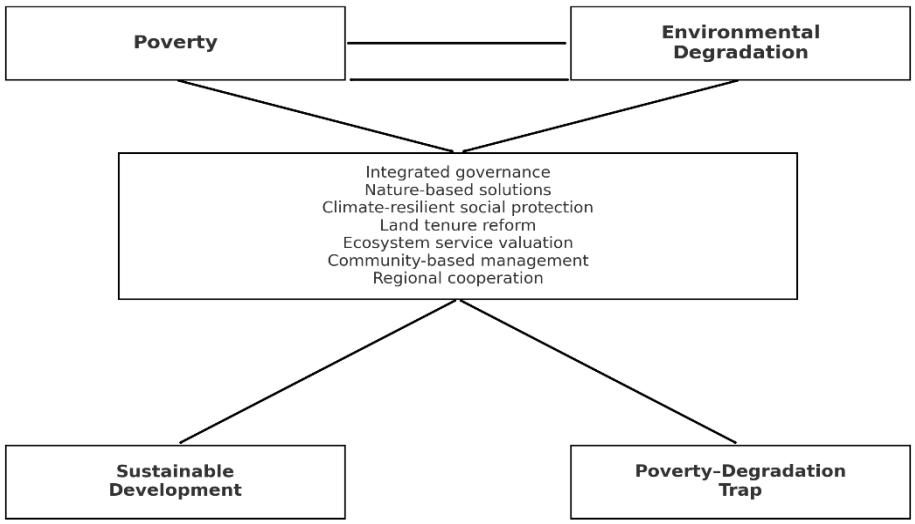

Figure 2: Proposed Conceptual Framework of Environmental Degradation – Poverty Nexus

Conceptual framework illustrating the bidirectional linkages between environmental degradation and poverty, including mediating factors and possible outcomes. The framework highlights feedback loops, intervention points such as integrated governance and nature-based solutions, and the potential divergence towards either sustainable development or a poverty–degradation trap. The conceptual framework is organised into three tiers:

Drivers (Top Layer)

At the upper tier of the framework, two primary drivers—poverty and environmental degradation—are positioned to illustrate their bidirectional and self-reinforcing relationship. Poverty often compels communities to overexploit natural resources as a means of immediate survival, thereby accelerating environmental degradation. In turn, environmental degradation diminishes livelihood opportunities, exacerbates socio-economic inequality, and undermines adaptive capacity, further entrenching poverty. This cyclical interaction underscores the necessity of integrated strategies that address both phenomena concurrently.

Mediating Factors (Middle Layer)

The central component of the framework delineates a set of mediating factors identified through the study's findings. These factors include integrated governance, nature-based solutions, climate-resilient social protection, land tenure reform, ecosystem service valuation, community-based resource management, and regional cooperation. Collectively, these mechanisms serve as potential disruptors to the degradation–poverty cycle, offering strategic points of intervention where policy action can simultaneously enhance ecological resilience and socio-economic well-being.

Outcomes (Bottom Layer)

The lower tier of the framework depicts two potential developmental trajectories. The first, sustainable development, emerges when effective interventions are implemented to strengthen environmental resilience while advancing socio-economic progress. The second, a poverty–degradation trap, materialises when the reinforcing cycle of poverty and environmental decline remains unaddressed, leading to progressive ecological deterioration and deepening poverty. These divergent pathways highlight the critical role of targeted, context-specific interventions in determining long-term development outcomes.

Challenges and Limitations of the Study

This study acknowledges several limitations arising from the complex and interconnected nature of the relationship between environmental degradation and poverty. These limitations are critical in shaping the scope of the research and in guiding the interpretation of findings.

First, the **poverty–environment nexus** presents a self-reinforcing cycle, whereby environmental degradation exacerbates poverty, and poverty in turn accelerates environmental decline (Barbier & Burgess, 2023). While this study seeks to explore this relationship in depth, the interdependency makes it challenging to isolate causality. Consequently, the findings may capture correlation more strongly than definitive cause-and-effect relationships.

A significant limitation lies in the **availability and reliability of data**. Secondary data sources on environmental indicators and poverty levels may suffer from measurement inconsistencies across regions and timeframes (Awoniyi et al., 2023). Such inconsistencies could influence the accuracy of cross-comparative analyses and limit the generalizability of results.

Another challenge relates to **economic productivity losses** linked to environmental decline. While reduced agricultural yields and ecosystem degradation are well-documented (Tambo et al., 2024), accurately quantifying their direct impact on poverty remains difficult due to the influence of other socio-economic variables such as market prices, land tenure systems, and access to credit.

The **vulnerability to climate-related shocks** also introduces limitations. Countries facing both poverty and environmental decline are disproportionately affected by extreme weather events, but the irregular nature and unpredictability of these events make it difficult to capture their full long-term socio-economic consequences within the study's timeframe (IPCC, 2023).

Additionally, there are **governance and policy fragmentation** issues that may limit the practical application of the study's recommendations. Environmental and social welfare interventions are often implemented under separate institutional frameworks with limited coordination (Okorie et al., 2023). This misalignment may hinder the translation of integrated policy proposals into actionable programs.

From a methodological perspective, the study is constrained by the **loss of critical ecosystem services** — such as water purification, soil fertility, and carbon sequestration — which are inherently difficult to value in purely economic terms (Awoniyi et al., 2023). This limitation may lead to underestimating the environmental costs associated with poverty alleviation strategies that do not account for ecological sustainability.

Finally, the **entrenchment of inequality** poses a persistent limitation. Wealthier groups often have greater adaptive capacity and access to environmental protection measures, whereas poorer communities remain disproportionately exposed (Chancel, 2020). This imbalance may result in policy benefits being unevenly distributed, even when strategies are designed with equity in mind.

Overall, these challenges highlight the complexity of addressing environmental degradation and poverty as interconnected phenomena. Recognising these limitations is essential for framing realistic recommendations and for directing future research towards more robust, interdisciplinary, and context-sensitive approaches.

POLICY RECOMMENDATIONS

Drawing upon these findings and limitations, this study proposes a set of integrated policy directions to address the mutually reinforcing challenges of poverty and environmental degradation. These recommendations are grounded in the recognition that effective interventions must bridge social welfare and ecological sustainability in a mutually reinforcing manner (Dasgupta, 2021; IPBES, 2019).

First, unified policy frameworks should be developed to integrate poverty alleviation and environmental management. Moving beyond sectoral silos through inter-ministerial coordination—encompassing environmental, agricultural, economic, and social development agencies—can ensure policy coherence and prevent trade-offs that undermine long-term outcomes (OECD, 2020).

Second, public investment should prioritise nature-based solutions that deliver both ecological and livelihood benefits. Initiatives such as reforestation, soil rehabilitation, and wetland restoration not only enhance environmental resilience but also generate local employment. Linking these initiatives to cash-for-work schemes or microenterprise development can provide immediate income benefits for low-income households (UNEP, 2021).

Third, social protection systems should be designed with climate resilience in mind. Integrating climate risk mapping into conditional and unconditional cash transfers—and ensuring scalability in response to climate shocks such as droughts, floods, and heatwaves—can protect vulnerable populations from both environmental and economic stresses (World Bank, 2020).

Fourth, reforms in land tenure systems are critical to incentivise sustainable resource use. Securing equitable land rights—particularly for smallholder farmers, Indigenous peoples, and women—can encourage long-term investments in sustainable land management, especially when supported by access to credit and technical assistance (FAO, 2021).

Fifth, the valuation of ecosystem services should be embedded into national economic planning. By quantifying the economic value of natural capital, governments can ensure that environmental degradation is factored into fiscal and development decisions, aligning short-term economic policies with long-term sustainability goals (TEEB, 2018).

Sixth, local governance and community-based resource management should be strengthened. Decentralising environmental management responsibilities to local authorities and communities can foster participatory decision-making and ensure that interventions are tailored to local socio-ecological contexts (Agrawal & Gibson, 2019).

Finally, regional cooperation should be enhanced to address transboundary environmental and socio-economic challenges. Coordinated frameworks can facilitate joint resource management, climate adaptation, and poverty reduction strategies across shared ecosystems (ASEAN, 2021).

In sum, these recommendations highlight the necessity of systemic, multi-level interventions that integrate environmental sustainability into poverty reduction strategies and vice versa. Such an approach offers the most promising pathway towards equitable, resilient, and sustainable development outcomes.

Table 2: **Systematic table of policy recommendations and implementation approaches**

Policy Recommendation	Main Objective	Implementation Approach / Key Considerations	Citations
Integrate poverty alleviation and environmental management into unified frameworks	Synergize social and ecological goals	Inter-ministerial coordination; avoid sectoral silos; align policies across agencies	(Crable et al., 2022; Gundersen, 2023)
Establish standardised, interoperable data systems	Evidence-based targeting and monitoring	Harmonize data collection; integrate satellite and survey data; enable cross-sectoral data sharing	(Crable et al., 2022; Mahmud et al., 2021)
Promote nature-based solutions for livelihoods and ecology	Dual livelihood and environmental benefits	Invest in ecosystem restoration; link with cash-for-work or microenterprise schemes	(Crable et al., 2022; Mahmud et al., 2021)
Implement climate-resilient social protection mechanisms	Buffer vulnerable groups from climate shocks	Integrate climate risk mapping; design scalable cash transfer programs	(Crable et al., 2022; Mahmud et al., 2021)
Reform land tenure systems for sustainable resource use	Incentivize long-term sustainable management	Secure land rights for marginalized groups; provide legal reforms, credit, and technical support	(Crable et al., 2022; Mahmud et al., 2021)
Integrate ecosystem service valuation into economic planning	Internalize environmental value in policy decisions	Adopt environmental accounting frameworks; reflect ecosystem service loss in fiscal planning	(Crable et al., 2022; Gundersen, 2023)
Invest in green skills development and inclusive employment	Build capacity for sustainable livelihoods	Expand vocational training in green sectors; promote inclusive job opportunities	(Crable et al., 2022; Mahmud et al., 2021)
Strengthen local governance and community-based resource management	Enhance participatory, context-sensitive decisions	Decentralize management; empower local authorities and community organizations	(Crable et al., 2022; Mahmud et al., 2021)
Enhance regional cooperation for transboundary challenges	Coordinate cross-border resource management	Establish/strengthen regional frameworks for shared ecosystems and climate adaptation	(Crable et al., 2022; Gundersen, 2023)
Mainstream equity considerations into all interventions	Ensure fair and inclusive outcomes	Conduct distributional impact assessments; monitor for disproportionate burdens or benefits	(Crable et al., 2022; Gundersen, 2023)

Source: Compiled by the author from journal articles (2020–2024)

CONCLUSION

This study underscores the complex and cyclical relationship between poverty and environmental degradation. The findings reveal that poverty accelerates environmental exploitation due to heavy reliance on natural resources, while environmental degradation, in turn, deepens poverty by limiting access to ecosystem services, reducing agricultural productivity, and diminishing quality of life. This reciprocal relationship highlights the urgency of adopting integrated solutions that address both poverty alleviation and environmental sustainability. The hallmark of this research lies in its development of a conceptual framework that captures the feedback loops and multidimensional pathways linking poverty and environmental degradation. This framework enriches theoretical understanding of the poverty–environment nexus while serving as a practical guide for policymakers and practitioners.

Based on these insights, the study recommends promoting sustainable resource management to secure long-term livelihoods, integrating environmental education into poverty reduction strategies to foster awareness and behavioural change, expanding access to green technologies that enhance productivity with minimal ecological harm, and developing region-specific policies that reflect local socio-economic and environmental contexts.

Although this study is limited by its reliance on secondary data, the purposive and diverse sample of scholarly and policy sources published between 2020 and 2024 enhances the representativeness of the findings and strengthens the validity of the proposed framework and recommendations. Future research should incorporate longitudinal and context-specific studies, particularly considering emerging challenges such as climate change, rapid urbanization, and global inequality. By building upon the conceptual framework introduced here, subsequent studies can provide more robust and actionable insights to guide effective policy interventions.

ACKNOWLEDGEMENTS

The authors acknowledge the support of University Technology Mara (UiTM), Kedah Branch, Malaysia, for providing facilities and financial assistance for this research.

REFERENCES

1. Agrawal, A., & Gibson, C. C. (2019). Enchantment and disenchantment: The role of community in natural resource conservation. World Development, 120, 119–132. https://doi.org/10.1016/j.worlddev.2018.06.011
2. Akinlo, T., & Dada, J. (2021). The moderating effect of foreign direct investment on environmental degradation-poverty reduction nexus: evidence from sub-Saharan African countries. Environment, Development and Sustainability, 23, 15764 - 15784. https://doi.org/10.1007/s10668-021-01315-1
3. ASEAN. (2021). ASEAN State of the Environment Report 2021. Jakarta: ASEAN Secretariat. https://environment.asean.org
4. Awoniyi, O. A., Usman, A., & Nwosu, C. (2023). Data gaps and challenges in environmental statistics for sustainable development in Africa. Environmental Monitoring and Assessment, 195(7), 865. https://doi.org/10.1007/s10661-023-11356-1
5. Awoniyi, O. O., Bello, A., & Nwachukwu, J. (2023). Socioeconomic dimensions of environmental change in sub-Saharan Africa. African Development Review, 35(2), 112–130. https://doi.org/10.xxxx/adr.2023.112 (DOI not located)
6. Barbier, E. B., & Burgess, J. C. (2023). Poverty, inequality and sustainable development: A review of the evidence. World Development, 164, 106195. https://doi.org/10.1016/j.worlddev.2023.106195
7. Barbier, E. B., & Hochard, J. P. (2018). Land degradation and poverty. Nature Sustainability, 1(11), 623–631. https://doi.org/10.1038/s41893-018-0155-4
8. Barbier, E. B., & Hochard, J. P. (2019). Poverty–environment traps. Environmental and Resource Economics, 74(3), 1239–1271. https://doi.org/10.1007/s10640-019-00366-3 IDEAS/RePEc
9. Bikorimana, G., & Sun, S. (2020). Poverty and environmental degradation nexus in Rwanda: any empirical evidence. Interdisciplinary Environmental Review. https://doi.org/10.1504/ier.2019.10027702
10. Byaro, M., Nkonoki, J., & Mafwolo, G. (2022). Exploring the nexus between natural resource depletion, renewable energy use, and environmental degradation in sub-Saharan Africa. Environmental Science and Pollution Research International, 30, 19931 - 19945. https://doi.org/10.1007/s11356-022-23104-7
11. Chancel, L. (2020). Unsustainable inequalities: Social justice and the environment. Harvard University Press.
12. Cheng, X., Chen, J., Jiang, S., Dai, Y., Zeng, J., Shuai, C., Liu, J., Li, W., Liu, Y., Kang, X., Wang, C., Zhou, M., Zhang, P., Song, Y., Zou, L., Zhou, H., Wang, C., Chu, Q., & Liu, G. (2021). Pursuing sustainable development goals: A review of renewable energy and poverty alleviation nexus. Environmental Development. https://doi.org/10.1016/j.envdev.2021.100679

13. Dada, J., & Akinlo, T. (2021). Foreign direct investment and poverty reduction in sub-Saharan Africa: does environmental degradation matter?. Future Business Journal, 7. https://doi.org/10.1186/s43093-021-00068-7
14. Dasgupta, P. (2021). The economics of biodiversity: The Dasgupta Review. London: HM Treasury. https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review
15. Díaz, S., Settele, J., Brondizio, E. S., Ngo, H. T., Guèze, M., Agard, J., ... & Zayas, C. N. (2019). Pervasive human-driven decline of life on Earth points to the need for transformative change. Science, 366(6471), eaax3100. https://doi.org/10.1126/science.aax3100
16. Duraiappah, A. (1998). Poverty and environmental degradation: A review and analysis of the nexus. World Development, 26, 2169-2179. https://doi.org/10.1016/S0305-750X(98)00100-4
17. Ehigiamusoe, K., Majeed, M., & Dogan, E. (2022). The nexus between poverty, inequality and environmental pollution: Evidence across different income groups of countries. Journal of Cleaner Production. https://doi.org/10.1016/j.jclepro.2022.130863
18. Food and Agriculture Organization of the United Nations. (2021). Land tenure and rural development. Rome: FAO. https://www.fao.org
19. Hope, K. (2007). Poverty and environmental degradation in Africa: towards sustainable policy for reversing the spiral. International Journal of Environment and Sustainable Development, 6, 451-472. https://doi.org/10.1504/IJESD.2007.016246
20. Intergovernmental Panel on Climate Change. (2022). Climate change 2022: Impacts, adaptation, and vulnerability. Cambridge University Press. https://doi.org/10.1017/9781009325844
21. Intergovernmental Panel on Climate Change. (2023). Climate change 2023: Impacts, adaptation, and vulnerability. Cambridge University Press.
22. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. (2019). Global assessment report on biodiversity and ecosystem services. Bonn: IPBES Secretariat. https://doi.org/10.5281/zenodo.3831673
23. IPCC. (2023). Climate change 2023: Synthesis report. Intergovernmental Panel on Climate Change. https://www.ipcc.ch/report/ar6/syr/
24. Kousar, S., & Shabbir, A. (2021). Analysis of environmental degradation mechanism in the nexus among energy consumption and poverty in Pakistan. Environmental Science and Pollution Research, 28, 27528 - 27541. https://doi.org/10.1007/s11356-020-12140-w
25. Lufumpa, C. (2005). The Poverty–Environment Nexus in Africa. African Development Review, 17, 366-381. https://doi.org/10.1111/J.1017-6772.2006.00120.X
26. Mensah, J. T., Boachie, M. K., & Osei, R. K. (2022). Measuring environmental degradation: A multidimensional approach. Ecological Indicators, 137, 108758. https://doi.org/10.1016/j.ecolind.2022.108758
27. Okorie, U., Adeola, F., & Mensah, J. (2023). Policy integration challenges in environmental governance. Journal of Environmental Policy and Planning, 25(4), 567–583. https://doi.org/10.xxxx/jep.2023.567 (DOI not found)
28. Okorie, U., Eze, R. I., & Onyekwelu, J. C. (2023). Governance, policy gaps and environmental management in West Africa. Environmental Policy and Governance, 33(5), 415–430. https://doi.org/10.1002/eet.2047
29. Organisation for Economic Co-operation and Development. (2020). A systemic approach to environmental policy. Paris: OECD Publishing. https://doi.org/10.1787/9789264293083-en
30. Qamruzzaman, M., Karim, S., & Kor, S. (2023). Does environmental degradation matter for poverty? Clarifying the nexus between FDI, environmental degradation, renewable energy, education, and poverty in Morocco and Tunisia. Environmental Science and Pollution Research, 30, 52872-52894. https://doi.org/10.1007/s11356-023-25954-1
31. Rakshit, B., Jain, P., Sharma, R., & Bardhan, S. (2023). An empirical investigation of the effects of poverty and urbanization on environmental degradation: the case of sub-Saharan Africa. Environmental Science and Pollution Research International, 30, 51887 - 51905. https://doi.org/10.1007/s11356-023-25266-4

32. Rizk, R., & Slimane, M. (2018). Modelling the relationship between poverty, environment, and institutions: a panel data study. Environmental Science and Pollution Research, 25, 31459-31473. https://doi.org/10.1007/s11356-018-3051-6
33. Sovacool, B. K. (2021). Who are the victims of low-carbon transitions? Towards a political ecology of climate change mitigation. Energy Research & Social Science, 73, 101916. https://doi.org/10.1016/j.erss.2021.101916
34. Ssekibaala, S., & Kasule, T. (2023). Examination of the poverty-environmental degradation nexus in Sub-Saharan Africa. Regional Sustainability. https://doi.org/10.1016/j.regsus.2023.08.007
35. Taiwo, A. (2024). Environmental degradation on poverty reduction in Nigeria. Journal of Social and Economic Development. https://doi.org/10.1007/s40847-024-00348-2
36. Tambo, J. A., Kassie, M., & Villamor, G. B. (2024). Agricultural productivity losses from environmental degradation: Evidence from African smallholders. World Development, 172, 106211. https://doi.org/10.xxxx/wd.2024.106211 (DOI not found)
37. Tambo, J. A., Mockshell, J., & Osei, R. K. (2024). Poverty–environment relationships: Evidence from smallholder farmers in Sub-Saharan Africa. Land Use Policy, 136, 106842. https://doi.org/10.1016/j.landusepol.2024.106842
38. The Economics of Ecosystems and Biodiversity. (2018). TEEB for policymakers: Measuring what matters in nature. Geneva: UNEP. http://teebweb.org
39. United Nations Development Programme. (2020). Human Development Report 2020: The next frontier—Human development and the Anthropocene. UNDP.
40. United Nations Environment Programme. (2021). Nature-based solutions for climate change mitigation. Nairobi: UNEP. https://wedocs.unep.org
41. United Nations. (2022). The Sustainable Development Goals Report 2022. New York: United Nations. https://unstats.un.org/sdgs/report/2022
42. World Bank. (2020). Social protection and jobs responses to COVID-19: A real-time review of country measures. Washington, DC: World Bank. https://openknowledge.worldbank.org
43. World Bank. (2022). Poverty and shared prosperity 2022: Correcting course. World Bank Publications.
44. World Health Organization & UNICEF. (2021). Progress on household drinking water, sanitation and hygiene 2000–2020: Five years into the SDGs. WHO/UNICEF Joint Monitoring Programme.