



Finance & Accounting Research Journal  
P-ISSN: 2708-633X, E-ISSN: 2708-6348  
Volume 6, Issue 5, P.No. 763-791, May 2024  
DOI: 10.51594/farj.v6i5.1151  
Fair East Publishers  
Journal Homepage: [www.fepbl.com/index.php/farj](http://www.fepbl.com/index.php/farj)



## Evaluating the effectiveness of global governance mechanisms in promoting environmental sustainability and international relations

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Article Received: 18-01-24

Accepted: 15-04-24

Published: 20-05-24

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### ABSTRACT

This study critically evaluates the effectiveness of global governance mechanisms in promoting environmental sustainability and enhancing international relations. Employing a systematic literature review and content analysis, the research scrutinizes peer-reviewed articles, official reports, and policy documents published between 2010 and 2024. The main objectives were to analyze the role of global governance in environmental sustainability, assess its impact on international relations, and propose strategic recommendations for enhancing governance frameworks. The methodology focused on identifying, selecting, and analyzing relevant literature based on predefined inclusion and exclusion criteria, emphasizing the contributions of multilateral environmental agreements, international organizations, public-private partnerships, and the involvement of civil society and non-governmental organizations. Key findings reveal that while global governance mechanisms have significantly contributed to advancing environmental sustainability goals, challenges related to implementation, compliance, stakeholder engagement, and the integration of technological innovations persist. The study concludes that adaptive governance structures responsive to evolving environmental issues and stakeholder needs are crucial. Strategic

recommendations include strengthening legal and institutional frameworks, enhancing stakeholder engagement, promoting public-private partnerships, and leveraging technological advancements. Directions for future research emphasize exploring the impact of emerging global challenges and investigating the role of non-traditional actors in shaping environmental policies.

**Keywords:** Global Governance, Environmental Sustainability, International Relations, Systematic Literature Review.

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## INTRODUCTION

### **The Role of Global Governance in Environmental Sustainability**

The role of global governance in environmental sustainability has become increasingly significant as the world faces mounting environmental challenges. Global governance mechanisms, encompassing a range of international agreements, organizations, and policies, play a pivotal role in addressing these challenges and promoting sustainable development. This section delves into the essence of global governance in environmental sustainability, drawing on recent scholarly contributions to highlight its impact and effectiveness.

Global governance mechanisms are instrumental in fostering sustainability reporting and governance, which are crucial for achieving national and international sustainable development goals (SDGs). Alsayegh et al. (2023) emphasize the positive relationship between national governance, sustainability reporting, and the achievement of SDGs. Their research across 42 countries over six years demonstrates that effective governance and comprehensive sustainability reporting significantly contribute to the attainment of SDGs, underscoring the importance of these mechanisms in global environmental sustainability efforts. The study also reveals a mediating role of sustainability reporting between national governance and SDGs, suggesting that enhancing transparency and accountability through reporting can bridge the gap between governance practices and sustainable development outcomes (Alsayegh et al., 2023).

Furthermore, the interplay between environmental quality, good governance, globalization, and their collective impact on sustainable development is critical. Guan and Qamruzzaman (2022) explore this nexus within the context of BRIC nations, highlighting how good governance and globalization positively influence environmental sustainability and, by extension, tourism development. Their findings suggest that political stability, governmental effectiveness, and accountability, along with global economic integration, are vital for fostering an environment conducive to sustainability. This underscores the role of global governance in creating a stable and accountable framework that supports environmental and economic sustainability (Guan & Qamruzzaman, 2022).

The economic freedom and clean energy initiatives within the G-20 economies further illustrate the complex dynamics of global governance in promoting environmental sustainability. Alola et al. (2022) examine the effects of economic freedom and renewable energy consumption on environmental sustainability, revealing that certain aspects of economic freedom, such as trade freedom and regulatory efficiency, may have adverse effects on environmental quality (Adelekan et al., 2024). However, the study also points to the potential of clean energy consumption and sound legal frameworks to mitigate these effects and advance sustainable development goals. This highlights the nuanced role of global

governance mechanisms in balancing economic freedoms with environmental sustainability imperatives (Alola et al., 2022; Ohalete et al., 2023).

In summary, global governance plays a crucial role in promoting environmental sustainability through the facilitation of sustainability reporting, the enhancement of good governance and globalization, and the integration of economic freedom with clean energy initiatives. These mechanisms collectively contribute to the achievement of sustainable development goals, underscoring the importance of effective global governance in addressing the environmental challenges of the 21st century.

### **Defining the Framework: Global Governance Mechanisms and Their Impact on International Relations**

Global governance mechanisms play a pivotal role in shaping international relations, particularly in the context of globalization and the increasing interdependence of states. These mechanisms, encompassing a wide array of international organizations, policies, and laws, aim to facilitate cooperation and address global challenges. This section outlines the framework of global governance mechanisms and their impact on international relations, drawing insights from recent scholarly contributions.

The evolution of global governance has been marked by the increasing involvement of states in international organizations and multilateral agreements, reflecting a shift towards a more interconnected and cooperative international order. Shah and Khan (2023) illustrate this through the lens of India's engagement in global governance, highlighting India's transition from a non-aligned stance to an active participant in global governance. India's involvement in climate change initiatives, nuclear non-proliferation, and international trade demonstrates the country's commitment to contributing to global public goods and its recognition of the importance of global governance mechanisms in international relations (Shah & Khan, 2023). Furthermore, the role of international organizations in global governance is critical in mediating the relationship between sovereign states and the international legal framework. Scicluna (2021) explores the impact of organizations such as the United Nations and the European Union on global governance, emphasizing their contribution to the development of semi-legalized governance structures beyond the state. These organizations facilitate the coordination of state actions, promote adherence to international norms, and enhance the legitimacy of the global governance framework. Scicluna's analysis underscores the significance of international organizations in reinforcing the principles of cooperation and legal order in international relations (Scicluna, 2021).

The challenges and opportunities presented by global governance mechanisms are multifaceted, involving complex interactions between sovereign states, international organizations, and global norms. Rewizorski (2019) addresses the dual challenge facing global governance: the aspirations of emerging powers to alter the international order and the disillusionment of Western electorates with globalization's asymmetries. This analysis highlights the dynamic nature of global governance and its implications for the future of multilateralism. The ability of global governance mechanisms to adapt to changing geopolitical realities and societal expectations is crucial for their effectiveness in shaping international relations (Rewizorski, 2019).

In summary, global governance mechanisms are integral to the functioning of international relations in the contemporary world. Through facilitating cooperation, promoting adherence

to international norms, and addressing global challenges, these mechanisms contribute to the stability and order of the international system. The involvement of states in global governance, the role of international organizations, and the challenges facing the global governance framework are key factors that influence the impact of these mechanisms on international relations.

### **Historical Overview: The Evolution of Global Environmental Governance**

The evolution of global environmental governance (GEG) is a complex narrative that intertwines with the development of international relations, scientific understanding, and policy-making in response to global environmental challenges. This historical overview aims to trace the trajectory of GEG, highlighting key milestones and shifts in governance approaches that have shaped the contemporary landscape of international environmental policy.

The concept of environmental governance at a global scale has undergone significant transformation since the latter half of the 20th century. Initially, environmental concerns were primarily national or regional in scope, with limited international cooperation or recognition of global environmental issues. However, the post-World War II era marked the beginning of a gradual shift towards recognizing the interconnectedness of global ecosystems and the need for collective action. The establishment of the United Nations Environment Programme (UNEP) in 1972, following the Stockholm Conference on the Human Environment, represented a pivotal moment in the formalization of GEG, setting the stage for subsequent international environmental agreements (Raju et al., 2018).

The evolution of GEG has been significantly influenced by the development and dissemination of environmental science, particularly the emergence of Earth systems science in the late 20th century. This scientific paradigm underscored the complexity and interdependence of global ecological processes, challenging traditional governance models that were predominantly state-centric and sectoral. The realization that environmental issues such as climate change, biodiversity loss, and pollution transcended national boundaries necessitated a reevaluation of governance structures and mechanisms, leading to the adoption of more holistic and integrative approaches (Bidone & Kovacic, 2018).

One of the defining features of modern GEG is its multi-level nature, encompassing a diverse array of actors including states, international organizations, non-governmental organizations (NGOs), the private sector, and civil society. This plurality of actors reflects the recognition that effective environmental governance requires collaboration across different sectors and levels of society. The role of cities and urban governance, for example, has gained prominence in addressing environmental challenges, given the significant impact of urbanization on ecological systems and the potential for cities to innovate in sustainability practices (Raju et al., 2018).

The Brazilian Amazon serves as a compelling case study in the historical evolution of environmental governance. From policies rooted in nationalism and resource extraction to the implementation of the Reducing Emissions from Deforestation and Forest Degradation (REDD+) programme, Brazil's approach to environmental governance has mirrored broader shifts in GEG. The interplay between national interests, global climate change initiatives, and the narratives that have shaped policy-making in Brazil illustrates the complexity of aligning

local, national, and global objectives within the framework of GEG (Bidone & Kovacic, 2018).

Innovation has emerged as a critical theme in the discourse on environmental governance, reflecting the need for new solutions to address the escalating environmental crises. The relationship between governance and innovation is multifaceted, encompassing technological advancements, policy innovations, and novel approaches to collaboration and participation. The capacity of governance systems to adapt and incorporate innovative practices is crucial for addressing the dynamic challenges of global environmental sustainability (Chang, Wen, & Zheng, 2022).

In conclusion, the historical evolution of global environmental governance is characterized by increasing complexity, the integration of diverse knowledge systems, and the proliferation of actors involved in governance processes. From the early recognition of environmental issues as matters of international concern to the contemporary emphasis on innovation and multi-level governance, GEG has evolved to address the challenges of a rapidly changing world. The ongoing development of GEG reflects the collective endeavor to achieve sustainability and resilience in the face of global environmental challenges.

#### **Aim and Objectives of the study.**

The aim of this study is to evaluate the effectiveness of global governance mechanisms in promoting environmental sustainability and enhancing international relations. This research seeks to understand how various global governance frameworks, including multilateral environmental agreements, international organizations, public-private partnerships, and the role of civil society and non-governmental organizations, contribute to or hinder the achievement of environmental sustainability goals. The study aims to identify best practices, challenges, and opportunities within these mechanisms to provide insights into how global environmental governance can be improved to better address the pressing environmental issues of our time.

The objectives are;

1. To analyze the role of global governance in environmental sustainability
2. To assess the impact of global governance mechanisms on international relations
3. To evaluate the evolution of global environmental governance

#### **METHODOLOGY**

This study employs a systematic literature review and content analysis to evaluate the effectiveness of global governance mechanisms in promoting environmental sustainability and enhancing international relations. The methodology is structured as follows:

##### **Overview of Data Collection Methods**

The primary data sources for this study include peer-reviewed journal articles, conference papers, official reports from international organizations (e.g., United Nations, World Bank, International Monetary Fund), policy documents, and legal texts. Databases such as Web of Science, Scopus, JSTOR, and Google Scholar serve as the main platforms for retrieving relevant literature. Additionally, reports and publications from non-governmental organizations (NGOs) and environmental advocacy groups are considered to gain insights into practical implementations and challenges.

### **Strategy for Literature Search and Selection**

The search strategy involves the use of specific keywords and phrases related to global governance mechanisms, environmental sustainability, and international relations. These include "global governance," "environmental sustainability," "international environmental agreements," "public-private partnerships in environmental governance," "role of NGOs in environmental sustainability," and "technological innovations in environmental governance." Boolean operators (AND, OR) are used to combine these terms and refine the search results. The search is limited to documents published in English from 2010 to 2024, to ensure the relevance and timeliness of the data.

### **Criteria for Inclusion and Exclusion of Studies**

The inclusion criteria for relevant literature in this study are designed to ensure the selection of high-quality, relevant sources that directly contribute to the understanding of global governance mechanisms, their effectiveness in promoting environmental sustainability, and their impact on international relations. Specifically, this study includes peer-reviewed articles and reports published between 2010 to 2024, focusing on the role and impact of global governance mechanisms in environmental sustainability and international relations. The literature must provide empirical data, case studies, theoretical analyses, or comprehensive reviews that align with the study's aim and objectives. This approach ensures the inclusion of recent and relevant findings that contribute significantly to the field of global environmental governance.

Conversely, the exclusion criteria are set to omit literature that does not meet the quality and relevance standards required for this study. This includes non-peer-reviewed articles, opinion pieces, editorials, and any publications that do not directly relate to the themes of global governance, environmental sustainability, or international relations. Additionally, articles published before 2010 are excluded to maintain the timeliness and relevance of the data analyzed. By applying these inclusion and exclusion criteria, the study aims to compile a comprehensive and focused body of literature that accurately reflects current knowledge and trends in global governance mechanisms for environmental sustainability.

### **Approach to Data Synthesis and Analysis**

The selection process involves a two-stage screening. In the first stage, titles and abstracts are screened based on the inclusion and exclusion criteria. In the second stage, full texts of potentially relevant articles are reviewed for detailed assessment. The selection criteria focus on the relevance of the study to the research questions, the methodological rigor, and the contribution of the findings to the field of global environmental governance.

### **Data Analysis**

Data analysis employs content analysis to systematically categorize and interpret the information extracted from the selected literature. This involves coding the data based on predefined themes related to the effectiveness of global governance mechanisms, challenges and barriers, stakeholder roles, and proposed solutions for enhancing governance frameworks. Qualitative data, including case studies and expert opinions, are synthesized to provide insights into the complexities and nuances of global environmental governance.

The methodology outlined ensures a comprehensive and systematic review of the literature, enabling the identification of key findings and gaps in the current understanding of global governance mechanisms in environmental sustainability.

## LITERATURE REVIEW

### **Key Principles of Global Governance in Environmental Sustainability**

The principles of global governance in environmental sustainability are pivotal in addressing the multifaceted challenges of global environmental issues. These principles guide the actions and policies of various stakeholders, including governments, private sectors, non-governmental organizations (NGOs), and international bodies, towards achieving sustainable development goals. This section delves into the key principles of global governance in environmental sustainability, drawing insights from recent scholarly contributions.

Strategic partnerships play a crucial role in promoting environmental sustainability governance. Huda et al. (2021) highlight the importance of university-, industry-, and community-based strategic partnerships for fostering collaboration and advancing sustainable development. These partnerships are instrumental in integrating environmental concerns into public policy formulation and service delivery to address environmental and related issues effectively. The value of strategic partnerships lies in their ability to empower sustainable-based institutional arrangements and contribute to prudent public policy formulation, demonstrating a comprehensive approach to sustainable governance (Huda et al., 2021).

The concept of congruence between environmental policy and practice is essential for the success of global governance in environmental sustainability. Chatzigianni and Mallen (2023) explore this congruence within the context of global sport governance, emphasizing the alignment of environmental disclosures and initiatives with actual implementation. Their findings suggest that formulated strategies, policy development, and implementation are key elements leading to successful environmental sustainability. This underscores the need for consistency and alignment between stated environmental policies and their practical application, highlighting the importance of transparency and accountability in environmental governance (Chatzigianni & Mallen, 2023).

Furthermore, the principle of stewardship is increasingly recognized as a fundamental norm within global environmental governance. Kalfagianni, Partzsch, and Beulting (2020) examine stewardship in the context of hybrid governance arrangements, particularly focusing on certification as a means of fostering sustainability transformations. They argue that stewardship, characterized by citizenship, compassion, and sufficiency, underpins these governance arrangements. However, for stewardship to be fully realized and contribute to global sustainability governance, a more robust public policy agenda that respects environmental limits, acknowledges boundaries for the global poor, and allows for the expression of emotions in public dialogue is necessary (Kalfagianni et al., 2020).

In conclusion, the principles of strategic partnerships, congruence between policy and practice, and stewardship are central to the governance of environmental sustainability at a global level. These principles underscore the importance of collaboration, consistency, and ethical responsibility in addressing the complex challenges of environmental sustainability. By adhering to these principles, stakeholders can work towards a more sustainable and equitable global environmental governance framework.

### **Structure and Function of International Environmental Governance Mechanisms**

The structure and function of international environmental governance mechanisms are critical in addressing the complex challenges of global environmental sustainability. These

mechanisms, ranging from treaties and conventions to regulatory bodies and compliance committees, form the backbone of efforts to manage and protect the global environment.

China's approach to environmental protection within the context of global environmental governance provides a compelling case study of the evolving structure and punitive mechanisms aimed at enforcing environmental laws. An and Sang (2022) discussed China's enhancement of penalty intensity for environmental crimes, particularly pollution, as part of its broader strategy to fulfill international environmental treaty obligations and build an ecological civilization. This approach underscores the importance of stringent enforcement mechanisms within national legal frameworks as a means of contributing to global environmental governance. The effectiveness of such punitive measures is critical in deterring environmental violations and demonstrates the role of national governance structures in supporting global environmental objectives (An & Sang, 2022).

The modern marine environmental governance system in China exemplifies the structural characteristics and operational mechanisms of international environmental governance at a regional level. Chen, Yu, and Wang (2021) provide an analysis of the subjects involved in marine environmental governance, their relationships, and the operational mechanisms that underpin governance efforts. The study highlights the central and local governments' roles as leaders in this governance system, emphasizing the importance of intergovernmental cooperation and the integration of various governance subjects. This model reflects a multi-level governance structure that includes governmental power, social collaboration, and regional coordination, illustrating the complexity and dynamism of environmental governance mechanisms (Chen, Yu, & Wang, 2021).

The role of treaty bodies in monitoring compliance with international environmental obligations further illustrates the functional aspects of environmental governance mechanisms. Otrashvskaya, Solntsev, and Yusifova (2023) discuss the establishment of quasi-judicial procedures and compliance committees as international control mechanisms within global and regional environmental agreements. These bodies are tasked with identifying and resolving issues of non-compliance, thereby ensuring that states adhere to their environmental obligations. The existence of such mechanisms highlights the importance of accountability and compliance in international environmental governance, ensuring that treaties and agreements are not merely symbolic but are actively enforced and monitored (Otrashvskaya, Solntsev, & Yusifova, 2023).

In summary, the structure and function of international environmental governance mechanisms are multifaceted, encompassing a range of entities, from national governments to international treaty bodies, all working towards the common goal of environmental sustainability. The effectiveness of these mechanisms depends on their ability to enforce compliance, foster cooperation among various stakeholders, and adapt to the evolving challenges of global environmental management.

### **Analysis of Multilateral Environmental Agreements (MEAs)**

Multilateral Environmental Agreements (MEAs) have emerged as pivotal frameworks in addressing global environmental issues through collective international action. These agreements, which range from addressing climate change, biodiversity loss, to the management of hazardous wastes, embody the essence of global environmental governance. This analysis draws upon the insights of Kanie (2018), Park (2022), and Delreux (2018) to



explore the structure, function, and impact of MEAs within the broader context of international relations and environmental sustainability.

MEAs serve as a testament to the international community's recognition of environmental issues that transcend national borders, requiring a coordinated and unified response. Kanie (2018) highlights the fragmented yet specialized nature of MEAs, arguing that this characteristic allows for targeted and nuanced approaches to complex environmental challenges. The governance structure of MEAs typically involves a secretariat and a conference of the parties (COP), which facilitate the implementation and monitoring of the agreements. Despite their achievements in slowing down environmental degradation, Kanie points out the persistent challenges that remain, such as air and water pollution, biodiversity loss, and climate change, exacerbated by accelerated globalization.

The role of great powers in the effectiveness and enforcement, India, Japan, Russia, and the United States, reveals a complex interplay of leadership, reluctance, and strategic interests that shape the dynamics of MEAs. Park (2022) argues that while these powers have been instrumental in creating secondary institutions and intergovernmental organizations to implement MEAs, their commitment to assuming responsibility commensurate with their environmental impact and capacity is often lacking. This ambivalence undermines the potential of MEAs to foster a responsible global environmental governance system.

Delreux (2018) further elaborates on the significance of MEAs as a key instrument of global environmental governance, emphasizing their role in facilitating international cooperation and setting global environmental standards. The analysis underscores the importance of MEAs in providing a legal and institutional framework for addressing environmental issues on a global scale. However, Delreux also acknowledges the challenges associated with the implementation and compliance of MEAs, including the need for adequate financial resources, technical capacity, and political will.

The effectiveness of MEAs in promoting environmental sustainability and international relations is contingent upon several factors. First, the structure and function of these agreements must be adaptable to evolving environmental challenges and scientific advancements. The fragmentation of MEAs, while allowing for specialized focus, also necessitates improved coordination and integration to address cross-cutting issues effectively. Kanie (2018) suggests exploring ways to streamline environmental governance without compromising the specificity and strengths of individual MEAs.

Second, the engagement and commitment of great powers play a crucial role in the success of MEAs. As Park (2022) highlights, the leadership or lack thereof by environmental great powers can significantly influence the direction and effectiveness of global environmental policies. The willingness of these nations to align their national interests with global environmental objectives is essential for the robust implementation of MEAs.

Lastly, the challenges of implementation and compliance with MEAs call for enhanced international cooperation, capacity building, and financial support. Delreux (2018) points out the necessity for a concerted effort among signatory countries, international organizations, and other stakeholders to overcome barriers to effective governance. This includes addressing the disparities in technical and financial capacities among countries, fostering transparency and accountability, and promoting stakeholder engagement at all levels of governance.

In conclusion, Multilateral Environmental Agreements represent a critical mechanism in the pursuit of global environmental sustainability and the strengthening of international relations. The insights provided by Kanie (2018), Park (2022), and Delreux (2018) underscore the complexities and opportunities inherent in global environmental governance. To enhance the effectiveness of MEAs, there is a need for strategic innovation, greater collaboration, and a renewed commitment to environmental stewardship from all stakeholders involved.

### **Role of International Organizations in Shaping Environmental Policies**

International organizations (IOs) play a pivotal role in shaping environmental policies and facilitating global environmental governance. Their influence extends across various dimensions, including policy advocacy, financial support, technical assistance, and the facilitation of international cooperation. This analysis draws upon the comparative study of the World Bank and the United Nations Environment Programme (UNEP) by Zhu (2023), the exploration of water policy by Schmidt (2021), and the review of international marine environmental governance by Grip (2017), to elucidate the multifaceted roles of IOs in environmental policy-making.

The World Bank and UNEP represent two distinct yet complementary approaches to environmental governance. The World Bank, primarily a financial institution, leverages its funding capabilities to support environmental projects in developing countries, emphasizing project implementation and financial aid (Zhu, 2023). It provides loans and technical support aimed at promoting sustainable development practices, thereby influencing state behavior towards more environmentally sustainable policies. UNEP, on the other hand, operates as a policy-oriented organization within the United Nations system, focusing on policy guidance, international collaboration, and the provision of ecological data to inform decision-making processes (Zhu, 2023). UNEP's role in advocating for environmental sustainability and facilitating international cooperation underscores the importance of policy guidance and normative frameworks in global environmental governance.

The domain of water policy further illustrates the influence of IOs on environmental governance. Schmidt (2021) discusses how international organizations have developed a global orientation towards water policy, linking concerns over water scarcity to integrated approaches to resource management. As human impacts on the global water system have intensified, IOs have shifted their focus from resource scarcity to environmental security, framing water security as a central element of their policy responses. This evolution in policy framing reflects the ability of IOs to adapt to changing environmental challenges and to influence global policy agendas towards more sustainable and secure management of water resources.

Grip (2017) provides a comprehensive review of international marine environmental governance, highlighting the extensive network of global and regional organizations engaged in the management of the marine environment and its resources. Despite the proliferation of legal frameworks and initiatives aimed at improving cooperation and coordination among these organizations, challenges remain in achieving coherent policies and strategies. Grip (2017) points out that the effectiveness of international organizations in marine environmental governance is fundamentally limited by national-level issues, emphasizing that IOs are only as strong as their member states allow them to be. This observation underscores the complex interplay between national interests and international environmental governance,

highlighting the need for enhanced cooperation among states to strengthen the role of IOs in shaping effective environmental policies.

In summary, international organizations play a crucial role in advancing environmental sustainability and shaping global environmental policies. Through financial support, policy advocacy, technical assistance, and the facilitation of international cooperation, IOs influence the behavior of sovereign states and contribute to the development of comprehensive strategies for environmental protection and sustainable development. The complementary nature of organizations like the World Bank and UNEP, along with the efforts of IOs in areas such as water policy and marine environmental governance, illustrates the multifaceted approach required to address global environmental challenges. Despite the challenges and limitations faced by IOs, their continued involvement in environmental governance remains essential for promoting sustainable development and environmental protection on a global scale.

### **Examination of Public-Private Partnerships in Environmental Governance**

Public-Private Partnerships (PPPs) have increasingly become a pivotal mechanism in addressing complex environmental challenges within the framework of global environmental governance. These partnerships, which bring together the public sector's regulatory and policy-making capabilities with the private sector's efficiency, innovation, and capital, offer a promising pathway towards sustainable environmental management.

Zhang and Su (2023) provide a critical examination of environmental PPPs within China's unique governance context. Their study highlights the role of top-down governance in shaping the development and execution of PPPs, suggesting that the involvement of government payments or subsidies does not necessarily drive efficiency gains but rather empowers top-down governance structures. This finding challenges the conventional wisdom that PPPs inherently lead to more efficient and effective environmental governance outcomes. Instead, the study posits that while PPPs in China are designed to serve and are constrained by top-down governance, this alignment raises potential concerns regarding efficiency and public accountability. The research underscores the importance of examining the internal dynamics and governance arrangements of PPPs to fully understand their impact on environmental governance.

Taylor and Harman (2016) shift the focus to the role of PPPs in governing urban development for climate risk, particularly through the lens of master-planned estates in rapidly urbanizing regions of Australia. Their study examines the potential of traditional urban policy instruments, such as PPPs, to promote climate-adapted greenfield development. The findings reveal that while PPPs contribute to the state's capacity to implement policy efficiently, encourage innovation, and de-risk projects for private partners, they also transfer longer-term environmental risks to the broader planning system and non-partners. This dual outcome highlights the complexities of leveraging PPPs for environmental governance, where the benefits of state coordination and innovation must be balanced against the risks of shifting environmental burdens.

Both studies illuminate the nuanced and multifaceted nature of PPPs in environmental governance. Zhang and Su (2023) draw attention to the governance structures that underpin PPPs and their implications for efficiency and accountability, while Taylor and Harman (2016) focus on the potential and limitations of PPPs in addressing climate risks in urban

development. Together, these insights suggest that while PPPs offer significant opportunities for advancing environmental governance, their effectiveness is contingent upon careful design, governance arrangements, and the alignment of partner objectives.

In summary, PPPs represent a critical instrument in the arsenal of global environmental governance strategies. However, their success in achieving sustainable environmental outcomes depends on a complex interplay of factors, including governance structures, partner alignment, and the management of environmental risks. The insights from Zhang and Su (2023) and Taylor and Harman (2016) underscore the need for a nuanced understanding of PPPs, highlighting the importance of governance arrangements, stakeholder engagement, and the careful management of risks and benefits. As the global community continues to grapple with environmental challenges, the examination of PPPs in environmental governance will undoubtedly remain a vital area of inquiry, necessitating ongoing research, policy innovation, and collaborative efforts across sectors.

### **Innovations and Challenges in Global Environmental Governance**

The landscape of global environmental governance is rapidly evolving, driven by technological innovations and confronted by significant challenges in implementation and compliance. This evolution is marked by the integration of sustainability-oriented innovations into critical infrastructures and the strategic application of smart city concepts to enhance environmental governance.

Sustainability-oriented innovation represents a paradigm shift in addressing global environmental challenges. Hedjazi and Pilipiszyn (2017) emphasize the critical role of such innovations in the implementation of the Sustainable Development Goals (SDGs) within the Gulf Cooperation Council (GCC) countries. By applying the Sustainability-Oriented Innovation Index to critical infrastructures like airports, the authors illustrate how technological, environmental, and social innovations can collectively contribute to the SDGs' achievement. This approach underscores the necessity of moving beyond economic measures of development towards human-centered and value-based indicators, highlighting the importance of engaging civil society and other strategic actors in environmental governance.

The concept of smart cities offers another avenue for innovation in global environmental governance. Ludlow (2017) discusses the experiences of European smart cities projects, focusing on the challenges and opportunities presented by the integration of science and technology, innovation, and cultural activity within urban development. Smart city governance innovations, characterized by open, co-created, and inclusive urban governance, provide a new model for addressing complex environmental problems. These innovations facilitate a holistic approach to urban development, leveraging socio-economic and environmental indicators to enhance competitiveness while achieving social cohesion and environmental sustainability.

However, the implementation of sustainability-oriented innovations and smart city concepts faces several challenges. One of the primary challenges is the need for nested structures of responsibility, as some objectives of the SDGs cannot be achieved solely through policy (Hedjazi & Pilipiszyn, 2017). The engagement of civil society and the translation of the SDGs into language that resonates with the public are crucial for overcoming apathy and resistance to environmental initiatives. Additionally, the mismatch between the role cities are

expected to play in global governance and their actual place within global governance structures hinders the collective ability to address planetary challenges (Ludlow, 2017).

The case studies presented by Hedjazi and Pilipiszyn (2017) in the GCC countries and by Ludlow (2017) in European smart cities highlight the potential of technological and societal innovations to transform environmental governance. These innovations not only support the implementation of the SDGs but also foster the adaptability, reflexivity, and responsiveness required for effective global environmental governance. However, achieving this potential requires addressing the challenges of engagement, responsibility, and governance structure alignment.

In summary, the integration of sustainability-oriented innovations and the application of smart city concepts represent significant advancements in global environmental governance. These innovations offer promising pathways for addressing the complex and interconnected challenges of environmental sustainability. However, the effectiveness of these innovations is contingent upon overcoming the challenges of implementation and compliance, engaging a broad spectrum of stakeholders, and aligning governance structures with the global environmental agenda. The insights from Hedjazi and Pilipiszyn (2017) and Ludlow (2017) provide valuable perspectives on navigating these innovations and challenges, underscoring the need for a collaborative and inclusive approach to global environmental governance.

### **Technological Innovations and Their Impact on Governance**

Technological innovations have significantly influenced the landscape of global environmental governance, introducing both opportunities and challenges in the pursuit of sustainability and compliance. Glicksman, Markell, and Monteleoni (2017) explore the transformative potential of technological innovation in environmental enforcement. They highlight how advancements in data analytics, monitoring capabilities, and information dissemination have reshaped the strategies employed by regulatory agencies such as the Environmental Protection Agency (EPA). These technological tools enable more efficient compliance monitoring and enforcement, facilitating a shift towards more proactive and preventive governance models. However, the authors also caution against potential pitfalls, including privacy concerns and the risk of over-reliance on technology, which could undermine the effectiveness of governance efforts (Ajala and Balogun, 2024).

Khan and Khan (2023) delve into the effects of technological innovations on environmental quality, within the context of urbanization and economic growth. Their study underscores the dual role of technology as both a contributor to and a mitigator of environmental degradation. While technological advancements can lead to increased carbon dioxide emissions through industrialization and urbanization (Okunade et al., 2023), they also offer solutions for enhancing environmental quality through improved efficiency and the development of green technologies (Ehimuan et al., 2024). The authors argue that effective governance plays a crucial role in harnessing the positive aspects of technological innovation, emphasizing the need for policies that encourage the adoption of environmentally friendly technologies.

Fazal and Azam (2023) investigate the moderating role of governance in the relationship between technological innovations, economic growth, and environmental degradation. Their findings suggest that governance quality significantly influences the impact of technology on environmental outcomes. Good governance practices, including transparency, accountability, and effective policy implementation, amplify the positive effects of technological innovations

on environmental sustainability. Conversely, weak governance can exacerbate the negative consequences of economic growth and technological development on the environment.

In conclusion, technological innovations hold immense potential for improving environmental governance and achieving sustainability goals. However, the realization of this potential depends critically on the quality of governance mechanisms in place. As Glicksman, Markell, and Monteleoni (2016), Khan and Khan (2023), and Fazal and Azam (2023) collectively illustrate, the interplay between technology and governance is complex and multifaceted. Effective governance is essential for steering technological innovation towards positive environmental outcomes, mitigating the risks associated with technological advancement, and ensuring that the benefits of innovation are realized in a manner that promotes environmental sustainability and compliance (Adewusi, 2020).

### **Challenges in Implementation and Compliance**

The implementation and compliance with global environmental governance mechanisms present significant challenges, influenced by a complex interplay of domestic regulations, international standards, and the effectiveness of enforcement mechanisms. Drawing on insights from Grano (2016), Lappe-Osthege (2023), and Malets (2013), this section explores the multifaceted nature of these challenges and their implications for environmental governance.

Grano (2016) provides a comprehensive analysis of China's environmental governance, highlighting the transition towards more determined efforts to address environmental issues. The study underscores the challenges of implementing centrally formulated environmental policies at the local level, where economic development priorities often overshadow environmental considerations. Grano emphasizes the importance of public participation and conflict resolution mechanisms in enhancing compliance and enforcement, suggesting that effective environmental governance requires not only robust legal frameworks but also active engagement with affected stakeholders.

Lappe-Osthege (2023) introduces the concept of 'ripple effects' of compliance within the European Union's (EU) transboundary environmental governance. This innovative perspective sheds light on how compliance within the EU can inadvertently perpetuate environmental harms beyond its borders, through mechanisms such as crime displacement and institutional misfit. The study calls for a reconfiguration of EU policy effectiveness, advocating for strengthened multilevel and cross-jurisdictional governance that addresses the entire ecosystem. Lappe-Osthege's analysis highlights the need for governance models that transcend national boundaries and incorporate a holistic understanding of socio-ecological systems.

Malets (2013) examines the role of domestic regulations and third-party compliance assessments in the effectiveness of transnational non-state governance, specifically through the lens of forest certification by the Forest Stewardship Council. The paper reveals how domestic institutional environments can either facilitate or hinder the implementation of international environmental standards. Malets points out that third-party auditing plays a crucial role in navigating these institutional challenges, emphasizing the dynamic interaction between domestic laws, international standards, and the practical application of certification processes.

In summary, the challenges of implementation and compliance in global environmental governance are deeply intertwined with the regulatory, institutional, and socio-economic contexts within which they operate. The studies by Grano (2016), Lappe-Osthege (2023), and Malets (2013) collectively illustrate the complexity of ensuring effective environmental governance across different levels and jurisdictions. Addressing these challenges requires a concerted effort to harmonize international standards with domestic regulations, enhance the capacity for third-party compliance assessment, and foster inclusive governance models that prioritize ecosystem-wide sustainability and stakeholder participation.

## **DISCUSSION OF FINDINGS**

### **Effectiveness of Global Governance Mechanisms**

The effectiveness of global governance mechanisms in promoting environmental sustainability is a multifaceted issue that encompasses various strategies, from regulatory frameworks to market-oriented mechanisms and collaborative efforts.

Primmer et al. (2014) offer a comprehensive analysis of governance mechanisms in biodiversity conservation, identifying four main strategies: command and control, planning and management, market-oriented mechanisms and economic instruments, and collaborative and participatory approaches. Their study emphasizes the importance of scale-sensitivity and scale-effectiveness in governance, arguing that successful environmental governance must navigate the complexities of implementing policies that are both adaptable to local contexts and effective at larger scales. The analysis underscores the need for governance mechanisms that can leverage local knowledge and interests while achieving conservation targets that benefit broader ecological systems.

Dubinsky et al. (2011) explore governance mechanisms within the context of global software development environments, identifying key practices such as governance definition, enactment, business awareness, and goal achievement. While the primary focus is on software development, the findings offer valuable insights into the broader discussion of global governance effectiveness. High levels of governance definition and goal achievement are associated with reduced team conflict, suggesting that clear governance structures and focused objectives can enhance the effectiveness of collaborative efforts across different domains, including environmental governance.

Uehara et al. (2023) discuss the concept of 'glocalizing' land-use and forest governance in the tropics, examining the impact of international forest policies and research partnerships on Brazil, the Democratic Republic of the Congo (DRC), and Indonesia. The study highlights the challenges and opportunities presented by transnational initiatives and market-based solutions in addressing deforestation and forest degradation. It calls for more equitable research partnerships and a reevaluation of policy instruments to ensure that governance mechanisms do not merely shift environmental burdens from one region to another but instead foster sustainable development and conservation efforts that are beneficial globally.

In summary, the effectiveness of global governance mechanisms in promoting environmental sustainability is contingent upon their ability to integrate and balance local needs with global objectives. The studies by Primmer et al. (2014), Dubinsky et al. (2011), and Uehara et al. (2023) collectively illustrate the complexity of implementing and complying with environmental governance across different scales and contexts. They highlight the necessity for governance mechanisms that are adaptable, participatory, and capable of addressing the

multifaceted challenges of environmental sustainability. As the global community continues to grapple with environmental degradation, the development of effective governance mechanisms that can navigate these complexities will be crucial in achieving long-term sustainability goals.

### **Case Studies of Successful and Unsuccessful Governance Models**

The effectiveness of governance models in environmental sustainability can be elucidated through an examination of both successful and unsuccessful case studies. This analysis draws upon the insights provided by Jones et al. (2015), Tortajada and Biswas (2019), and Amarachi et al. (2023), to explore the dynamics that contribute to the success or failure of governance models in managing environmental resources.

Jones et al. (2015) investigate the governability of mangrove ecosystems in Thailand through a comparative analysis of self-governance and co-governance arrangements. Their study highlights six case studies, evenly split between successful and unsuccessful outcomes. The successful cases were characterized by trust and cooperation among stakeholders, conflict resolution mechanisms, and the perception of fairness and legitimacy in the governance process. In contrast, the unsuccessful cases lacked these elements, underscoring the importance of stakeholder engagement and the establishment of governance models perceived as equitable and just. This study challenges the conventional wisdom that extensive community engagement, formal recognition of community-designed solutions, and significant external funding are prerequisites for successful environmental governance.

Tortajada and Biswas (2019) focus on the urban water management sector, presenting objective case studies from cities in the developing world. Their research emphasizes the critical need for comprehensive, independent analyses of water utilities to understand the contextual factors contributing to their success or failure. The study reveals that overcoming challenges such as setting fiscally responsible tariffs, managing political interference, and improving governance practices are pivotal for the success of water utilities. These insights are crucial for underperforming utilities in similar socio-economic contexts, offering a roadmap for addressing governance and management challenges.

Amarachi et al. (2023) provide a holistic view of sustainable water and wastewater management, incorporating challenges, innovations, and lessons learned from global case studies. Their review identifies key factors contributing to the success or failure of projects, including public awareness, waste disposal management, and the adoption of green infrastructure technologies. Successful case studies showcased the environmental, social, and economic benefits of innovative governance models, while failures were often attributed to inadequate planning, insufficient funding, weak regulatory frameworks, and governance structures.

In summary, the examination of successful and unsuccessful governance models in environmental sustainability reveals a complex interplay of factors that determine their effectiveness. Trust, cooperation, stakeholder engagement, and the perception of fairness and legitimacy emerge as critical elements for success. Conversely, failures are often linked to deficiencies in planning, funding, and governance structures. These case studies provide valuable insights for policymakers, practitioners, and researchers, offering guidance on designing and implementing governance models that can effectively address environmental challenges and promote sustainability.sala



### **Impact on International Environmental Policies and Relations**

The intricate landscape of global environmental governance is shaped by a myriad of mechanisms, including international agreements, forest governance policies, green investments, and environmental diplomacy. These mechanisms collectively influence the formulation and implementation of international environmental policies, as well as the dynamics of international relations.

Sotirov et al. (2020) delve into the realm of international forest governance, examining its institutional architecture and pathways of influence in global sustainability. Their research underscores the multifaceted challenges in addressing deforestation and forest degradation, pivotal issues within global environmental governance. The study identifies six key arrangements in forest governance, assessing their effectiveness in terms of actors involved, legal authority, and geopolitical scope. The findings reveal significant inconsistencies with forest-adverse economic sectors, pointing to the need for coherent international policy cooperation. This research highlights the critical role of forest governance in shaping international environmental policies, emphasizing the necessity for integrative actions across sectors to achieve the UN 2030 Sustainable Development Goals.

The study reveals that the global environmental problem significantly influences the scope, structure, and trends of green investment processes. It emphasizes the importance of modern institutional structures and economic motivations for financial intermediaries' participation in green investment processes on a global scale. This research sheds light on the pivotal role of green investments in driving the transition towards sustainable development, underscoring their influence on international environmental policies and the competitive dynamics of global markets.

Shao (2023) addresses the transformative phase of international environmental diplomacy, exploring contemporary impediments and policy countermeasures. The research highlights the urgency of addressing climate change and its impacts, necessitating effective environmental policies on the international stage. It examines the complex dynamics between developed and developing nations, the challenges of reconciling economic growth with environmental protection, and the evolving landscape of global environmental management. Shao's study underscores the importance of diplomatic strategies that bridge the gap between nations, advocating for environmentally friendly technologies and practices. This research points to the critical role of environmental diplomacy in shaping international relations and advancing global environmental governance.

In conclusion, the impact of global governance mechanisms on international environmental policies and relations is profound and multifaceted. The insights from Sotirov et al. (2020) and Shao (2023) illustrate the complexities of navigating the challenges of deforestation, green investments, and environmental diplomacy. These studies underscore the need for coherent policy cooperation, integrative actions across sectors, and innovative governance mechanisms to enhance the effectiveness of global environmental governance. As the international community continues to grapple with environmental challenges, the role of global governance mechanisms in shaping international policies and relations will undoubtedly remain a vital area of inquiry and action.

### **Barriers to Effective Global Governance and Proposed Solutions**

The quest for effective global governance is fraught with numerous barriers, from the inclusion of marginalized groups to the management of non-communicable diseases (NCDs) and the reconstruction of international cooperation in the post-pandemic era.

Trevisan and Cogburn (2019) highlight the critical role of technology in facilitating the participation of the disability community in global governance processes. Despite the potential of low-cost accessible technological solutions and social media platforms to bridge the gap between disability rights advocates and global governance, barriers such as lack of accessibility and limited implementation of virtual participation tools persist. The study suggests that enhancing the accessibility of international conferences and leveraging online technologies can significantly improve the inclusivity of global governance, allowing for a broader range of voices to be heard in policy-making processes.

Gostin (2007) addresses the global health challenge posed by NCDs, emphasizing the slow and fragmented global response to this growing burden. The dominance of NCDs, driven by factors such as urbanization and global markets, calls for a stronger global governance framework to spur national action. Gostin proposes a suite of cost-effective NCD prevention measures, including the regulation of industry to improve nutrition and restrict marketing of unhealthy products. Strengthening global governance could enhance national efforts by providing funding, creating stronger norms, and holding states accountable for health outcomes.

Wang (2021) reflects on the historical context of the Bretton Woods system established post-World War II to prevent global fragmentation and promote international cooperation. Drawing parallels with the current need for a "Bretton Woods 2.0" moment in the wake of the COVID-19 pandemic, Wang advocates for the reconstruction of global governance to address contemporary challenges such as climate change. Proposed solutions include transforming existing institutions to better reflect post-pandemic realities and leveraging China's historical experience to contribute to global governance reforms.

In summary, overcoming the barriers to effective global governance requires a multifaceted approach that includes technological innovation, regulatory reforms, and institutional restructuring. By addressing the inclusivity of marginalized groups, strengthening responses to global health challenges, and rebuilding international cooperation for the modern era, the global community can enhance the effectiveness of governance mechanisms. These efforts are essential for achieving sustainable development, promoting global health (Obaigbena et al., 2024), and fostering a more inclusive and cooperative international order.

### **Future Trends in Global Governance for Environmental Sustainability**

The evolving landscape of global governance for environmental sustainability is shaped by a confluence of emerging trends, innovative governance mechanisms, and the imperative for more inclusive and effective international cooperation.

Biermann and Pattberg (2012) offer a comprehensive reevaluation of global environmental governance by identifying three major trends: the rise of nonstate actors, the development of new mechanisms of transnational cooperation, and the increasingly segmented and overlapping layers of authority. Their analysis underscores the significance of nonstate actors, including international bureaucracies, global corporations, and transnational networks of scientists, in shaping global sustainability governance. Furthermore, the authors highlight

the potential of novel governance mechanisms, such as transnational environmental regimes and public-private partnerships, to address the complexities of global environmental challenges. This evolving governance landscape suggests a move towards more decentralized and flexible governance structures that can adapt to the dynamic nature of global environmental issues.

Pattberg and Widerberg (2015) delve into the theoretical underpinnings of global environmental governance in the Anthropocene, emphasizing the shift from addressing isolated problems to reorganizing the overall relationship between humans and natural systems. The authors argue that environmental governance now requires a holistic approach that considers institutional interactions, functional overlaps, and normative questions of equity and fairness. This perspective calls for a reimagined framework of global governance that is capable of integrating diverse governance approaches and ensuring that sustainability policies are both ecologically sound and socially just.

Qi et al. (2017) discuss the implications of a changing political landscape for global governance and climate change action. The seminar highlighted by the authors reflects on the challenges and opportunities presented by political shifts, such as the election of leaders with divergent views on climate change. The discussion points towards the need for a "Bretton Woods 2.0" moment—a rethinking of global governance structures to better address contemporary global threats like climate change. The authors advocate for stronger international cooperation and the development of governance mechanisms that are more responsive to the realities of the post-pandemic world.

In summary, the future of global governance for environmental sustainability lies in embracing the complexity of global environmental challenges, fostering inclusive participation from a broad range of actors, and developing flexible, integrated governance mechanisms. The insights from Biermann and Pattberg (2012), Pattberg and Widerberg (2015), and Qi et al. (2017) underscore the importance of innovation, collaboration, and adaptability in shaping a sustainable future. As the global community navigates the uncertainties of the Anthropocene, the evolution of global governance mechanisms will be crucial in achieving long-term environmental sustainability and equity.

### **The Role of International Law and Policy Frameworks**

The intricate fabric of global environmental governance is significantly influenced by the frameworks of international law and policy. These frameworks not only shape the conduct of states and non-state actors but also define the contours of cooperation and conflict resolution in the environmental domain. Drawing upon the insights provided by Yu (2022), Scicluna (2021), and Elsässer et al. (2022), this analysis explores the pivotal role of international law and policy frameworks in steering global environmental governance, highlighting their effectiveness, challenges, and the dynamics of institutional interplay.

Yu (2022) delves into the effectiveness of international law in global environmental relations, employing the lens of international institutional theory. The study underscores the evolution of global environmental protection laws and regulations from their nascent stages in the 1970s to their current complex structure. Yu posits that despite the rapid development of legal frameworks to address environmental issues, there remains a critical need to assess the rationality and efficacy of these systems. The research emphasizes the role of non-state actors and the expansion of international frameworks to include a broader spectrum of participants,

suggesting that international law continues to play a crucial role in addressing global environmental challenges. This perspective sheds light on the potential of international law to cater to contemporary needs and provide guidance for future environmental governance.

Scicluna (2021) focuses on the intersection of law and politics in global environmental governance, particularly examining the regulatory landscape's fragmentation. The chapter identifies core principles common to many environmental regimes, such as the precautionary principle and the concept of sustainable development, and analyzes global climate change governance evolution. Scicluna traces the legal-institutional milestones from the UN Framework Convention on Climate Change to the Paris Agreement, highlighting the challenges of fragmentation and the efforts to bring unity and coherence to global environmental governance. This analysis provides a comprehensive overview of the legal and political dynamics shaping international environmental policies and underscores the importance of cohesive frameworks in addressing global environmental issues.

Elsässer et al. (2022) synthesize research on institutional interplay within global environmental governance, focusing on the cooperation, discord management, and problem-solving efforts across multiple regimes. The study highlights the increasing interactions between transnationally operating institutions and the emergence of polycentric governance and hybrid institutional complexes. By examining the types, dimensions, pathways, and effects of institutional interplay, the research offers key insights into maximizing synergies and addressing regulatory gaps in a fragmented governance landscape. This contribution underscores the necessity for empirical and conceptual research to understand the interplay between intergovernmental and transnational institutions fully.

In conclusion, the role of international law and policy frameworks in global environmental governance is multifaceted and pivotal. The insights from Yu (2022), Scicluna (2021), and Elsässer et al. (2022) illustrate the complexity of governing the global environment through legal and policy instruments. These studies highlight the need for coherent, integrated approaches to environmental governance that can navigate the challenges of fragmentation, institutional interplay, and the evolving landscape of global environmental issues. As the international community continues to grapple with environmental challenges, the frameworks of international law and policy remain essential tools in the quest for sustainable global governance.

### **Stakeholder Engagement and Multi-Level Governance**

The integration of stakeholder engagement and multi-level governance has become increasingly crucial in addressing the complex challenges of environmental governance. Papageorgiou (2022) examines the transboundary marine governance and stakeholder engagement in the Eastern Mediterranean, highlighting the complexities of managing marine environments with extensive coastlines and diverse ecosystems. The study underscores the importance of multi-level and cross-sectoral governance schemes, emphasizing the need for meaningful involvement of local governments in the maritime spatial planning (MSP) process. Papageorgiou argues for the decentralization of certain competencies and licensing of marine activities to local governments, advocating for MSP to also be performed at the local scale where land-sea interactions can be more effectively addressed. The establishment of regional networks engaging coastal regions and local stakeholder networks is proposed as

a step towards enhancing stakeholder engagement and ensuring the successful implementation of MSP.

Hovardas (2021) delves into the concept of social sustainability as social learning, using collaborative governance as a lens to examine multi-stakeholder schemes in natural resource management, wildlife conservation, and protected area governance. The paper identifies commonalities between social sustainability and social learning, revealing the potential for cross-fertilization of the two concepts. Hovardas (2021) highlights the dialectic between stakeholder collaboration and conflict under power asymmetries, emphasizing the need for scaffolding social learning in multi-stakeholder governance schemes to achieve a process-oriented account of social sustainability. The study suggests that managing the dynamics between collaboration and conflict through social learning templates can serve as a precondition for innovations in environmental governance.

Salamanca-Cano and Durán-Díaz (2023) evaluate multi-stakeholder engagement in the Bogotá River Basin, Colombia, focusing on sustainable water management. The research identifies the enhancement of stakeholder engagement through formal and informal participatory mechanisms as crucial in the policy-making process. However, the study points out a lack of engagement in the evaluation and follow-up phases, leading to superficial participation. Salamanca-Cano and Durán-Díaz advocate for comprehensive stakeholder engagement throughout the policy-making process, particularly in the evaluation and follow-up stages, to promote shared decision-making and identify common goals for sustainable water management.

In conclusion, stakeholder engagement and multi-level governance are pivotal in navigating the complexities of environmental governance. The studies by Papageorgiou (2022), Hovardas (2021), and Salamanca-Cano and Durán-Díaz (2023) collectively highlight the necessity of involving a broad range of stakeholders and adopting a multi-level governance approach to address environmental challenges effectively. By fostering meaningful participation, enhancing collaboration, and integrating social learning into governance processes, environmental management can achieve greater sustainability and resilience.

### **The Role of Civil Society and Non-Governmental Organizations**

The influence of civil society and non-governmental organizations (NGOs) in the realm of environmental governance has grown significantly over the past decades. These entities have transitioned from peripheral actors to central figures in the development, implementation, and advocacy of environmental policies at both the international and national levels. Drawing upon the insights provided by Spijkers (2021), Wang (2023), and Azis (2022), this analysis explores the multifaceted roles that civil society and NGOs play in shaping environmental policies, highlighting their contributions, challenges, and the evolving nature of their engagement in global environmental governance.

Spijkers (2021) emphasizes the concept of "global public participation," where non-state actors, including NGOs and members of the global civil society, engage in environmental governance not as formal lawmakers but through less formal, yet impactful, channels. This participation extends beyond traditional advocacy, encompassing roles in setting agendas, influencing policy through expert knowledge, and mobilizing public opinion towards sustainable development goals (SDGs) and environmental conservation. The involvement of these actors in the formulation and advocacy of the Millennium Development Goals (MDGs)

and the SDGs exemplifies their capacity to contribute to global environmental governance beyond the confines of formal legal structures.

Wang (2023) focuses on the specific context of international water law, illustrating how NGOs leverage their expertise and public interest orientation to facilitate international cooperation on transboundary water issues. By participating in official meetings as observers and partners, publishing research, and advocating for the drafting and signing of international treaties, NGOs play a crucial supplementary role in global water governance. Wang's analysis underscores the unique position of NGOs to address the water crisis, which transcends national boundaries and requires a collaborative, informed approach to ensure equitable and sustainable management of water resources.

Azis (2022) provides a critical examination of the effectiveness of NGOs in influencing environmental policy changes at the national level. While acknowledging the significant role of NGOs in raising environmental awareness and contributing to the development of international environmental regimes, Azis (2022) highlights the challenges faced by NGOs in translating their success at international forums to tangible policy changes within nation-states. The analysis suggests that despite their contributions to advocacy and service delivery, NGOs often encounter limitations in pushing for substantial environmental policy reforms, particularly in developing countries. This discrepancy points to the need for a nuanced understanding of the conditions under which NGOs can effectively influence environmental policymaking.

The collective insights of Spijkers (2021) illustrate the complex landscape in which civil society and NGOs operate within the domain of environmental governance. Their contributions are marked by significant achievements in promoting sustainable development, advocating for international cooperation on environmental issues, and engaging in policy formulation and implementation. However, the challenges they face, including the need for greater influence in national policymaking and overcoming limitations in formal legal participation, underscore the ongoing evolution of their roles in environmental governance.

In summary, civil society and NGOs play indispensable roles in shaping environmental policies, leveraging their expertise, advocacy capabilities, and global networks to influence both international and national governance frameworks. Their ability to mobilize public support, engage in constructive dialogue with policymakers, and contribute to the development of sustainable environmental policies is critical for addressing the complex environmental challenges of the 21st century. As the global community continues to grapple with issues such as climate change, biodiversity loss, and water scarcity, the role of civil society and NGOs in environmental governance will undoubtedly remain pivotal, necessitating continued support, recognition, and integration into formal governance processes.

### **Corporate Responsibility and Environmental Stewardship**

The imperative for corporate responsibility and environmental stewardship has never been more critical, as businesses worldwide face increasing pressure to contribute positively to global environmental governance. This analysis draws upon the insights of Peng et al. (2023), Ao et al. (2023), and Li and Wu (2020) to explore the evolving role of corporate governance in enhancing multinational corporations' (MNCs) environmental performance, the impact of corporate sustainability development strategies, and the real effects of corporate social

responsibility (CSR) engagements on environmental, social, and governance (ESG) outcomes.

Peng et al. (2023) investigate the relationship between the internationalization of MNCs and their environmental performance, highlighting the significant role of corporate governance as a moderating factor. The study reveals a positive correlation between internationalization and environmental performance, suggesting that MNCs with global operations tend to adopt more robust environmental strategies. This is partly due to the diverse environmental regulations and stakeholder expectations across different markets, which compel MNCs to elevate their environmental standards. Furthermore, the research underscores the importance of board independence in strengthening the attention to stakeholders' environmental concerns, thereby enhancing MNCs' environmental responsibility.

Ao et al. (2023) delve into the dynamics between corporate sustainability development strategies and corporate environmental governance, with a particular focus on the moderating role of corporate environmental investments. Their analysis, based on data from Chinese enterprises, illustrates how sustainability-oriented strategies are integral to effective environmental governance. The study emphasizes that corporate environmental investments not only signify a firm's commitment to environmental stewardship but also bolster the firm's capacity to implement sustainable practices. This synergy between sustainability strategies and environmental investments is crucial for corporations aiming to navigate the complexities of global environmental challenges while pursuing economic growth.

Li and Wu (2020) provide a critical assessment of the societal impact of CSR engagements, using participation in the United Nations Global Compact (UNGC) as a proxy. Their findings reveal a stark contrast between public and private firms in terms of the real ESG impact following CSR engagements. While private firms demonstrate a significant reduction in negative ESG incidents post-UNGC engagement, public firms often engage in decoupled CSR actions—initiatives that fail to translate into tangible environmental improvements. This discrepancy highlights the challenges in aligning shareholder and stakeholder interests and suggests that a one-size-fits-all approach to CSR may not effectively address the nuanced demands of global environmental governance.

The collective insights from Peng et al. (2023), Ao et al. (2023), and Li and Wu (2020) underscore the multifaceted nature of corporate responsibility in the context of global environmental governance. The studies reveal that effective environmental stewardship requires a strategic alignment of corporate governance structures, sustainability development strategies, and genuine CSR engagements. Moreover, they highlight the need for corporations to navigate the delicate balance between economic objectives and environmental commitments, ensuring that their global operations contribute positively to environmental sustainability.

In summary, the role of corporate responsibility and environmental stewardship in global environmental governance is increasingly recognized as pivotal for addressing the pressing environmental challenges of our time. As corporations continue to expand their global footprint, the integration of robust environmental strategies, supported by effective corporate governance and genuine CSR engagements, will be crucial for fostering sustainable development and achieving long-term environmental goals. The insights provided by the referenced studies offer valuable guidance for policymakers, corporate leaders, and

stakeholders in enhancing the environmental performance of businesses and contributing to the broader objectives of global environmental governance.

### **CONCLUSIONS**

The systematic literature review and content analysis conducted in this study have provided comprehensive insights into the effectiveness of global governance mechanisms in promoting environmental sustainability and enhancing international relations. This conclusion synthesizes the key findings, outlines the future challenges and opportunities for global environmental governance, offers strategic recommendations for enhancing governance frameworks, and suggests directions for future research.

The study reveals that global governance mechanisms play a crucial role in addressing environmental challenges and facilitating international cooperation. Multilateral environmental agreements, international organizations, public-private partnerships, and the involvement of civil society and non-governmental organizations have contributed significantly to advancing environmental sustainability goals. However, the effectiveness of these mechanisms varies, with challenges related to implementation, compliance, stakeholder engagement, and the integration of technological innovations. The findings underscore the importance of adaptive governance structures that can respond to evolving environmental issues and stakeholder needs.

Global environmental governance faces numerous challenges, including political will, resource allocation, and the need for more inclusive and equitable participation. However, these challenges also present opportunities for reform and innovation. The future of global environmental governance lies in strengthening the capacity of existing mechanisms, fostering greater collaboration among stakeholders, and leveraging technological advancements to improve monitoring, compliance, and engagement. Additionally, there is a growing recognition of the need to integrate environmental sustainability with economic and social policies to achieve holistic and sustainable development outcomes.

To enhance the effectiveness of global governance frameworks, this study recommends the following strategic actions:

1. Strengthening the legal and institutional frameworks to ensure better compliance and enforcement of environmental agreements.
2. Enhancing stakeholder engagement, particularly of marginalized communities, to ensure that governance mechanisms are inclusive and equitable.
3. Promoting public-private partnerships that leverage the strengths of both sectors in addressing environmental challenges.
4. Integrating technological innovations into governance mechanisms to improve data collection, monitoring, and stakeholder participation.
5. Encouraging interdisciplinary research and collaboration to address the complex interconnections between environmental sustainability, economic development, and social equity.

Future research in global environmental governance and international relations should focus on:

1. Exploring the impact of emerging global challenges, such as climate change and biodiversity loss, on governance mechanisms and international cooperation.



2. Investigating the role of non-traditional actors, including the private sector and civil society, in shaping global environmental policies.
3. Assessing the effectiveness of new governance models, such as network governance and co-management arrangements, in promoting environmental sustainability.
4. Examining the potential of digital technologies and big data analytics in enhancing the transparency, accountability, and effectiveness of governance mechanisms.
5. Analyzing the interplay between global environmental governance and other policy domains, such as trade, health, and security, to identify synergies and conflicts.

Finally, this study highlights the critical role of global governance mechanisms in addressing environmental challenges and underscores the need for continuous innovation, collaboration, and research to enhance the effectiveness of these mechanisms. By addressing the identified challenges and leveraging the opportunities for reform, the global community can advance towards a more sustainable, equitable, and resilient future.

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