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Research Article

The Role of business in achieving biodiversity targets: challenges and opportunities

Tavan Bajger[1], Khairi Ali Auso Ali[1], Kawar Mohammed Mousa[1]*, Dildar Haidar Ahmed[2]

[1]Department of Business Administration, Near East University, Nicosia 99138, North Cyprus, via Mersin 10, Turkey

[2] Department of Economic Science, College of Administration and Economics, University of Zakho, Zakho P.O. Box 12, Iraq Email: dildar.ahmed@uoz.edu.krd

*Email: kawarmohammed.mousa@neu.edu.tr

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Abstract

Businesses are an important part of the solution to the problem of biodiversity loss. Despite this, linking biodiversity conservation with strategy is often held back by two apparent barriers, which are financial, regulatory, and operational. This study analyzes the role of businesses in meeting biodiversity targets and identifies major obstacles that prevent them from evolving and strengthening their biodiversity initiatives. A qualitative and quantitative study approach is used. Stakeholders from different industries were surveyed and interviewed, and experts were consulted to collect primary data. The impacts of biodiversity initiatives were assessed through case studies in agriculture, manufacturing, retail, and other sectors. Thematic analysis was used for qualitative data, and statistical methods for survey results. However, sectors such as agriculture and energy were found to be leading in terms of conservation of biodiversity in the study, and sustainable sourcing and waste management techniques were shown to have yielded positive outcomes. On the other hand, retail sector initiatives such as carbon offsetting had negative biodiversity impacts. It showed several barriers that have obstructed the successful implementation of biodiversity practices, including financial constraints, complex regulatory barriers, and a lack of expertise. Barriers to progress must be overcome, and technological innovations must be harnessed to take up sustainable business models that facilitate significant contributions to biodiversity conservation. Biodiversity is protected best when corporations join as partners in multisector collaboration.

Keywords: Biodiversity Conservation, Corporate Strategy, Financial Constraints, and Sustainable Business Models.

Introduction

Biodiversity supports ecosystem stability because it includes the diversity of species and ecosystems together with genetic diversity across the entire planet (Fargione et al., 2018). Making up ecosystem services that maintain climate regulation, water purification systems, soil fertility maintenance, and food production simultaneously supports human prosperity and economic gains (Mace et al., 2018). Modern human activities pose escalating threats to world biodiversity levels because of deforestation and pollution, together with habitat destruction, resource overexploitation, and changing global climate (Pörtner et al., 2023). Businesses now play an essential part in biodiversity protection because industries need natural resources to support their supply chains, along with operational activities (Shires, 2023). The operations impact biodiversity in two ways through their management of land resources, material extraction, pollution levels, and sustainability practices (White et al., 2023). The agricultural sector, together with forestry, fisheries, and mining operations, leads directly to biodiversity loss, but businesses can play a positive role by implementing responsible practices, making financial investments, and upholding environmental policies (Stephenson et al., 2022). Sustainable Development Goal 15 (SDG 15) stands vital among the United Nations Sustainable Development Goals because it underscores the need for sustainable ecosystem management together with biodiversity conservation (Guterres, 2020). Businesses benefit from the Convention on Biological Diversity (CBD) and the Kunming-Montreal Global Biodiversity Framework, which motivate them to embed biodiversity aspects into their strategic planning (Hughes et al., 2022). The operations now increasingly depend on biodiversity conservation through nature-positive business models that integrate biodiversity targets into corporate sustainability strategies (Griscom et al., 2017).

As entities in the business world serve two purposes in biodiversity conservation by being sources of environmental destruction, yet possessing the power to create beneficial changes. Biodiversity and ecosystem services provide essential support for every major industry of the global economy, including food production, pharmaceuticals, ecotourism, and raw materials (Anderies et al., 2022). Organizations ignoring biodiversity conservation in their business plans will encounter growing threats, which include environmental degradation-related financial instability, regulatory penalties, and reputational damage (Spash, 2022). The three main approaches that businesses can support biodiversity conservation include implementing corporate social responsibility (CSR) programs, performing environmental impact assessments, and maintaining ethical, sustainable

supply chains (Vermeulen et al., 2024). Multinational corporations continue adopting zero-deforestation frameworks and habitat restoration plans along with carbon-offsetting initiatives that lie within their sustainability frameworks (Leibenath et al., 2020). The inclusion of biodiversity in business strategies leads to financial benefits, together with improved competitive positioning. Companies implementing sustainable land management along with resource-efficient technologies enjoy financial benefits through cost reduction, improve their brand reputation, and maintain customer loyalty (Cui et al., 2022). Businesses receive motivation through existing financial and regulatory frameworks to enter into active participation in biodiversity conservation efforts (Sachs et al., 2022). International organizations together with governments establish environmental social governance (ESG) policies to maintain operations with ecological responsibility (Gupta et al., 2015). The adoption of green finance instruments such as biodiversity credits and impact investments continue to grow because they provide sufficient support to biodiversity-positive business models (Radha et al., 2025). The path toward biodiversity-friendly business operations encounters multiple obstacles during its implementation (Alamgir et al., 2020). Multiple obstacles prevent companies from achieving profit margins alongside environmental protection, while they must handle sophisticated regulatory structures and lack a proper biodiversity management understanding (Maxwell et al., 2020). Entirely proactive participate in biodiversity conservation efforts will deliver lasting advantages both to themselves as well as to the environment and society (Armitage et al., 2020).

Biodiversity decline stands as a major environmental crisis that faces the world during the twenty-first century. Biodiversity decline along with ecosystem degradation produces severe negative impacts which affect both natural systems and human life. In recent decades, multiple human-caused destructive practices, including deforestation and overfishing, along with habitat destruction, pollution, and climate change, have substantially driven species extinction (Barbier et al., 2018). The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) confirms that one million species face extinction now and this extinction threat endangers the life-supporting ecosystems and services of Earth (Díaz et al., 2019). Excess biodiversity decline creates immediate threats to food security and clean water sources as well as climate control systems and results in adverse health effects for humans because natural ecosystems perform vital functions such as soil fertility maintenance and air and water purification (Smith et al., 2019). Human activities that damage ecosystems have raised the occurrence of

disasters, including floods, droughts, and hurricanes, resulting in heightened community worldwide exposure to risks. Economic losses from biodiversity reduction affect human society in the same way that they harm ecological systems (Baumgartner & Rauter, 2017). Strategic perspectives of corporate sustainability management to developing organization. Natural ecosystems maintain direct operational dependency on industries, which include agriculture, together with fisheries, and tourism. The fast-growing biodiversity loss presents an immediate danger to global environmental stability and economic systems, and the life quality of upcoming generations (Alkhodary, 2023). The solution to this crisis demands worldwide collaboration between businesses that serve as primary resource consumers and environmental polluters.

Leading agents of environmental development possess dual responsibilities concerning biodiversity because they simultaneously create both positive outcomes and negative consequences (Ryan et al., 2019). Private sector industries consume most global resources while creating environmental damage, thus acting as major biodiversity loss, yet remaining essential for conservation efforts. Business branches like agriculture combined with forestry and mining alongside manufacturing actively result in biodiversity decline through their practices of forest clearance and habitat damage and pollution from their activities and the unsustainable extraction of natural resources (Lee & Theokary, 2021). The operations retain the ability to create positive environmental results when organizations implement sustainable methods, alongside green technology purchases, along with strict regulatory compliance. Businesses have realized that sustainable alignment produces both financial advantages and a better corporate reputation (Nadyne-Clémence C. B., 2019). The agriculture and food industries now use zero-deforestation policies as they adopt sustainable sourcing methods that simultaneously protect vital ecosystems along with promoting biodiversity. The energy sector and manufacturing industry use renewable power technologies together with circular economics approaches to minimize their environmental impact (Saba, 2024). The increasing market demand for environmentally conscious products allows industries to develop new designs while creating biodiversity-friendly corporate social responsibility programs. The positive actions taken by businesses are hindered by financial limitations with complex regulations and insufficient awareness (Koh et al., 2019). The full potential of contributions to biodiversity conservation depends on meaningful, consistent actions from companies that integrate sustainability into their business operations and models.

The study examines involvement in biodiversity target fulfillment through analysis of corporate

strategy integration opportunities and obstacles. The study investigates the major obstacles encountered by focusing on financial obstacles, regulatory complexities, and operational limitations, which stop effective biodiversity conservation practices. The study also identifies practical opportunities for businesses, including sustainable business model adoption alongside green financial methods and technological implementations, which maximize biodiversity support while upholding financial sustainability.

Martial and methods

Research Design

The design implemented a combination of methods to study the involvement of businesses in biodiversity conservation efforts. The study used both qualitative and quantitative methods to deliver a complete understanding of business struggles and opportunities regarding biodiversity integration. The qualitative approach delivered detailed corporate strategy information, but quantitative methods generated statistical data about these strategic methods. The research framework relied on the corporate social responsibility (CSR) theory together with the sustainable business model to direct the investigation of objectives and hypothesis development.

Data Collection

Key stakeholders from different industries participated in data collection by providing survey responses as well as answering interviews in addition to expert consultations. A combination of surveys aimed to measure participation in biodiversity protection, alongside semi-structured dialogue with corporate executives to gain a qualitative understanding of their management challenges. The secondary information used a systematic literature review, which incorporated academic and industry-based peer-reviewed articles, reports, and case studies. An analysis of the secondary sources identified trends and patterns regarding business practices alongside biodiversity targets and their success rates. The collected data sources underwent thorough vetting because they met the requirements of relevance credibility, and timeliness.

Case Study

The multiple case studies, which included investigation of organizations from agriculture, manufacturing, retail, and energy sectors to explore diverse industrial contributions toward biodiversity conservation. Biodiversity conservation practices served as the criteria for selecting companies based on their actual involvement in activities like sustainable procurement and habitat

restoration. The chosen selection process maintained equal representation between multinational corporations and local businesses, which delivered a detailed comprehension of specific sector-related difficulties and prospects for biodiversity conservation.

Data Analysis Techniques

The analysis combined qualitative data analysis through thematic techniques with quantitative data analysis based on statistical methods. Thematic analysis enabled to location of common patterns that appeared throughout the interview transcripts and case study documents, leading to details about barriers and opportunities within biodiversity integration. The survey data analysis incorporated descriptive statistics and inferential statistical techniques including regression analysis to establish the relationship between involvement in biodiversity and their performance results. The analysis of qualitative data used NVivo software, but SPSS served as the tool for survey results statistical analysis.

Reliability and Validity of the Study

The study used data triangulation through a comparison of data gathered from surveys and interviews with findings from the literature review. The method served to verify that the gathered data was consistent and accurate. The study used data validation methods by performing member checking during interviews to let participants verify the accuracy of their interview responses. The study took into account the biases that might exist in sample selection and data collection methods and identified these limitations within the analysis framework.

Ethical Considerations

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Every aspect of this study followed accepted ethical guidelines to maintain participant privacy, together with data integrity protection. The participants received informed consent, which explained both the purpose and confidentiality standards and voluntary participation conditions. The complete response was confidentiality and stated that the collected information would only be used for research purposes. Data protection procedures based on ethical standards included removing personal identifiers from the dataset to safeguard necessary. An ethical approval from the appropriate institutional review board granted permission to start data collection.

Ethic Committee Name: Near East University ethics committee

Approval Code: NEU/AE/2024/19

Approval Date: 04/2024

Results

Impact of Industry-Specific Biodiversity Initiatives on Environmental Outcomes

The different industry sectors together with their specific biodiversity programs. The agriculture sector achieved better water management through sustainable sourcing combined with water conservation practices that increased biodiversity. Manufacturing enterprises that performed habitat restoration efforts achieved mixed outcomes that improved their resource efficiency levels as shown in Table 1. Retail companies executed carbon offsetting projects that led to biodiversity reduction. The energy sector applied waste management techniques that achieved both environmental emission reduction and positive environmental effects.

Table 1. Industry Sector Impact and Biodiversity Initiatives.

Industry Sector	Biodiversity Initiatives	Impact on Biodiversity	Outcome
Agriculture	Sustainable sourcing	Positive	Increased biodiversity
Manufacturing	Habitat restoration	Neutral	Improved resource efficiency
Retail	Carbon offsetting	Negative	Biodiversity loss
Energy	Waste management	Positive	Reduced emissions
Agriculture	Water conservation	Positive	Water conservation

Sector Leadership in Biodiversity Conservation and Their Initiatives

The study revealed agriculture together with energy as primary sectors for biodiversity conservation. The sustainable sourcing approaches and water conservation strategies put in place by agriculture enabled both biodiversity growth as well as greater water conservation. The energy sector dedicated its resources to waste management and emissions reduction to achieve both environmental benefits and emission reductions as shown in Table 2. Manufacturing companies demonstrated exceptional capability in habitat restoration as they improved their resource efficiency. Retail sector carbon offsetting programs yielded inconsistent outcomes because they caused biodiversity loss.

Table 2. Leading Industry Sectors in Biodiversity Conservation.

Industry Sector	Leading Biodiversity Initiative	Measurable Outcome
Agriculture	Sustainable sourcing, water conservation	Increased biodiversity, water conservation
Energy	Waste management, emissions reduction	Reduced emissions, positive environmental impact
Manufacturing	Habitat restoration	Improved resource efficiency
Retail	Carbon offsetting	Mixed results, biodiversity loss

Companies must assess specific measurable results that emerge from their biodiversity initiatives

The analysis revealed substantial benefits derived from corporate biodiversity programs. The data showed two companies managed to enhance biodiversity levels and a single organization recorded better resource management practices. The carbon offsetting program of a company caused biodiversity loss, while the waste management approach from another firm generated emission reductions. The water conservation programs implemented by the two companies created positive impacts on biodiversity as shown in Table 3. The outcomes displayed different effectiveness levels in biodiversity target achievement between diverse corporate strategies while pointing out key areas that need enhancement for better involvement in environmental preservation.

Table 3. Measurable Outcomes of Corporate Biodiversity Initiatives.

Outcome	Number of Companies	Impact on Biodiversity
Increased biodiversity	2	Positive
Improved resource efficiency	1	Neutral
Biodiversity loss	1	Negative
Reduced emissions	1	Positive
Water conservation	2	Positive

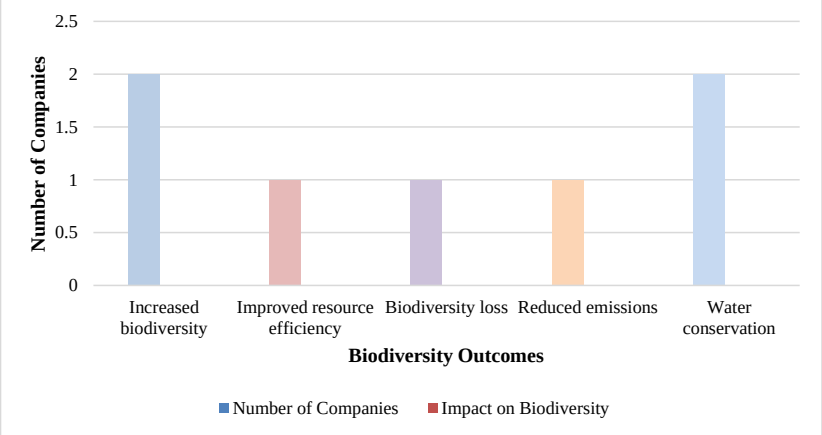

Figure 1. Analysis of Biodiversity Outcomes and Company Engagement.

Figure 1 presents data about biodiversity outcomes that result from different numbers of participating companies in each initiative. Two companies each participated in both the "Increased biodiversity" and "Water conservation" initiatives, which had the most participants among all categories. Two companies participated in the "Improved resource efficiency" and "Reduced emissions" categories, but each initiative had only one participating company. The initiative "Biodiversity loss" demonstrated negative effects although it involved just one participating company. The visual evidence demonstrates that companies are increasingly adopting programs that benefit biodiversity rather than programs that produce negative impacts.

Challenges Encountered by Businesses in Biodiversity Conservation

The implementation of biodiversity conservation into business operations led to multiple obstacles for companies. Sustainable practice investments faced high costs, which limited financial support, especially in agriculture and manufacturing operations. Other problems arose from retail and energy sector regulatory barriers, which were complicated by complex and inconsistent policies from different regions and countries as shown in Table 4. Businesses throughout all sectors experienced difficulties because of their limited understanding of biodiversity conservation and their lack of expertise in this field. The difficulty for manufacturing and retail companies to achieve profit goals while protecting the environment became more complicated because of their conflicting business priorities. Various barriers created barriers to the advancement of biodiversity

protection goals.

Table 4. Challenges Faced by Businesses in Biodiversity Conservation.

Challenge	Description	Industry Sector Most Affected
Financial Constraints	High costs are associated with sustainable practices, which limit investment.	Agriculture, Manufacturing
Regulatory Barriers	Complex environmental regulations and inconsistent policies across regions.	Retail, Energy
Lack of Awareness and Expertise	Limited knowledge about biodiversity issues and conservation strategies.	All sectors
Conflicting Objectives	Difficulty balancing profit motives with environmental goals.	Manufacturing, Retail

Discussion

This study analyzed how businesses across different sectors, such as agriculture, manufacturing, and retail, together with the energy sectors handle biodiversity conservation as part of their operational frameworks. The agriculture sector and energy sector became leaders in biodiversity conservation when they adopted sustainable sourcing methods and water conservation practices to enhance biodiversity numbers and improve water management systems (Table 1). The energy sector used waste management practices together with emissions reduction methods to create environmental benefits while decreasing their emissions output. Retail companies pursued carbon offsetting strategies that created biodiversity loss because such indirect conservation methods proved ineffective. The manufacturing sector engaged in habitat restoration activities, but these initiatives produced no direct effects on biodiversity improvements (Table 2). Corporate biodiversity initiatives demonstrated different degrees of achievement in their measurable results. The data indicates that two businesses increased their biodiversity numbers and one organization enhanced their resource efficiency metrics (Table 3). The study indicates that direct participation in ecosystem interactions leads to better results than offsetting carbon emissions, which produces inconsistent or negative effects. Challenges encountered by businesses in integrating biodiversity strategies include financial constraints, regulatory barriers, lack of awareness, and conflicting objectives, as outlined in (Table 4).

The analysis of this study identified integration methods of biodiversity conservation used by different business sectors including agriculture, manufacturing, retail, and energy industries. Positive biodiversity outcomes emerge stronger from industry sectors that work directly with ecosystems, such as the agriculture sector together with the energy sector. Agriculture companies achieved better resource management through sustainable sourcing practices and water conservation strategies that also supported increased biodiversity (Table 1). Energy companies used their resources to implement waste management and emission reduction programs that simultaneously generated environmental benefits to ecosystem health (Table 2). The retail sector concentrated its efforts on carbon offsetting, which proved ineffective for substantial biodiversity enhancements, based on the mixed outcomes and biodiversity reduction statistics in Table 2. A study by (Kathryn E. Bazany, 2024) has already demonstrated that carbon offsetting fails to stop direct biodiversity loss, which is confirmed by these findings. Carbon offsetting serves to lower carbon emissions, yet it fails to solve the loss of habitats and species, which constitute fundamental priorities for biodiversity protection. The data indicates businesses, particularly in retail, need to direct their efforts toward concrete hands-on conservation initiatives instead of maintaining indirect programs such as carbon offsetting (Figure 1). Businesses must implement ecosystem-based strategies that enable them to generate long-lasting biodiversity results according to the findings.

The results support earlier studies because they underline the necessity of implementing direct conservation strategies. The study was conducted in (Spash, 2022) demonstrated the success of businesses in the agriculture and energy sectors, which perform land restoration and water management activities in their pursuit of biodiversity targets. The study was conducted by (Erdelen & Richardson, 2021) demonstrated that carbon offsetting produces minimal impact on long-term biodiversity improvements, thus validating this study's findings about biodiversity loss from retail sector carbon offsetting activities (Table 2) (Willberg et al., 2024).

Biodiversity conservation needs to become a strategic requirement for businesses because industries now experience rising expectations to reduce their environmental footprint (Facer, 2020). Future studies should focus on fostering effective multi-sector partnerships between public agencies and private organizations to combine the private sector's capabilities with the regulatory power of the public sector (Kumar, 2019). Through these partnerships, businesses can access efficient biodiversity conservation solutions that scale up due to their organizational strength. A

thorough investigation of how emerging technological solutions contribute to biodiversity monitoring methods and decision processes should be conducted (Boiral, 2016). There are a significant number of technologies to utilize remote sensing, artificial intelligence (AI), and big data analytics, and can help in improving biodiversity assessments (Ritson, 2023). The tools enable businesses to acquire live data, which enables them to analyze biodiversity patterns while assessing the success of conservation programs throughout various geographic areas (Panwar et al., 2023). The study shows that business biodiversity integration requires both government policy support alongside financial incentives from authorities (Colli, 2011). The implementation of carbon pricing taxation and financing with subsidies and tax incentives will motivate businesses to build sustainable practices. The advancement of biodiversity goals needs better comprehension regarding how policy frameworks interact with corporate strategies. Last but not least, a further study should be done on how biodiversity metrics could be introduced into Environmental, Social, and Governance (ESG) reporting frameworks (Mkwara, 2018). Businesses that implement ESG practices need to include biodiversity measurement as a fundamental indicator because they are adopting these practices more frequently. Standardized biodiversity reporting measures will make it accountable for environmental impact assessments and give stakeholders the ability to evaluate biodiversity conservation efforts.

Biodiversity conservation within business strategies delivers positive results to organizations such as Unilever, Patagonia, and IKEA. Unilever's sustainable sourcing initiatives, which include a policy against deforestation, have proven to be instrumental in preserving biodiversity. Their adoption of sourcing products from certified sustainable forests plays a dual role in sustaining both environmental health and ecosystem stability. Patagonia implements sustainable sourcing methods for wool and cotton together with recycled materials while operating its Worn Wear initiative to extend product use and reduce waste. IKEA dedicates itself to obtaining timber from FSC-certified forests while actively practicing reforestation activities to defend forest biodiversity through circular economy principles. Businesses across industries incorporate green finance models that include biodiversity credits together with impact investments to sustain biodiversity projects and stay financially viable. The combination of environmental sustainability with profitability delivers success in biodiversity conservation by using nature-based solutions alongside green finance mechanisms.

Organizations need proper support from governing bodies that establish policies to integrate biodiversity conservation practices into strategic planning (Mousa et al., 2024). Companies receive encouragement to adopt sustainable practices through regulatory frameworks which include both the Convention on Biological Diversity and national biodiversity policies. The integration of biodiversity faces significant challenges due to regulatory barriers and inconsistent policies which mainly affect both retail and energy sectors. The stability of biodiversity conservation policy frameworks should benefit oil companies because it would direct their investments toward sustainable operations. The achievement of private-sector-government collaboration needs public-private partnerships to secure financial backing technical expertise and a practical understanding of optimum approaches. The success of expanding effective biodiversity programs depends on such partnerships between private entities and government bodies.

The study delivers important data about business operations, but multiple limitations must be considered. Businesses that report data themselves face a risk of introducing bias into the information because they might present more positive outcomes to improve their public image. Future studies need to expand their data collection to include multiple sources beyond company self-reporting to confirm the actual effects of corporate biodiversity programs. Subsequent research should investigate financial barriers to biodiversity conservation in agriculture and manufacturing since these constraints present a substantial challenge to overcome.

Conclusion

The importance of businesses in achieving biodiversity targets and the challenges and opportunities that they face in this process. But businesses from other sectors such as agriculture or energy are nevertheless moving ahead in the game of biodiversity conservation, albeit with many stumbling blocks that curtail their potential. The main reasons that companies are not able to fully integrate biodiversity goals into their corporate strategies are financial constraints, regulatory barriers, lack of expertise, and conflicting objectives. Nevertheless, the study also reveals valuable opportunities for businesses to improve their biodiversity efforts. Viable pathways for companies to undertake not only biodiversity improvements but also financial sustainability is via sustainable business models, green finance mechanisms, and technological innovation. The finding illustrates those integrated strategies like ‘sustainable sourcing’, ‘waste management’, and ‘water conservation’ do indeed lead to a positive environmental impact in the sectors of agriculture and energy. Furthermore, they show that actively engaging in biodiversity conservation is

beneficial to a company because it reduces the costs of resource use and gains positive public attention. Some retail included, have had mixed results, but there is no doubt that the value of biodiversity is becoming increasingly apparent and that businesses are changing their strategies to reflect this. However, although businesses confront numerous obstacles in meeting biodiversity targets by changing their operations, strategic adoption of future sustainable practices, regulatory support, and accumulation of expertise can help achieve better outcomes. Businesses need to continue evolving and work with stakeholders to develop effective solutions to the problem of biodiversity conservation on a global scale.

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