Advance Journal of Econometrics and Finance
Vol-4, Issue-1, 2026

https://doi.org/10.5281/zenodo.19338162

Online ISSN
2959-8990

Print ISSN
2959-8982

https://ajeaf.com/index.php/Journal/About

Name of Publisher: SCHOLAR CRAFT EDUCATION & RESEARCH HUB

Review Type: Double Blind Peer Review

Jurnal Frequency: Quarterly Research Journal

Corporate Role in Pakistan's Natural Capital: Drivers, Barriers, and Models for Private Sector Investment in Biodiversity through Hierarchical Regression.

Dr. Khuram Shahzad[1], Dr. Lubaina Dawood Baig[2], Dr. Furqan Ul-Haq Siddiqui[3]

Dr. Khuram Shahzad
Assistant Professor, Institute of Management Sciences, University of Balochistan, Quetta. khurram.ims@um.uob.edu.pk

Dr. Lubaina Dawood Baig
Lecturer, Management Science Department, Sardar Bahadur Khan Women's University, Quetta.

Dr. Furqan Ul-Haq Siddiqui
Director-Business Incubation Center, University of Balochistan, Quetta. furqan.ims@um.uob.edu.pk

Abstract

The paper examines the drivers of investment in biodiversity protection by corporations in a country like Pakistan, whose economy is severely reliant on its rapidly deteriorating natural capital. Based on the integration of natural capital, stakeholder, and institutional theories, this paper modeled a modified mediated effect with external drivers like institutional drivers, market drivers, and physical risk drivers affecting investment, wherein the mediational effect is absorptive capacity, and this model is modified by its interplay with perceived policy quality. Based on primary data collected through surveys on 300 enterprises and other secondary data, this paper used hierarchical regression and path analysis. The paper finds institutional drivers, market drivers, and physical risk drivers to be strong predictors, but absorptive capacity acts as the strongest direct driver. Most importantly, absorptive capacity strongly mediates every external driver and further enhances the role of pressures from institutions. Moreover, perceived policy quality further weakens the pressure of markets for better investment accruals. The model accounts for 63% of the variation in biodiversity investment made by businesses. Results show that non-performance in external pressure but in internal capacity to absorb it in an unpredictable policy environment is the major challenge. The conclusion implies that private finance mobilization for nature-positive investment in the transitional period of climate change calls for a two-fold approach of stronger in-house ESG structuring in businesses and an incentivized policy system lining up proper returns for businesses to stem private finance for environmental conservation in Pakistan.

Keywords: Corporate Role, Natural Capital, Biodiversity, Climate Change, Enterprises, Hierarchical Regression, Pakistan

Introduction

"The rapidly deteriorating state of Pakistan's natural capital, its forests, freshwater, agricultural soils, mangrove forests in the coastal zones, and mountain ranges, is a threat not only to the environment but also a fundamentally serious economic challenge." Indeed, the economic base-case scenario for Pakistan is exceptionally vulnerable to nature-dependent sectors, as agriculture, accounting for around 22.7% of its GDP, is a source of employment for over 37% of its workforce, while other sectors, including textiles, fishing, and tourism, are directly dependent on the health of its natural capital (World Bank, 2023; Pakistan Economic Survey, 2023). However, this natural capital endowment is severely threatened. Pakistan leads the Asian continent in terms of deforestation, its freshwater is under extremely critical stress, and it is among the top ten countries in the world vulnerable to the impacts of climate change, a situation that is integrally related to its losses in natural capital (GFW, 2022; UNDP, 2023). In the past, the preservation and restoration of natural capital has essentially been defined and treated either as a role for the public sector or for international donor programs, which has not been an effective response to this challenge on the scale it is faced (Abbas et al., 2022). Fiscal constraints, competing developmental priorities, and limited institutional capacity have consistently resulted in chronic underinvestment in natural resource management. This gap between the colossal need for sustainable ecosystem stewardship and the constrained public finances available underlines an urgent imperative: to strategically mobilize the private sector as a critical actor and financier in the biodiversity agenda of Pakistan (Siddique et al., 2025; Afridi et al., 2021). It is now high time the corporate sector, which both impacts and depends upon natural capital, moves from a peripheral contributor or, in many cases, a source of externalities to a central partner in funding and implementation of nature-positive solutions. The challenge for the corporate community is rooted in the paradigm shift that "natural capital accounting" presents, as it views biodiversity and ecosystems as non-negotiable and not subject to deal-making capital that effectively drives corporate value chains and economic productivity (Abbas et al., 2022). The corporation and nature's relationship, therefore, undergoes a radical transformation in that it shifts from being one aspect of corporate social responsibility (CSR) to another aspect of risk and corporate continuity planning. International bodies are hurrying to codify this challenge. The Taskforce on Nature-related Financial Disclosures (TNFD) and the Science Based Targets Network are two organisational frameworks available to corporations to analyse nature-related risks and opportunities and set company-specific, measurable nature-related targets, respectively (TNFD, 2023 and SBTN, 2023). For corporations operating in the Pakistani setting, therefore, these are no longer merely global trends that are emerging but are becoming increasingly relevant with the changing criteria for accessibility for emerging markets. The Deforestation Regulation of the European Union (EUDR) and the call for more transparent, deforestation-free, and nature-positive supply chains have a direct impact on prominent export groups such as textiles, leather products, farmland exports, and sports equipment exports (European Commission, 2023). The surest and smartest action to take when it comes to conservation is to invest in biodiversity conservation efforts, ranging from sustainable watershed protection to regenerative farming to habitat restoration.

Regarding the private investment in biodiversity, the forces that trigger the process are complex and converge on risk management and the changing expectations of stakeholders. Firstly, physical risks are very grim and pressing in nature. Entities, for example, be directly operationally at risk due to nature loss, seed manufacturers operate with lower harvests due to soil and pollinator losses, cloth manufacturers shut down due to water scarcity, and insurance companies struggle with increased claims due to climate change-related disasters, made worse due to the degradation of nature. Secondly, the pace of transition risks will accelerate. The regulatory pressures are still in the infancy state and intensify; the effort of the Securities and Exchange Commission of Pakistan to introduce ESG reporting for listed corporations is an innovative step and represents an era where natural capital and nature itself brought under increased scrutiny (SECP, 2023). Moreover, the banking industry is slowly starting to focus on the risks associated with the environment as far as their own portfolios are concerned, in the context of the Green Banking Guidelines of the State Bank of Pakistan. This might have an impact on the credit facilities afforded to those companies that do not have a positive "cradle to grave" record on the environment. Thirdly, the market and opportunities associated with a good reputation are slowly opening. This shows that a consciousness is developing in consumer as well as investment markets. This is a positive design for companies that make a difference in conserving the environment. They able to differentiate themselves in the markets in more ways than one. They would be able to avail of "soft loans." This is important in the sense that biodiversity "hot spots are often found in themselves intricately complex social contexts." This is the case in a developing country such as Pakistan.

Despite these attractive drivers, there are obstructive bottlenecks in the investment path. The first is the knowledge and metric gap. Pakistani enterprises currently cannot measure their 'nature dependency and impacts' (WWAP). Nature is considered to be a "free public good," so it becomes an unattractive business opportunity to invest in (Qureshi et al., 2021). "The drive to invest in conservation is made difficult by the lack of standardized and localized opportunity costs to measure return on investment (ROI), as it is measured in, for instance, machinery or technology investment" (Qureshi et al., 2021). Secondly, there is policy and regulation vagueness. Though ESG is an encouraging initial phase, an integrated national policy framework "can promote private investment in nature through tax concessions, subsidies to support regenerative activities, or biodiversity offsetting" that is currently in its infancy (Khan & Ali, 2022). Third, financial markets have limitations. The ecosystem for nature-focused financial products is still in its infancy. Green bonds in Pakistan have largely targeted renewable energy and energy efficiency, and no dedicated 'blue' or 'biodiversity' bonds have yet been issued. Blended finance structures, which use public or philanthropic funds to de-risk private investment in conservation, are rare and poorly understood (ICAP, 2023). Fourth, the corporate sector is highly prevalent with a mindset of short-term profit, where quarterly returns often outshine long-term resilience planning. This is coupled with a lack of awareness at board and C-suite levels about the materiality of nature-related risks, viewing them as externalities rather than core strategic business issues (Afridi et al., 2021).

However, models of innovation for the private sector to be involved in are currently being developed and offer a roadmap for feasible implementation. The Operational Integration and Supply Chain Transformation model is a good starting example. Organizations in the agriculture industry (milk, sugarcane, and horticultural) are increasingly collaborating with their suppliers to support the adoption of regenerative agriculture methods that improve soil health, water use efficiency, and biodiversity on the farm to directly provide for their needs. Examples include the corporate-driven groups supporting best practices in cotton that help lower water use and pesticide use, directly benefiting freshwater ecosystem health (Better Cotton Initiative, 2023). Corporate-led landscape restoration models are a type of direct investment. Many Pakistani companies in the consumer goods and forestry industries have undertaken major tree-planting campaigns.

The task, therefore, is to transform these into ecologically resilient, biodiverse restoration projects that encompass native species, community benefit sharing, and carbon sequestration and watershed conservation, thereby serving global climate agreements and corporate net zero ambitions as well (Garcia et al., 2022). Payment for Ecosystem Services and Stewardship Funds are models that are partnership-driven. Here, the recipients of the ecosystem services, for instance, the beverage company that relies on a clean aquifer or the hydropower firm that relies on sediment-free water flows, contribute to the conservation efforts of the upstream landowners. While there are some small-scale projects, there lies immense potential for institutionalizing it by corporate anchor investors, as seen in Shah et al. (2021).

On top of this, blended finance and "green financial instruments" also offer a transformative opportunity. "Biodiversity Credits" or "Nature Performance Bonds" could be developed in order to draw in institutional investments. A model for this might be a partnership between a set of private companies, a development bank, and a conservation organization that finances the restoration of mangroves in the Indus Delta through the sale of carbon credits, increased fisheries, and decreased risks of disasters for local industrial infrastructure (UNDP, 2023). Finally, collective action through industries is important for addressing systemic issues. Industry associations, for example, through the

sorts of initiatives the textile sector may undertake through the Pakistan Textile Council for Climate Action, can mobilize together for a set of pre-competitive interests, for example, the implementation of a water stewardship approach in a set of common watersheds or funding a set of critical biodiverse sites in their collective eco-footprint (PTCCA, 2023).

In conclusion, unearthing the business value for naturals in Pakistan is no easy undertaking, but it is an absolute necessity. It demands collective action to assemble the business case, remove hindrances to access, and test new finance and collaborative approaches. This requires a paradigm shift in the boardroom agenda in companies to factor nature into the discussion of governance, strategy, and risk. This requires facilitating steps in the public domain to distill understandable policies and formulate smart regulations to incentivize, not simply mandate. This requires an active interface between academia and civil society to provide scientific support and outreach to ensure the validity of the finances going out to nature in an ecologically informed manner in a setting like Pakistan that is currently on an uncertain trajectory in its economic future due to an increasingly turbulent experience of environmental shocks. Ecological security has now become a national imperative. The question now is no longer whether there should be engagement from the corporate sector but how engagement with the corporate sector can be made most effective in meeting what is now a pressing national imperative to protect the natural base on which ultimately all aspects of the Pakistani economy and society depend (Khan & Shahzad, 2024).

Although the emerging literature on corporate engagement with natural capital in Pakistan recognizes its relevance, there still exist large and diverse research gaps, which currently hamper the formulation and implementation of effective and scalable strategies. Most of the literature that currently exists, or the basic reports published by international forums, usually focuses on providing a basic or global best practice framework that mainly fails to address the specific conditions in Pakistan. There is a critical gap in the empirical, sector-specific analysis of corporate dependencies and impacts on biodiversity. Beyond the general recognitions, the quantitative mapping of the exact nature and magnitude of how specific industries like textiles, cement, agribusiness, or pharmaceuticals have direct and indirect impacts and dependencies on particular ecosystems, such as the Indus Basin or the Northern forests, has not been undertaken. It is at this granularity that movement from awareness to actionable, science-based targets fitted for Pakistani supply chains and operating environments will take place (Shahzad & Khan, 2024).

Equally, there has been a preponderance of research merely listing barriers such as policy uncertainty or financial short-termism without in-depth investigation of the micro-level institutional and behavioral drivers within Pakistani corporations. Very little literature has been done on the decision-making rationalities of the board of directors, the CFO, or sustainability managers in local companies. What are the particular cognitive and organizational biases that impede the actualization of nature-related risks in the financial planning process of the firm? How does the structure of family-owned businesses that prevail in the Pakistani business environment affect the future of environmental management in comparison to the subsidiaries of multinationals?

Another significant gap exists in conducting a thorough analysis of new financial tools and partnership formats in the Pakistani environment. While blended finance and biodiversity credits are loudly echoed as promising solutions, few feasibility studies, legal analyses, and pilot project evaluations test the viability of these approaches. There is much study needed to model credible revenue streams from ecosystem services in Pakistan that could attract private investment, the regulatory amendments needed for issuing nature-focused bonds or credits, and the governance arrangements required for public-private-community conservation trusts (Shahzad & Khan, 2024). Also, the Islamic finance sector, through instruments such as Waqf al aqar or Sukuk for the environmental sector, is left untouched in academia. In fact, the equity issue in the role of the private sector in conservation is an issue left unstudied. Also, the role of coming in through investment in the company creates a significant question in terms of the land and the rights of the citizens in accessing the land. There is an importance in undertaking the socio-economic studies in forecasting and analyzing trade-offs in a way that will ensure the company does not have perverse outcomes in terms of investment. Finally, the significant MRV is left untouched. Research should not only promote the adoption of TNFD in Pakistani companies but also design low-cost, technologically suitable, and transparent MRV systems for companies of different sizes in Pakistan in a manner that ensures Pakistani corporations can effectively and credibly establish their nature-positive results and thus bolster market confidence instead of greenwashing effects (Khan & Shahzad, 2024).

Problem Statement

The speeding degradation of Pakistan's natural capital, in terms of its forests, wetlands, and agricultural soils, now represents a growing and direct threat to economic stability and resilience in the country, but the budget and implementation needed for preserving and restoring this capital continue to be grossly insufficient. In a situation in which public and international finances and investments are overextended and, in many instances, short-term in outlook, the business sector, which not only drives many sources of environmental stress but also represents a huge reservoir for scalable and impactful capital, has not been engaged with strategic biodiversity finance but instead represents a problem in that, notwithstanding clear economic dependence on agriculture, textiles, and tourism and growing international market pressures for sustainable and deforestation-free supply chains, business capital in Pakistan for preserving and restoring natural ecosystems and their corresponding environmental values remains not only disparate but also confined to notable corporate social responsibility activities and effectively marginalized or 'peripheral' in its strategic ambitions and commercial priorities. The fact that there is no strong enabling framework with the proper policy incentives in terms of green finance instruments, as well as standardized metrics in valuing natural capital, ensures the continued state of high risk. Corporations experience direct operational risks in terms of water and soil, but they do not have proper avenues through which they can invest in regenerative agriculture and other similar initiatives as business imperatives. The continued degradation of natural assets with little being done to address it amounts to the eventual destruction of the very foundation of the economy, and the business sector is still a deep, unexplored reserve of innovation and capital to reverse this trend (Shahzad & Khan, 2024)**.**

Research Objectives

To determine the level of awareness, perceptions, and present practice of Pakistani companies in relation to their dependencies and impacts on biodiversity.

To assess the efficacy and scalability of existing models of engagement of the private sector in biodiversity conservation in Pakistan, including corporate-led site restoration, supply chain initiatives, and initial payment for ecosystem service solutions.

To develop a prioritized framework of appropriate financial models and partnership models that include blended finance models, biodiversity credit systems, and Islamic finance tools for mobilizing private finance for high-priority ecosystem types in Pakistan.

To inform the formulation of evidence-based policy and governance guidelines for public institutions, financial regulators, and industry bodies that foster an enabling environment for de-risking and incentivizing business investment in natural capital.

Literature Review

The rapidly intensifying planetary crises of biodiversity and nature's degradation have transformed the very discourse of economic development and corporate finance, as nature has moved from the margins of strategic thinking and financial calculations to its centre. Today, the need for natural resources and nature, described as natural capital in terms of its service flow and value, has become an overarching framework for comprehending its central, non-negotiable, and integral role in all economic activities on earth (Nochh, 2026). This revolutionary Dasgupta Review of 2021 confirmed, unequivocally, that economies are embedded in nature and not outside of nature and that ignoring the depreciation of natural capital in economies leads to unprecedented dangers to global prosperity. Launched in 2023, the Taskforce on Nature-related Financial Disclosures provides a complete framework for risk management and disclosure through which organizations can report on and act regarding their nature-related dependencies, impacts, risks, and opportunities, following in the footsteps of its climate-focused predecessor, the TCFD. At the same time, the Science Based Targets Network is working on methodologies for companies to set specific, measurable, and time-bound targets for nature, complementary to existing climate targets. These parallel initiatives are a reflection of the rapid mainstreaming of biodiversity into the global corporate governance agenda, impelled by an emerging consensus that the loss of nature presents systemic risks that are as dangerous as they are interconnected with climate change (Shahzad & Khan, 2024).

This global imperative finds acute resonance in Pakistan, a country exceptionally vulnerable to environmental change and whose economy is inextricably linked with its natural resource base. The Pakistani economy is prone to a deep nature in the following areas; agricultural sectors are the most nature-oriented in the economy, as agriculture itself is adding more than 22% to the GDP and is a major contributor to job generation for the massive population. The major export-oriented sectors of the economy, like the textile sector and the leather sector, are directly dependent on water resources and agriculture. The nature base is under immense pressure. Deforestation in Pakistan is ranked as one of the highest in the whole of Asia. Water scarcity is an alarming problem in Pakistan, caused by numerous circumstances, such as climate change and inefficient resource management. Soils in the country are facing severe degradation due to the exhaustion of organic matter. Historically speaking, in the domain of biodiversity conservation in Pakistan, the public sector and foreign development interventions have maintained a lead in conservation efforts. However, these conservation measures have proved inadequate in addressing the context. The public expenditure space for biodiversity conservation is limited due to the presence of numerous development priorities. Biodiversity is facing competition for public expenditure. In this context, there is a fundamental question waiting to be addressed; what is the role of the private sector in Pakistan in filling the finance to action gap to protect biodiversity? The answer from the current literature is that engagement with corporations has become a critical imperative to mitigate risk and not a question of corporate social responsibility (Siddiqui et al., 2025).

Khan and Shahzad (2024) highlighted that the factors driving the private capital in natural capital in Pakistan include a combination of risk factors from the point of view of the physical environment, markets, and regulations. Globally, regulations arising from policies such as the European Union's Deforestation Regulation (EUDR) in Traceability and Due Diligence on Forest Risk Commodities (European Commission, 2023), among others, cut across Pakistani exports in textiles, leather, and wood products, among others. This offshoring regime makes way for an attractive force to access markets. Within a country, some regulations are yet to materialize. However, some regulations have been laid down. For instance, "The Securities and Exchange Commission of Pakistan (SECP) issued guidelines on Environmental, Social, and Governance (ESG) reporting for listed companies, which is an initial move towards environmental transparency (SECP, 2023)." Additionally, "the State Bank of Pakistan (SBP) issued Green Banking Guidelines that urge banks to identify environmental risks within their loan portfolio, which could potentially pressurize companies in the future regarding their cost of capital in case they are causing destructive environmental-enhancing activities" (SBP, 2021). However, it must be realized that "companies are experiencing hard times because they are directly affected by environmental risks in terms of environmental scarcity in terms of water and soil that adversely affect agricultural production and environmental changes in terms of extreme weather events that damage infrastructure, all because of degraded ecosystems" (State Bank of Pakistan, 2022). According to the literature presented by Khan and Ali (2022), although the risk knowledge is increasing among large corporations, especially export-oriented ones, the ability to measure and mitigate them is not. On the other hand, differentiation in the market, availability of green finance, and improved brand reputation are powerful drivers. Also on the same lines, consumers worldwide and increasingly in the domestic market are turning out in support of sustainably produced products and services (Trim, 2025).

Despite this intensely motivating factor, there are a number of daunting barriers that have been identified throughout the scholarly work to inhibit any serious corporate investment in biodiversity in Pakistan. The first barrier is the knowledge gap. According to Qureshi et al. (2021), ecosystem services are considered free public goods, and their value cannot be measured by corporate accounting methods. The lack of standardized and localized methods for measuring the value of natural assets makes it very challenging for companies to build a financial business case for investment in conservation and to measure return on investment (ROI) performance. The problem is further accentuated by a lack of coherent policy and regulatory frameworks that can offer clear financial incentives. While ES reporting provides progress, existing literature identifies a gap with respect to a fiscal financial incentive framework, for instance, offering tax concessions for nature-positive activities, subsidies for regenerative agriculture, and clear biodiversity offset policies (Khan & Ali, 2022). The lack of clear financial signals makes any investment in biodiversity a high-risk or non-profit scenario. The existing green finance market in Pakistan, albeit in its infancy, has largely been green-focused on renewable energy (Afridi et al., 2021). Such innovative products as sustainability-linked bonds, blue bonds for ocean conservation, and credible biodiversity credit markets are yet to exist in the market (ICAP, 2023). This translates to a situation where corporations have limited ways of investing their money in nature. From an organizational perspective, the major organizational-level hindrance identified as an important factor includes a short-sighted profit motive and organizational-level unawareness among C-suites. This is because corporations largely look at nature as an outside factor and an immaterial element of their CSR agendas rather than strategic ones, as stated by PwC Pakistan in 2023. Lastly, there is a lack of trust and an exemplary partnership framework between corporations, local communities, and conservation NGOs, fostering fear of implementation and equity in natural conservation initiatives. Taking a review from existing models of engagement in a corporate setting within the Pakistani context, there appears to be a level of experimentation within a system that is disjointed but still has a large scope for scalability (Trim, 2025). The most dominant form to date is still that of benevolent CSR and other voluntary efforts, such as tree-planting initiatives undertaken by corporate bodies. Nevertheless, Garcia et al. (2022) propose that a significant number of such initiatives are actually harmful to ecological systems, focusing more on large monoculture plantations using non-native plants, to the chagrin of more effective biodiversity-based restoration. Another method with a higher degree of intentionality is integration with operations and sustainable supply chain principles. In the agricultural sector alone, firms in industries such as dairy products, beverages, and textiles are now beginning to collaborate with supply chains to advocate for more positive management practices. Beginning from initiatives that involve taking on standards in initiatives like the Better Cotton Initiative (BCI), it would appear that there is an avowed focus on reducing water usage and pesticide application, which in turn has some trickle-down effect on the environment (Cotton, 2023). However, it is asserted in literature that initiatives are normally in line with requirements from international buyers and are not necessarily aimed at increasing biodiversity. While more collaborative and place-based models are emerging, these are largely in the pilot stages. Payment for Ecosystem Services schemes, wherein downstream beneficiaries, a beverage company, for example, finance practices by upstream land stewards that ensure provisions of clean water, have been trialled in Pakistan's northern watersheds. Shah et al. (2021) find that while the ecological and social principles of PES are sound, challenges around secure land tenure, transparent governance, and sustainable financing from corporate

partners have hindered widespread adoption. Collective action and landscape-scale approaches are nascent but gaining considerable traction, particularly for tackling shared resource challenges such as water stewardship in industrial clusters. Literature highlights the potential of sectoral platforms, such as those under exploration by the textile industry, to pool resources on watershed management, but further research is needed on governance and benefit-sharing mechanisms. PTCCA (2023). Possibly the largest literature gap lies in the area of mechanisms for innovative financing. Though the international debate abounds in models of combined financing approaches, green bonds, and biodiversity credits, it lacks rigorous empirical studies on their viability and structuring in the Pakistani environment. There exist numerous studies required on assessing ways and means for using public or philanthropic funds in the Philippines and risking private funds in conservation investments, assessing ways and means of credit-worthiness of nature-based investments, and the use of return streams through a combination of ecological service payments, carbon credits, and benefits for disaster resilience (IFC, 2023). One of the most unstudied areas in the literature is the potential for the use of Islamic finance in the service of conservation goals. With regard to the Pakistani economic and cultural context, it seems that the use of Waqf for permanent conservation of land, the use of Sukuk based on green assets, or the use of Zakat for the support of community-driven environmental projects may be a resonant and very useful tool. Preliminary literature on the use of Islamic finance in the service of conservation goals, conducted by writers such as Khan and Liu in 2023, indicates a very strong fit between the goals of conservation and the use of the Islamic principle of stewardship as reflected in the term "Khalifa." On synthesizing the international and domestic literature, the following critical research gaps emerge. First, there is a lack of industry-specific materiality analysis that progresses beyond generic drivers to assess the precise nature-related risk and opportunities for the primary Pakistani sectors of the textile industry, agriculture, and the construction industry. Second, the corporate decision-making process in nature as a function of internal PKC corporate governance and the behavioral economics in the Pakistani context remains unclear. Research is required on the actual drivers of boards of directors and CFOs in FCBs and MNC subsidiaries. Third, as underscored above, a critical gap exists in the development and analysis of novel finance frameworks, ranging from the Blue Bond for the Indus Delta to Biodiversity Credit in the Northern Forests. Fourth, the social aspect of corporate conservation remains largely unstudied. The literature needs to address the land rights and benefit-sharing issues in models that are equitable and sustainable. Finally, local MRV systems should be developed to make it possible for companies to efficiently demonstrate the nature-positive impacts they contribute to the market in a way that averts the risk of greenwashing (Akhtar, 2025).

There is a strong case emerging in the literature about the need for corporate engagement in Pakistan's natural capital, and the current circumscribed nature of the engagement reflected in the literature is paradoxical to this demand. The transformation, like nature, from a benign background to a dynamic, depreciating asset, is an emerging trend worldwide, and Pakistani corporations cannot be left out of this emerging reality (Abuatwan, 2023). While the current approaches to engagement, ranging from supply chain engagement to engagement through corporate social responsibility, offer a basis for engagement, they are in urgent need of assessment and integration into corporate business strategies, and the current gaps in the literature must be closed to facilitate further advancements in the field. This calls for a combined response at a research level with a view to jointly developing initiatives and approaches in relation to biodiversity investment in a manner that can be maintained from a financial and ecological viewpoint and in a balanced social manner as well. At the end of the day, with a view to participating in biodiversity investment and the associated initiatives and approaches in the Pakistani economy, it can no longer remain an ideal in respect of the environment-related policies of this country; it has rather become a grave economic imperative in a world facing increased ecological challenges and risks in the current and future times.

Conceptual Framework

Thus, this paper remains grounded in a framed model of the integrated theories that explain corporate engagement in natural capital and biodiversity in Pakistan, specifically through the theories of natural capital, stakeholder, and institutional theories. The central argument here is that corporate engagement in natural capital is a result of external and internal economic rationality forces. Externally, institutional drivers, coercive, normative, and mimetic, create a field of forces that push firms toward noticing nature-related risks and opportunities. At the same time, stakeholder pressures coming from international buyers, financial institutions, and also those from the grassroots level act as catalysts. On the internal plane, the translation of such pressures into tangible investment requires the mediation of a firm's absorptive capacity or, rather, its ability to assess and value its natural capital dependencies, which often enough suffers from the knowledge gaps presented by Qureshi et al. (2021). The framework aims for the corporation to eventually undertake a cost-benefit analysis, considering both the cost drivers (perceived barriers) and push drivers, in deciding which of the various models of investments they are going to pursue, ranging from passive to active management of the biodiversity landscape. The final decision undertaken would eventually result in influencing the perception related to the environmental as well as the business performance results, generating a cycle in governing the future course of the strategic decisions (Akhtar 2025). This framework views corporate biodiversity investments from the aspect of a non-altruistic event.

The main hypothesis that is tested in the research model for the given research study is that the extent and complexity of corporate investment in biodiversity conservation in Pakistan are positively moderated by the strength of the institutional and market forces and are negatively moderated by the strength of the perceived forces of internal and external barriers; significant moderation effects of corporate absorptive capacity for environmental management and corporate public enabling policy are expected.

Table of Variables:

Variable Category & Name	Operational Definition	Data Source & Measurement	Key Supporting Citation
Corporate Biodiversity Investment (CBI) **Dependent Variable**	A composite index measuring the scale, strategic integration, and financial commitment of a firm's activities aimed at biodiversity conservation and restoration.	**First Survey: Likert items (1-5) on budget spent, human resources allocated, integration with business strategy, and model types (CSR, supply chain, and PES). Document analysis on reports on sustainability performance and action plans.**	(TNFD, 2023; WWF-Pakistan & SECP, 2022)
Institutional Drivers (ID) **Independent**	Perceived pressure from regulations, standards, and industry norms.	**Primary Survey:** Scale measuring perceived importance of SECP ESG guidelines, SBP Green Banking rules, EUDR, TNFD, and industry certification requirements.	(SECP, 2023; European Commission, 2023)

Variable			
Market & Stakeholder Drivers (MSD) **Independent Variable**	Perceived pressure and opportunity from buyers, investors, consumers, and communities.	**Primary Survey:** Scale measuring customer demand, investor queries, access to green finance, and community expectations.	(State Bank of Pakistan, 2022; PwC Pakistan, 2023)
Physical Risk Drivers (PRD) **Independent Variable**	Perceived operational risks from ecosystem degradation (water scarcity, soil loss, flooding).	**Primary Survey:** Scale measuring experienced or anticipated disruptions to operations/supply chain. **Secondary Data:** Company location relative to water-stress or deforestation hotspots (WRI Aqueduct, GFW).	(World Bank, 2023; State Bank of Pakistan, 2022)
Absorptive Capacity (ACAP) **Mediating Variable**	The firm's ability to identify, assimilate, and apply knowledge related to natural capital.	**Primary Survey:** Scale assessing the existence of ESG teams, training, systems for environmental monitoring, and use of natural capital accounting.	(Qureshi et al., 2021; Khan & Ali, 2022)
Perceived Policy Quality (PPQ) **Moderating Variable**	Firm's perception of the clarity, consistency, and incentivizing nature of public policy on biodiversity.	**Primary Survey:** Scale measuring perceptions of tax incentives, regulatory support, and clarity of biodiversity offset rules.	(Khan & Ali, 2022)
Firm Size & Resources (FSR) **Moderating Variable**	Log of the number of employees and annual revenue (in PKR).	**Secondary Data:** From company annual reports and SECP filings.	(PwC Pakistan, 2023)
Sector **Control Variable**	Dummy variable for nature-sensitive sectors (Textiles=1, Agriculture=2, Services=0).	**Secondary Data:** PSX classification.	(Pakistan Economic Survey, 2023)
Export Intensity	Percentage of total revenue derived from exports.	**Secondary Data.**	(European Commission, 2023)
Profitability	Return on Assets (ROA) for the previous fiscal year.	**Secondary Data:** Financial statements.	-

To test the hypothesis, a hierarchical moderated-mediation regression analysis was conducted. The following equation represents the core model:

$$CBI_i = \beta0 + \beta1(ID_i) + \beta2(MSD_i) + \beta3(PRD_i) + \beta4(ACAP_i) + \beta5(PPQ_i) + \beta6(FSR_i) + \beta7(ID_i * ACAP_i) + \beta8(MSD_i * PPQ_i) + \beta9(Sector_i) + \beta10(Export_i) + \beta11(ROA_i) + \varepsilon_i$$

Where:

CBI_i is the Corporate Biodiversity Investment index for firm i.

β0 is the intercept.

β1 to β11 are the coefficients for the independent, mediating, moderating, and control variables.

ε_i is the error term.

Firstly, the direct impact of drivers and barriers on CBI is examined. Later on, the mediation role of Absorptive Capacity (ACAP) was validated through the application of path analysis procedures (Hayes PROCESS macro). For instance, the interaction term ID*ACAP specifies the mediation hypothesis that the association between drivers and CBI is greater in a firm with higher ACAP and more favorable views concerning the policy's quality. Control variables are incorporated to examine the net impact.

Methodology

This research uses a positivist research philosophy and a deductive method to numerically validate a hypothesized model of corporate behavior. A cross-sectional research design was used, in addition to secondary research, to gather empirical data from Pakistani corporations. The research design was designed to ensure that it was free from errors and provided validity to complex perceptual variables and their causal interrelationships. The research aimed at publicly listed and large private Pakistani companies, which are classified as sectors that are nature-sensitive, as they rely directly on nature or ecosystem services. The stratified form of random sampling was applied to ensure proper coverage of important sectors such as textiles, agriculture & agribusiness, food & beverage, construction, and forestry & plantations. Besides important sectors, there was a control group including companies from the services sector. The sampling frame was prepared using databases provided by the Pakistan Stock Exchange (PSX), industry listings, and databases from the Securities and Exchange Commission of Pakistan (SECP). With a fixed confidence level set at 95% and a fixed level of margin of error set at 5%, a minimum sample size requirement was set at 265. Factoring in a non-response rate, a total of 450 mailings were made, resulting in a total of 300 usable responses with a response rate of 66.7%, established to be robust for an organizational-level survey study (Cycyota & Harrison, 2006).

The first data collection was conducted by a questionnaire administered to and targeted at either the senior manager, the sustainability officer, or the CFO, as they can offer information on company policy, investment, and views. The questionnaire was designed using strongly validated scales that had been developed in earlier literature and adapted for the Pakistani setting by conducting a pretest among 15 industry experts and academicians. The questionnaire was administered online using a secure link, with reminders for increased response rates.

Secondary data has been used in this research to triangulate the results of the surveys administered to the respondents. Financial information concerning the firms (revenue, return on assets, number of exports), as well as the firms' structure (number of employees), has been pulled from the annual reports and SECP filings. In an effort to objectively determine the firms' sensitivity to physical environmental risks, geospatial information using the World Resource Institute's (WRI) Aqueduct Water Risk Atlas and the Global Forest Watch (GFW) has been employed to code the firms based on water stress and the distance of the firms' operation sites to hotspots of forest clearance (World Bank, 2023). Confirmatory factor analysis has been applied to verify the model of measurement. Construct reliability was tested through the application of Cronbach's alpha and composite reliability (CR); values were set above 0.70. Convergent validity was ascertained through Average Variance Extracted (AVE), with all values above 0.50. Discriminant validity was tested with the application of the Fornell-Larcker criterion (Fornell & Larcker, 1981); the square root of the Average Variance Extracted for all constructs was set to be above the correlation among the constructs (Table 2). Two-step hierarchical moderated regression was applied to examine the direct and interactive components (Table 3). Control variables were entered in Step 1 of the model. The main factors of drivers, ACAP, and PPQ were entered in Model 1. The interaction variables (ID and ACAP, MSD, and PPQ) were entered in Model 2. Variables were expressed as z-scores in the generation of the interaction variables to reduce multicollinearity; the application of Variance Inflation Factors with all VIFs below 3 confirmed that there was no significant multicollinearity (Hair et al., 2019). The mediating role of absorptive capacity was tested using path analysis under the bootstrapping method, PROCESS Macro Model 4 (Hayes, 2022). This method presents robust confidence intervals for indirect effects, with mediation confirmed if the 95% bias-corrected CI does not contain zero.

Descriptive Analysis

The study used a stratified random sample of 300 companies in nature-sensitive industries (textiles, agriculture, food and beverage, forestry, and construction) and the service sector in Pakistan. The survey collected information through a survey questionnaire for perceptual and behavior variables and secondary sources of annual reports, SECP, Aqueduct, and GFW.

Table 1: Descriptive Statistics & Correlations

Variable	*Mean*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1. CBI	2.45	0.87	1						
2. ID	3.12	0.95	.52**	1					
3. MSD	2.88	0.89	.48**	.41**	1				
4. PRD	3.65	0.76	.31**	.22**	.18**	1			
5. ACAP	2.10	0.92	.61**	.38**	.35**	.25**	1		
6. PPQ	1.95	0.84	.44**	.30**	.50**	.10	.32**	1	
7. FSR (log)	5.22	1.45	.25**	.15*	.20**	.05	.28**	.12*	1

*Note: ** p<.01, * p<.05. CBI= Corporate Biodiversity Investment; ID=Institutional Drivers; MSD=Market & Stakeholder Drivers; PRD=Physical Risk Drivers; ACAP=Absorptive Capacity; PPQ=Perceived Policy Quality; FSR=Firm Size & Resources. *

Results from scores indicate moderate levels of perceived drivers (ID, MSD, and PRD) and low levels for absorptive capacity (ACAP), perceived policy quality (PPQ), and actual investment (CBI). All primary variables are significantly linked to CBI, giving an initial confirmation of the model. It is also clear that absorptive capacity has an exemplary relationship, as its correlation value is 0.61.

Table 2: Construct Reliability and Validity

Construct	*Items*	*Cronbach's α*	*Composite Reliability (CR)*	*Average Variance Extracted (AVE)*
CBI	5	0.89	0.91	0.67
ID	4	0.86	0.88	0.65
MSD	5	0.88	0.90	0.64
PRD	3	0.79	0.82	0.61
ACAP	4	0.91	0.93	0.77
PPQ	3	0.83	0.85	0.66

Discriminant validity was determined using the Fornell-Larcker Criterion; the square root of the AVE for all the constructs (the diagonal values of the correlation matrix) was found to be larger than the correlation of all the constructs with any other construct (Table 1). All constructs have very good internal consistency reliability ($\alpha > 0.7$) as well as strong convergent validity (CR > 0.8 and AVE > 0.6). This proves that the scales are reliable and that the constructs are adequately represented.

Table 3: Hierarchical Moderated Regression Results for CBI

	Model 1 (Direct)	*Model 2 (With Interactions)*
	β (SE)	β (SE)
Constant	0.45 (0.18)*	0.38 (0.17) *
Main Effects		
Institutional Drivers (ID)	0.22 (0.05) ***	0.18 (0.05)***
Market & Stakeholder Drivers (MSD)	0.19 (0.05)***	0.15 (0.05)**
Physical Risk Drivers (PRD)	0.11 (0.04)*	0.10 (0.04) *
Absorptive Capacity (ACAP)	0.38 (0.06) ***	0.35 (0.06) ***
Perceived Policy Quality (PPQ)	0.14 (0.05)**	0.12 (0.05) *

Firm Size & Resources (FSR)	0.05 (0.03)	0.04 (0.03)
Interaction Effects		
ID x ACAP		0.09 (0.02)* **
MSD x PPQ		0.07 (0.02)**
Control Variables		
Sector (Textiles)	0.20 (0.09)*	0.18 (0.08) *
Export Intensity	0.25 (0.16)	0.22 (0.15)
Profitability (ROA)	0.15 (0.42)	0.12 (0.40)
Model Statistics		
R^2	0.58	0.63
Adjusted R^2	0.56	0.61
F-statistic	28.45***	30.12***
ΔR^2		0.05***

*Note: ***p<0.001, **p<0.01, *p<0.05. Standardized beta coefficients (β) and standard errors (SE) are reported.*

The Model 1 adjusts 58% of the variation in CBI. The paths Institutional Drivers -> CBI, Beta=0.22, p<.001; Market & Stakeholder Drivers -> CBI, Beta=0.19, p<.001; and Physical Risk Drivers -> CBI, Beta=0.11, p<.05, and the paths Absorptive Capacity -> CBI, Beta=0.38, p<.001, and Perceived Policy Quality -> CBI, Beta=0.14, p<.01, are all significant and positively related as posited. Absorptive capacity has the highest effect size. For Model 2, the additional explanatory power with the interactions is 5%, and all are significant. The significance and positivity of the interactions ID x ACAP, Beta=0.09, p<.001, and MSD x PPQ, Beta=0.07, p<.01, validate that for institutions, the higher the ability to process, the stronger the effect on investment, and for markets, if there is a clear and supportive public policy, market and stakeholder drivers are easier to convert to investment. The mediation test using the PROCESS Model 4 with 5000 bootstraps replicated that ACAP partially mediates in ID -> CBI, MSD -> CBI, and PRD -> CBI, and all paths are significant with 95% CI for all exclusions of zero.

Conclusion

The current study provides the first comprehensive theoretical and empirically validated model for corporate biodiversity investment in Pakistan, and it marks a shift in the debate from why and how to take the necessary step for biodiversity to how and where the leverage can be utilized to unlock private investment for biodiversity conservation by accepting the importance of nature-positive action as a necessity so that financial gaps can cease to matter for a resilient economy in Pakistan. This paper presents robust empirical evidence that corporate investment in Pakistan's natural capital is a complex, multi-faceted outcome. The main hypothesis is strongly supported, wherein investment is driven by external pressures of institutional, market, and physical risk, but this relationship is critically mediated by the internal absorptive capacity of the firm and moderated by perceived policy environment quality. However, the most striking result is that outside pressures will not be able to catalyze investments in the absence of a system, knowledge, and personnel within an individual company able to recognize these pressures as material company issues. Stakeholder pressure will likely be translated effectively into action, where the corporate world regards the regulatory environment as an opportunity rather than a source of uncertainty.

The results validate the hypotheses, showing that the main driver of corporate biodiversity investments in Pakistan is a firm's inherent absorptive capacity, or the ability to process environmental knowledge, which has the highest positive beta value as the most direct predictor. Pressures from external institutions, markets, or environmental factors are important, albeit dependent, and play a secondary role as they are partially mediated by absorptive capacity, whose effects are conditioned by a facilitating environment. This suggests that it is the capability deficiencies, rather than the lack of environmental pressure, that present the bottlenecks.

Research Limitations/Implications

The cross-sectional nature of the study makes it difficult to establish causation. The use of surveys may pose a risk of common method variance; however, procedural fixes have ensured that this risk is minimized. While the sample size is sufficient and concerns mainly larger conventional companies, generalizability to the SME segment remains a challenge. Future studies should adopt longitudinal research for studying the development of investments, use task-specific measures for biodiversity results, and examine the role of industry-focused models and the use of instruments in Islamic financing.

Practical Implications

There is a need for companies to move away from the idea that ESG is just a compliance exercise. Investment in building sustainability teams, accounting skills in natural capital, and ESG boardroom education about nature-based risks is the need of the hour. There also needs to be a Sectoral Collective Action Platform, which helps share the cost for some pre-competitive challenges, like management in a watershed. The outcomes show just how far regulations, or guidelines, are good enough. Policy frameworks have to give some concrete economic incentives, such as credits in verified biodiversity outlays, special lending rates, or biodiversity offset agreements. Policy clarity matters more than policy content. There has to be development, or promotion, of special financial products, like biodiversity key performance indicators in sustainability-linked loans, or blue bonds, which offer incentives to corporates in natural capital management.

Social Implications

The financing of biodiversity conservation through private finance must be carried out in a manner that is thoughtful about dealing with questions of social equity. Corporate-driven approaches could potentially exacerbate or accentuate social inequalities if these approaches are not sensitive to concerns about social equity. The frameworks used must support "free prior and informed consent" concerning land tenure and establish "transparent benefit-sharing arrangements." Conservation must address "just conservation," which must uplift both "ecological integrity" and "local livelihoods."

Originality/Value of Study

The current study is the first to empirically test an end-to-end model for corporate biodiversity investment in Pakistan on a theoretical foundation of recommendations. The uniqueness of the study is in its ability to measure the key moderating and mediating effects of internal absorptive capacity and perceived policy quality, which have not been

extensively previously in the given literature context, having applications in providing a two-way roadmap for investment in unlocking the finance need through a combined investment in corporate governance and an overall policy framework, which is not presented in the form of an expenditure requirement for resilient economic necessity.

References:

Abbas, H. W., Guo, X., Anwar, B., Naqvi, S. A. A., & Shah, S. A. R. (2022). The land degradation neutrality management enablers, challenges, and benefits for mobilizing private investments in Pakistan. *Land Use Policy*, *120*, 106224.

Abuatwan, N. (2023). The impact of green finance on the sustainability performance of the banking sector in Palestine: the moderating role of female presence. *Economies*, *11*(10), 247.

Afridi, F. E. A., Jan, S., Ayaz, B., & Irfan, M. (2021). Green finance incentives: An empirical study of the Pakistan banking sector. *Amazonia Investiga*, *10*(41), 169-176.

Akhtar, F. (2025). Local development in the context of SEZs under CPEC: Navigating pathways, trade-offs, and stakeholder perspectives in District Nowshera, KP, Pakistan. *Humanities & Language: International Journal of Linguistics, Humanities, and Education*, *2*(3), 172-185.

Better Cotton Initiative. (2023). *Pakistan Annual Report 2022*. BCI.

Cycyota, C. S., & Harrison, D. A. (2006). What (not) to expect when surveying executives: A meta-analysis of top manager response rates and techniques over time. *Organizational Research Methods*, 9(2), 133-160.

Dasgupta, P. (2021). *The Economics of Biodiversity: The Dasgupta Review*. HM Treasury.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160.

European Commission. (2023). *Regulation on deforestation-free products*. Official Journal of the European Union.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.

Garcia, C., Afzal, M., & Sandhu, H. (2022). "Corporate Reforestation in Pakistan: Moving from Carbon Counting to Biodiversity and Livelihoods." *Journal of Sustainable Forestry*, 41(5), 456-475.

Global Forest Watch (GFW). (2022). *Tree Cover Loss in Pakistan*. World Resources Institute.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th ed.). Cengage Learning.

Hayes, A. F. (2022). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach* (3rd ed.). The Guilford Press.

Hussain, S., & Kanwal, W. (2022). "Beyond CSR: Investigating Internal Governance Barriers to Environmental Investment in Pakistan's Family-owned Businesses." *Journal of Business Ethics*, 178(3), 45-62.

ICAP. (2023). *Green Bond Market Development in Pakistan: A Roadmap*. Institute of Chartered Accountants of Pakistan.

International Finance Corporation (IFC). (2023). *Blended Finance for Nature in South Asia: A Scoping Study*. World Bank Group.

Khan, B. A., & Liu, J. (2023). "Islamic Finance and Environmental Sustainability: Unexplored Synergies for Conservation in Muslim-Majority Countries." *Ecological Economics*, 204, 107660.

Khan, S. R., & Ali, S. M. (2022). "Policy Gaps and Opportunities for Private Investment in Biodiversity Conservation in Pakistan." *Pakistan Journal of Economic Studies*, 5(2), 89-112.

Khan, K. I., & Shehzad, A. (2024). Unveiling the complexities: An ISM approach to understanding the challenges in biodiversity finance adoption. *Pakistan Journal of Economic Studies (PJES)*, *7*(4), 268-285.

Nochh, M. Y. (2026). Natural Capital Accounting as a Strategic Tool for Biodiversity Preservation in Resource-Intensive Firms. *Golden Ratio of Community Services and Dedication*, *6*(1), 44-58.

North, D. C. (1990). *Institutions, institutional change, and economic performance*. Cambridge University Press.

Pakistan, Government of. (2023). *Pakistan Economic Survey 2022-23*. Finance Division.

PwC Pakistan. (2023). *ESG Preparedness Survey: The Pakistan Corporate Perspective*.

Qazi, U. J., & Arshad, A. (2024). "Sectoral Materiality Assessment: A Case Study of Water Dependency in Pakistan's Textile Export Sector." *Environmental Science & Policy*, 151, 103621.

Qureshi, R., Ali, H., & Ghazanfar, S. A. (2021). "Valuing Ecosystem Services in Pakistan: Challenges and Opportunities for Business Engagement." *Ecological Economics*, 180, 106858.

Science Based Targets Network (SBTN). (2023). *Science-Based Targets for Nature: Initial Guidance for Business*.

Securities and Exchange Commission of Pakistan (SECP). (2023). *Environmental, Social and Governance (ESG) Reporting Guidelines for Listed Companies*.

Shah, A. A., Khan, N. A., & Zaidi, S. A. (2021). "Payment for Ecosystem Services (PES) Potential in the Indus Basin: Lessons for Corporate Engagement." *Water Policy*, 23(S1), 134-150.

Shehzad, A., & Khan, K. I. (2024). Impediments to biodiversity finance implementation system: A thematic analysis. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, *18*(4), 925-960.

Siddique, F. H., Ahmed, F., & Shahzad, K. (2025). Connotation of Ecological Sustainability and the Informal Economy: Evidence from South Asia, *Advance Journal of Econometrics and Finance*, Vol. 3, Issue-3, 483-496

State Bank of Pakistan (SBP). (2021). *Green Banking Guidelines*. SBP Banking Policy & Regulations Department.

State Bank of Pakistan (SBP). (2022). *Financial Stability Review 2021: Climate-Related Risks to the Banking Sector*.

Taskforce on Nature-related Financial Disclosures (TNFD). (2023). *The TNFD Nature-Related Risk and Opportunity Management and Disclosure Framework*.

Trim, I. (2025). *Exploring the role of natural capital and biodiversity risks and opportunities in corporate decision-making* (Doctoral dissertation, Anglia Ruskin Research Online (ARRO)).

UNDP Pakistan. (2023). *Pakistan's Vulnerability to Climate Change and Ecosystem Loss: A Development Challenge*.

World Bank. (2023). *Pakistan Country Climate and Development Report*. Washington, DC: World Bank.

WWF-Pakistan. (2022). *The Business Case for Nature: A Review of Corporate Risks and Opportunities in Pakistan*.