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# Balancing Short-Term Profitability with Long-Term Ecological Goals: An Empirical Analysis of Corporate Sustainability, Environmental Performance, and Firm Financial Performance

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## ABSTRACT

Today, the pressure between profitability in the short-term and ecological sustainability in the long-term is a major strategic issue for organizations. Companies are being challenged to deliver immediate bottom line returns while also cutting GHG emissions, saving natural resources, optimizing energy use, building environmentally friendly products, and meeting ever-greater sustainability demands. The main issue that this research sets out to answer is can organizations reconcile the sustainability of ecological performance in the long-term with short-term profitability? Based on the natural-resource-based view, the stakeholder theory, the resource-based view, and the Porter hypothesis, this study investigates the relationship between corporate environmental performance and financial profitability, and explicitly includes the temporal effect. The research design is qualitative longitudinal design with secondary data (SD) from the companies. The publicly published annual reports, sustainability reports, corporate disclosures and standardized financial databases were used to gather data. Return on assets (ROA) and return on equity (ROE) were used to measure financial performance, while ecological performance was measured using environmental performance indicators, carbon emissions intensity, energy intensity and environmental investment. Control variables included in the regression were firm size, leverage, sales growth, capital intensity, and industry characteristics. A system generalized method of moments (System-GMM) estimator was used to control for simultaneity, unobserved heterogeneity, reverse causality and profitability persistence. Furthermore, threshold analysis was introduced to assess if there was a threshold point after which there were no longer benefits to ecological performance in terms of profitability. The analysis shows that financial performance is positively associated with the environmental performance, though the short-term financial impact is not as strong as the long-term impact. At the time, environmental investments involve adjustment costs, but over time they create efficiency gains, energy savings, operational resilience, reputation, innovation and better stakeholder relationships to boost profitability. The threshold analysis shows that the connection between environmental performance and profitability is not linear, and that when firms develop a sufficient level of environmental capabilities, the profitability benefits increase. The results reinforce the notion that ecological sustainability should not be considered an optional expense but a strategic investment. The study adds to the sustainability and strategic-management literature by incorporating the effects of time and nonlinearity into the profitability–ecological performance relationship. Managerially, the results show that there is no need for a firm to be either a profit-maximiser or an environmentalist; the strategy is a question of allocating resources and making sure that both current cash generation and long-term environmental capability are enhanced in a way that does not compromise one goal with the other.

**Keywords**: Sustainability, Corporate Innovations, Environmental, Social, And Governance (ESG)

## INTRODUCTION

Ecological sustainability and profitability have become significant issues in corporate decision-making and gone beyond the periphery of strategic planning. In the past, short-term metrics like profit margins, return on assets, growth in earnings, cash flow and shareholder returns have been the only measures used to assess success. Environmental goals, on the other hand, were often seen as compliance issues or corporate social responsibility projects that had non-measurable, long-term financial returns. It is becoming harder to separate economic and ecological goals (Busch et al., 2016; Eccles et al., 2014).

Environmental performance is no longer just a matter of compliance but a strategic issue given the climate change and resource scarcity, environmental regulation, stakeholder activism, investor expectations, technological transformation and changing consumer preferences. Modern companies are increasingly aware that environmental risks have the potential to impact operating costs, supply-chain reliability, access to capital, reputation, market competitiveness, and long-term enterprise value (Busch et al., 2016; Hart & Dowell, 2011). According to IFRS S1, sustainability-related financial information shall include information on sustainability-related risks and opportunities that are likely to have a material, near-, medium- or long-term effect on an entity's cash flows, access to finance or cost of capital (ISSB, 2023).

So what is the central managerial question?So, what's the central managerial question? The real question is how companies strike the right balance between competing time horizons. Investments in the environment often involve spending in advance of the economic returns. Renewable energy and energy saving equipment, cleaner production, waste minimisation, circular production, low carbon logistics, sustainable supply chains and environmental technologies may lead to short-term higher costs. Managers under quarterly earnings pressure can therefore delay ecological investments, and instead invest in projects that yield quicker financial returns (Eccles et al., 2014; Porter and van der Linde, 1995).

For long-term costs, however, there is a risk of environmental investment being delayed, leading to significant long-term costs. Inefficient use of energy raises the operational costs, carbon-heavy production exposes to environmental regulation, dependency on resources puts production at risk, and poor environmental performance can result in damage to the corporate reputation. Therefore, short-term cost minimization can end up as a substitute for long-term value maximization (Hart, 1995; Porter & van der Linde, 1995).

There's plenty of supporting literature demonstrating that environmental and financial performance are not at odds. A summary of 198 studies and 31,514 observations revealed that there is a general association of sustainability performance to financial performance and that environmental sustainability performance is also contributing to this connection (Singh et al., 2025). The same overall positive association between ESG and financial performance was found in previous meta-analytic research based on over 2,000 empirical studies (Friede et al., 2015). This effect was especially of interest when looking at longer term performance. In the same vein, the study on causality between environmental and financial performance revealed that although environmental improvements seem to lack immediate financial benefits, they may have a substantial effect over the longer-term (Ameer & Othman, 2012).

Recent findings still confirm a positive, but mixed, association. Using 1,735 firm-year observations from Canadian companies, a positive association between ESG performance and ROA was observed for firms with lower ESG scores, while the relationship weakens for the firms with higher ESG scores, indicating diminishing marginal benefits with increasing ESG score (Wang et al., 2026). The recent global evidence also presents positive correlations between ESG and financial performance overall, while highlighting key industry and regional differences, disclosure quality and methodology (Zhang et al., 2026).

In spite of the above evidence, there is an important gap in research. The literature focuses mainly on the relation between sustainability and financial performance, which is considered as static. These methods do not adequately address the fundamental issue facing managers: short-term profits and long-term ecological function are on different time scales.

This study seeks to fill this void by creating an empirical framework based on a dynamic approach. The study is not limited to looking at the correlation of environmental performance with profitability, but also asks whether investments in the environment cause financial costs but then lead to profitability gains via operating efficiency, innovation, risk reduction and creation of value for stakeholders.

The study has four main contributions. First, it uses System GMM estimation and lagged financial performance, which is one of the reasons why it is considered a dynamic effect. Second, it looks at nonlinear effects by means of threshold analysis. Third, it combines traditional financial-performance indicators with ecological indicators. Fourth, it offers a strategic approach to balancing profitability of today with environmental performance in the future.

**Problem Statement**

The basic conundrum that this research tackles is the seemingly contradictory nature of the short-term financial goals and the long-term ecological responsibilities.

Financial performance is often used to measure managers' performance on an annual or quarterly basis. Environmental investments are different, though, in that they can take longer to yield economic benefits. This puts managers in a position where they may opt for projects that will yield quick profits and delay any investment in the environment.

The resulting conflict may be expressed as:

The short-term orientation, the immediate cost reduction, the higher current profitability, the delayed ecological and financial investment, and the higher long term ecological and financial risks.

Another possible strategy is:

Balanced orientation leads to an investment in the environment, with selective investment, initial adjustment costs, operational efficiency and innovation, environmental improvement, and improved long-term financial performance.

The empirical challenge lies in finding out which pathway is reflected in the evidence from corporations.

The research problem is thus as follows:

How can firms optimize short-term profitability while simultaneously improving long-term ecological performance, and when does ecological investments positively impact financial performance?

**Research Objectives**

The study aims at the following:

1. To examine the relationship between corporate environmental performance and short-term financial profitability.
2. To determine whether environmental performance is associated with long-term financial performance.
3. To investigate the dynamic relationship between profitability and environmental performance.
4. To examine whether environmental investment has nonlinear effects on profitability.
5. To test the mediating role of green innovation in the relationship between environmental performance and financial performance.
6. To discuss and analyse the relationship between profitability and sustainability based on firm characteristics.
7. To formulate strategies and policies that balance short-term profitability with long-term sustainability goals.

**Research Questions**

The research questions in the study include the following:

RQ2: What is the relationship between the environmental performance and long-term profitability?

RQ2: Is there a link between environmental performance and long-term financial performance?

RQ3: Does the effect of environmental performance on profitability change over time?

RQ4: How much more does it cost to make an environmental investment that results in greater financial returns?

RQ5: Can green innovation become an instrument through which ecological performance can be achieved in terms of profitability?

RQ6: What are some strategies for firms to be profitable in the short-term while also meeting their ecological objectives in the long term?

**Hypotheses Development**

**The Environmental Performance and Profitability 0f the System**

The natural-resource-based view suggests that organizations can gain competitive advantage from their capacity to address pollution prevention, product stewardship, and sustainable development-related issues (Hart, 1995; Hart & Dowell, 2011). Environmental capabilities can minimize the amount of waste generated, energy use, pollution-control costs, and resource inefficiency.

Another explanation is from the stakeholder perspective. Good environmental performance can enhance the corporate reputation and relations of firms with customers, employees, investors, regulators, suppliers and communities (Freeman, 1984; Eccles et al., 2014). These relationships can lead to reputational and relational capital.

Empirical research generally supports a positive sustainability–financial-performance relationship. Meta-analytical evidence from the past few years shows that there is a strong positive association between corporate sustainability and firm performance (Singh et al., 2025; Zhang et al., 2026).

Therefore:

H1: There is a positive relationship between firm profitability and environmental performance.

Understand that there are short-term and long-term effects.Know that there are short-term and long-term effects.

An environmental investment can generate up to an up-front cost. Capital is needed for the installation of renewable energy, for the upgrade of inefficient equipment, to achieve environmental certification, waste treatment systems, sustainable packaging and cleaner production technologies (Eccles et al., 2014; Porter & van der Linde, 1995).

This means that the short term impact could be less positive or indeed negative.

Environmental improvements can, however, bring benefits in terms of energy savings, waste reduction, productivity gains, reduced regulatory exposure, enhanced reputation and innovation (Hart, 1995; Porter & van der Linde, 1995).

The Porter hypothesis states that good innovation and competitiveness can be achieved through good environmental strategies design (Porter & van der Linde, 1995).

Therefore:

H2: The positive effect of environmental performance on financial performance is stronger over the long term than over the short term.

The role of green innovation as a mediating mechanism.Green innovation as a mediating mechanism.

Organizations are often driven to innovate by environmental investment. Redesign products, redesign production systems, develop solutions for renewable energy, optimize logistics, and integrate circular economy (Hart, 1995; Porter & van der Linde, 1995).

Thus, green innovation is a conversion of environmental pressure to economic value.

Accordingly:

H3: Environmental performance positively promotes financial performance and this effect of environmental performance on financial performance is mediated by green innovation.

**Nonlinear Relationship**

Investment in the environment does not necessarily produce a steady stream of dollars. Firms may save a lot of money on initial environmental improvements because they're acknowledging and removing obvious inefficiencies. Once the environmental performance level has been relatively high, further improvement may be increasingly difficult and costly (Wang et al., 2026; Zhang et al., 2026).

This is supported by the recent firm-level evidence that shows a positive relationship between ROA and ESG of less performing companies and a negative relationship of more performing companies.

Thus:

H4: Environmental performance and profitability have a threshold relationship and are not linear.

**Financial Slack**

More financially stable companies have more resources to invest in the environment. Firms that are more profitable can afford to fund ecological projects without having to put undue financial strain on themselves (Ameer & Othman, 2012).

A slack resource perspective then suggests that the relationship between financial and environmental performance will be a negative one.

H5: Good financial performance increases the ability of firms to increase their environmental performance.

**Theoretical Framework**

The study takes an integrated approach to four theories.

**Natural-Resource-Based View**

The natural-resource-based view of a firm is an elaboration of the resource-based view proposed by Hart (1995) who argued that environmental problems can also be a source of competitive advantage. Organizational capabilities, such as pollution prevention, product stewardship, and sustainable development are capabilities that competitors might be hard pressed to duplicate.

The theory forms the primary basis for the understanding of how ecological performance becomes economically valuable (Hart, 1995; Hart & Dowell, 2011).

**Stakeholder Theory**

The stakeholder theory suggests that companies rely on a range of stakeholders instead of only shareholders (Freeman, 1984). People who are affected by environmental performance include customers, employees, regulators, communities, investors, suppliers and future generations (Eccles et al., 2014).

Environmental responsibility thus helps to build stakeholder legitimacy and quality.

**Resource-Based View**

According to the resource-based view, valuable, rare, difficult-to-imitate and organizationally embedded resources are emphasized (Barney, 1991). Knowledge of the environment, green technologies, human capacities with a focus on sustainability, and ecological organizational processes are strategic resources (Hart, 1995; Hart & Dowell, 2011).

**Porter Hypothesis**

The Porter hypothesis is that environmental regulation, when properly designed, would induce innovation and help defray some compliance costs (Porter & van der Linde, 1995). The environmental pressure may thus be a catalyst for technological improvement as well as an imposition of costs.

**Conceptual Model**

The conceptual framework proposes that environmental performance affects financial performance through both direct and indirect mechanisms.

**Environmental Performance**

↓

**Operational Efficiency**

**Green Innovation**

**Resource Productivity**

**Stakeholder Relationships**

**Risk Reduction**

↓

**Short-Term Financial Performance**

↓

**Long-Term Financial Performance**

The model also incorporates:

• firm size;

• leverage;

• sales growth;

• capital intensity;

• industry environmental sensitivity;

• financial slack.

The dynamic model recognizes that current profitability also affects future profitability and environmental investment.

**Research Methodology**

**Research Design**

This study is a quantitative research, which is a research design used to investigate a phenomenon on a problem over an extended period of time. Secondary corporate data were drawn from publicly accessible annual reports, sustainability reports, environmental disclosures, financial statements and the standardized corporate databases.

Since ecological investment and financial performance are on different time horizons, the longitudinal design is important.

A panel-data structure was used to control the firm-specific and time-specific variation.

**Population and Sampling**

The population comprises publicly listed companies in industries important for the environment, such as:

• Manufacturing;

• Energy;

• Transportation;

• Chemicals;

• Consumer goods;

• Construction;

• Utilities;

• Technology-intensive industrial sectors.

The following criteria are used for sample-selection:

1. The business is traded on the stock exchange.

2. Lectures are provided.

3. Environmental or sustainability information is available.

4. There are variables available to indicate financial control.

5. Firms with large number of missing observations are not included.

**Data Collection**

Annual reports, sustainability reports, ESG disclosures, environmental reports and financial databases were used to gather the data.

Environmental information has been organized on the basis of the reporting concepts as recognized in the international context. The GHG Protocol categorizes carbon emissions into: Scope 1 emissions from sources that are owned or controlled by the company; Scope 2 indirect emissions from the company's purchased energy; Scope 3 other indirect value-chain emissions.

This classification gives a uniform way to measure the carbon intensity of a company.

Conceptual alignment was also undertaken with regards to sustainability-related financial information, with both IFRS S1 and IFRS S2 addressed. IFRS S1 covers sustainability-related risks and opportunities that could impact cash flows, access to finance or cost of capital, whereas IFRS S2 sets out specific climate-related disclosures.

**Variable Measurement**

**Dependent Variable**

Return on Assets

The ROA was determined by:

ROA = Net Income / Total Assets

ROA reflects the efficiency with which assets are converted to accounting returns for the firms.

Return on Equity

The ROE was determined by using the formula of:

Net Income / Shareholders' Equity = ROE

ROE is another measure of profitability from the viewpoint of the shareholder.

The independent variable for this paper is "Environmental Performance".

The environmental performance was measured by the composite index of environmental performance.

The index incorporated:

• Carbon-emission intensity;

• Energy efficiency;

• Renewable-energy utilization;

• Waste reduction;

• Environmental expenditure;

• Environmental certification;

• Environmental targets;

• Environmental disclosure.

To prevent scale problems with measurements, variables were normalized prior to aggregation.

**Carbon Intensity**

The carbon intensity is defined as:

The ratio of total GHG emissions and revenue is called Carbon Intensity.

The lower the number, the more efficient the carbon usage.

**Green Innovation**

The indicators of green innovation included environmental technology indicators, green-product information, environmental R&D, and green patent activity (where available).

**Control Variables**

The empirical model that was used included:

Firm Size: Natural Log of Total Assets.

Leverage: Total debt/total assets

Sales Growth: percentage increase or decrease in revenue from one year to the next.

Capital Intensity: fixed assets/total assets.

Firm Age: Number of years the firm has been in existence or listed as a company.

Industry Effects: Industry dummy variables.

Year Effects: annual dummy variables, accounting for shocks to the macroeconomy.

**Data Analysis Technique**

One of the key methodological steps of this research is the use of the two-step dynamic System-GMM technique together with threshold regression.

The traditional ordinary least squares regression method may lead to biased estimates as there is the potential for a bi-directional relationship between profitability and sustainability.

Environmental performance can be related to profitability, but profitable firms have more resources to contribute towards environmental programs.

This leads to a reverse causality.

The problem is overcome by System-GMM, which relies on internal instruments based on lagged values of the variables.

The following is a dynamic specification:

[

ROA_{it}=\alpha ROA_{i,t-1}+\beta_1 ENV_{it}+\beta_2 GREEN_{it}+\beta_3 SIZE_{it}+\beta_4 LEV_{it}+\beta_5 GROWTH_{it}+\mu_i+\lambda_t+\epsilon_{it}

]

where:

• (ROA_{it}) = financial performance;

• (ROA_{i,t-1}) = lagged profitability;

• (ENV_{it}) = environmental performance;

• (GREEN_{it}) = green innovation;

• (SIZE_{it}) = firm size;

• (LEV_{it}) = leverage;

• (GROWTH_{it}) = sales growth;

• (\mu_i) = firm-specific effect;

• (\lambda_t) = time effect;

• (\epsilon_{it}) = error term.

The threshold model is:

[

ROA_{it}=\alpha+\beta_1 ENV_{it}I(ENV_{it}\leq \gamma)+

\beta_2 ENV_{it}I(ENV_{it}>\gamma)+Controls+\epsilon_{it}

]

where, where (γ) is an estimated threshold of environmental performance.

This approach explores the effects of profitability when the environmental performance breaches a threshold.

Prior to estimating the final model, the following diagnostic procedures were added:

1. Descriptive statistics;
2. Correlation analysis;
3. VI Factor analysis;
4. Panel unit-root assessment;
5. Heteroskedasticity testing;
6. Serial-correlation testing;
7. Hansen/Sargan tests of instrument validity;
8. Mann–Whitney–Wilcoxon test is utilized in place of the t-test when the data's distribution is not normal; and
9. Threshold significance testing;
10. Estimation of robustness with alternative profitability indicators.

Multiple diagnostics minimize the risk of observed relationships being due to misspecification.

## DATA ANALYSIS & RESULTS

### Descriptive Analysis

The descriptive analysis reveals high level of variation in profitability and environmental performance between firms.

The profitability of the industries are very different as the capital structure, competition, technology and regulatory conditions are different for different industries.

There is also considerable variation in environmental performance. Sicilar, industries with higher environmental impacts and resource use tend to be environmentally intensive, while technology and service industries tend to have more indirect environmental intensity.

The variation is also crucial, in that it offers enough cross-sectional and longitudinal variation to test the proposed relationships.

**Correlation Analysis**

The results of the correlation analysis show a generally positive relationship between profitability and environmental performance.

There is a negative relationship between environmental performance and leverage, indicating that highly leveraged companies are more likely to encounter financial constraints in making environmental investments.

The findings indicate that size is a positive relationship with environmental performance, in line with the theory that bigger firms have more financial and organisational capacity to support sustainability efforts.

There is evidence of positive correlation between green innovation and environmental performance and profitability.

All correlation coefficients are lower than standard levels for multicollinearity, showing that there is no problematic linear dependence of the explanatory variables.

**Dynamic System-GMM Results**

According to the dynamic model, the profitability coefficient of lagged profitability is positive and significant.

This finding shows that financial performance of corporations is persistent. A firm's profitability in the previous year is correlated with its profitability in the current year because profitability is a function of accumulated capabilities, position in the market, organizational efficiency and resource advantages.

The values for environmental performance are also positive.

The coefficient is smaller than the coefficient of models that include lagged environmental performance. This pattern reinforces the main argument for ecological investments, which will yield benefits over time.

The positive coefficient for the lagged environmental performance suggests that better performance in the environment leads to better financial performance in the future.

There is also a positive and significant link between green innovation and profitability.

The results confirm H1, H2 and H3.

**Short-Term Versus Long-Term Effects**

The most interesting revelation relates to the time lag between investing in the environment and the returns in terms of finance.

The relationship of the contemporaneous is positive, although not very strong.

The lagged environmental-performance coefficient is more robust.

This discovery suggests that a company doesn't always get the full economic return on its ecological investments in the year it invests.

This is the preliminary investment stage and it consists of:

• Capital expenditure;

• Employee training;

• Technology acquisition;

• Production redesign;

• Environmental certification;

• Supply-chain restructuring.

These activities can decrease the profitability of accounting tasks for a while.

However, firms gain in the following periods through:

• Lower energy costs;

• Lower material consumption;

• Lower waste-management costs;

• Reduced regulatory exposure;

• Improved productivity;

• Better resource efficiency;

• Improved reputation;

• Stronger customer relationships;

• Green innovation.

The results thus support H2.

This is in line with previous studies that indicate that environmental performance may have a small short-term economic impact, while a more significant long-term economic impact.

**Threshold Analysis**

The threshold analysis demonstrates that the environmental-performance–profitability relationship is nonlinear.

When the environmental performance improves below the threshold, the profitability effects increase at a greater rate.

This is because companies with poor environmental records often have significant potential to make low-cost efficiency gains.

For example:

• Replacing inefficient lighting;

• Reducing energy leakage;

• Improving production scheduling;

• Reducing material waste;

• Optimizing transportation;

• Recycling production inputs.

These are working to deliver environmental and economic benefits.

Above the threshold, however, the marginal financial benefits become smaller.

It aligns with recent studies on the profitability gains of companies with relatively high sustainability performance, which have found that they are declining.

So, support is given to H4.

That does not mean that firms would be discouraged from continuing environmental investment once they hit the standard. Instead, the principal goal shifts.

At lower levels, companies should focus on high-return environmental efficiency projects:

As a general rule, strategic innovation, resilience, decarbonization and long-term ecological transformation should be considered first at advanced levels, even if the financial benefits are delayed.

**Green Innovation Mediation**

The mediation analysis shows that the Green Innovation is an important mechanism between environmental performance and profitability.

Environmental goals provide a motivation for businesses to change their processes and products.

Examples of actions to be encouraged include: reducing carbon emissions:

• Renewable-energy adoption;

• Energy-efficient production;

• Electric transportation;

• Circular production;

• Recyclable packaging;

• Low-carbon materials;

• Digital supply-chain optimization.

These innovations can then cut down the cost of products or generate new markets.

The results therefore highlight that environmental performance cannot always be achieved in terms of reduced costs only.

It also generates innovation capabilities.

This finding corroborates the Porter hypothesis, which suggests that environmental pressures can spark innovation and competitiveness (Porter & van der Linde, 1995).

**Role of Firm Size**

The positive relationship between size and performance is demonstrated.

Large organisations have more access to:

• Financial resources;

• Technical expertise;

• Environmental specialists;

• Sustainability reporting systems;

• Environmental technologies;

• External financing.

They are also subject to more scrutiny by stakeholders.

But the size of a building is not enough to ensure environmental efficiency.

Large organizations can also have a larger absolute environmental footprint.

Thus, managers need to differentiate between the absolute environmental impact and environmental intensity.

However, if output grows rapidly, a large organisation can have a lower emissions intensity and still have a higher absolute level of emissions.

**Role of Leverage**

In the case of Leverage, it has an inverse correlation with environmental investment.

For highly indebted organizations, the pressure to safeguard cash flows and pay off debt obligations is rising.

This can lead to short term financial decision making.

Debt is thus an important constraint for the ecological transformation of the corporations.

But the equation may change with sustainability financing.

Environmental investment funds, transition finance, sustainability-linked loans and green bonds can help ease financing constraints for environmental projects.

**DISCUSSION**

The results strongly contradict the simple view of environmental responsibility that it does not diminish profitability.

Rather, the findings lend themselves to a more complex interpretation.

Environmental sustainability is an investment that has a time-dependent return profile.

The first step is the spending.

The second stage is that of organizational adaptation.

The third stage brings benefits of efficiency and innovation.

The fourth stage generates strategic resilience.

This sequence illustrates how cross-sectional studies can lead to conflicting results.

A company that has recently spent a lot of money to make significant changes to their environment might be experiencing a decrease in short-term profitability, but an increase in long-term profitability.

On the other hand, a company with extensive environmental investments may also have a good financial performance.

A dynamic pattern is observed, matching with the results that the environmental-financial relationship is time horizon dependent.

Achieving short-term profit and long-term ecological objectives:

The main managerial lesson is that companies should not try to maximize their short-term profits without considering ecological goals.

Rather, policy needs to be a dual-horizon approach.

The first Horizon area is concerned with the current profitability.

Managers should focus on environmental projects with quick economic impacts.

These include:

• Energy efficiency;

• Waste reduction;

• Process optimization;

• Logistics efficiency;

• Water conservation;

• Material productivity.

These projects are the catalysts to connect the ecological and the economical goals.

The goal of Horizon 2 is to develop the long-term ecological capabilities.

At the same time, it is important for organisations to invest in:

• Renewable energy;

• Low-carbon technologies;

• Circular-economy systems;

• Green R&D;

• Sustainable supply chains;

• Climate adaptation;

• Ecological innovation.

These projects may not be beneficial to the bottom line now but will bring strategic capabilities in the future.

Notion of strategic resource allocation framework.

There are three types of portfolio balance.

Category A: Immediate-return environmental investments

These projects have:

• Low implementation risk;

• Rapid payback;

• Measurable cost savings.

This can include reducing energy consumption and waste.

Category B: Medium-term strategic investments

These include:

• Sustainable supply-chain systems;

• Green product development;

• Renewable-energy infrastructure;

• Environmental technology.

A major change that will persist over time.

These involve:

• Circular business models;

• Net-zero transformation;

• Climate-resilient infrastructure;

• Fundamental production-system redesign.

Thus, there are three categories in the appropriate corporate portfolio.

The accountancy and measurement of environmental performance.

Measurement is a big management problem.

Financial performance is the focus of traditional accounting systems, and they may not adequately account for environmental externalities.

Businesses need to develop integrated performance dashboards with the following:

Financial KPIs

• ROA;

• ROE;

• Operating margin

• Free cash flow

• Economic value added

Environmental KPIs

• Scope 1 emissions

• Scope 2 emissions

• Relevant Scope 3 emissions

• Energy intensity

• Water intensity

• Waste intensity

• Recycled-material percentage

The GHG Protocol outlines a common framework for identifying direct and indirect emissions within Scope 1 Scope 2 and Scope 3

Innovation KPIs

• Green patents

• Green R&D expenditure

• Environmentally friendly products

• Percentage of revenue from sustainable products

Strategic KPIs

• Climate-risk exposure

• Supply-chain resilience

• Environmental compliance

• Sustainability-linked financing

**Sustainability Reporting**

Environmental performance is more and more related to financial reporting because of the increasing importance of sustainability related financial information.

IFRS S1 is applicable for annual reporting periods starting in or after 1 January 2024 and IFRS S2 covers the disclosures.

The link between environmental information and investor risk and opportunity assumptions is growing more pronounced, and is a direct result of the above.

This advancement reinforces the strategic link between ecological and financial performance.

**Theoretical Contributions**

The study has made various theoretical contribution.

First, it reinforces the natural-resource-based view that environmental capabilities are valuable as assets when incorporated into organizational processes.

Second, it builds on stakeholder theory by highlighting the connection between environmental performance and stakeholder relationship and how this can impact financial performance.

Third, it combines the resource-based view and the environment strategy, recognizing green innovation as a strategic competency.

Fourth, the threshold analysis shows that the impacts on sustainability and performance are nonlinear.

Last, the dynamic model shows that the environmental–financial relationship has to be understood in terms of time horizon and not just static.

**Managerial Implications**

Sustainability shouldn't be a distinct department in the company.

Instead focus environmental objectives in:

• Corporate strategy

• Capital budgeting

• Procurement

• Operations

• Marketing

• Human-resource management

• Financial planning

• Risk management

Financial and ecological returns should be both considered when making investment decisions

A project that has a financial payback of two years and significant carbon reduction may be treated differently to a project that has a five-year financial payback and creates transformative environmental capabilities

Managers should not judge environmental departments based on the cost of the immediate operation only

They should be able to demonstrate:

• Emissions reduction

• Energy savings

• Innovation

• Regulatory risk reduction

• Environmental resilience

• Stakeholder value

**Policy Implications**

The profitability–sustainability link can be enhanced through the design of policies which can make the economic transition to sustainability less costly

Policy mechanisms include:

1. Green financing incentives

2. Accelerated depreciation for environmental equipment
3. Renewable-energy incentives
4. Carbon-pricing mechanisms
5. Environmental disclosure standards
6. Green public procurement
7. Support for environmental R&D
8. Sustainability-linked financing frameworks

Regulatory outcomes can facilitate innovation without just imposing compliance costs.

**CONCLUSION**

The basic question of short-term profit against long-term ecological objectives was explored in this study.

The empirical approach shows that sustainability and profitability are not necessarily opposing goals.

From the results, it can be observed that the relationship is dynamic.

Environmental investment might induce short-term adjustment costs, since firms have to invest in technologies, infrastructure, training, environmental systems, and organizational change.

The financial benefits, however, accrue over time because of improved resource efficiency, lower energy use, reduced waste, innovation, reputation, stakeholder relationships, reduced risk and increased organizational resilience.

The analysis further indicates that the environmental-performance–profitability relationship is nonlinear.

The early environmental improvements frequently yield fairly high financial returns because companies get rid of standing room only inefficiencies. The more efficient a company's environmental performance, the less significant the financial gains will be. The strategic rationale for investing in the environment also evolves, from a cost-cutting mindset to an innovativeness, resilience, market and long-term ecological perspective at higher levels of sustainability.

Green innovation is one of key instruments in this process. Firms are incentivized to innovate in the face of environmental challenges to create new technologies, products, processes, and business models. Organizations can then learn and gain a competitive edge from environmental strategy.

The main finding is that it is not necessary to make a trade-off between profits and ecological sustainability. It's better to manage multiple time horizons at once.

Short-term profitability is still essential since companies need money to sustain themselves and invest.

Environmental sustainability is also critical as environmental risk is becoming an escalating issue that influences operating cost, resource management, supply chain, financing, as well as reputation, regulation and enterprise value.

The right strategy is neither profit seeking at environmental cost nor investment in environmental issues without financial prudence.

Rather, the maximization of sustainable value should be the goal of firms.

It is a method that brings about several short-term wins and a long-term ecological shift.

The results indicate that it is not enough to consider environmental responsibility as a standalone CSR initiative but needs to be part of the company's intrinsic abilities to be economically relevant.

**RECOMMENDATIONS**

Following these findings the following recommendations are put forward:

**Implement a two-time horizon strategic planning approach.**

Short-term and long-term sustainability goals should be set as distinct sustainability goals and incorporated into one corporate sustainability goal.

**Make the environmental projects high-return.**

Measures for energy efficiency, reduction of waste, productivity of resources and process optimization should be taken first where they can lead to both environmental and economic advantages.

**Increase investment in green innovation.**

Investment in the environment should be linked to product innovation, process innovation and technological innovation.

**Integrate environmental KPIs into executive evaluation.**

The evaluation of senior managers should be done based on financial and ecological indicators.

**Use dynamic investment evaluation.**

Capital budgeting should be based on long term cash flows not just on the immediate annual profitabilty of environmental projects.

**Improve environmental data quality.**

Firms need to set up robust systems to measure Scope 1, Scope 2 and relevant Scope 3 emissions.

**Make sustainability a part of financial risk management.**

Investment, financing, insurance and supply-chain decisions should include consideration of environmental risks.

**Use sustainability-linked financing where appropriate.**

Financing options that link financing costs to measurable sustainability gains should be considered.

**Do not waste any environmental expenditure unnecessarily.**

Ecological investment must be economical and be associated with quantifiable strategic results.

**Develop long-term ecological capabilities.**

Knowledge of the environment, Green Technologies, human capital focused on sustainability and green innovation should be considered as strategic resources for the companies.

**Limitations**

There are some limitations in the study.

First, environmental-performance measures differ across industries. An environmental indicator can thus not reflect the entire picture of ecological performance.

Secondly, corporate environmental disclosures are not of a high standard.

Thirdly, publicly available data can have differences in measurements between countries and industries.

Four, while System-GMM eliminates endogeneity concerns, no econometric technique can rule out all the omitted-variable bias.

Fifth, environmental investments can provide benefits for a longer time horizon than financial reporting cycles.

Empirical applications should be expanded in the future (to include more detailed environmental and supply-chain indicators).

**Future Research**

Longitudinal firm-level data should be used for future research to explore the relationship over time.

Investigators should also study:

• Carbon intensity

• Biodiversity performance

• Circular-economy adoption

• Renewable-energy investment

• Green intellectual capital

• Green human-resource management

• Climate-risk exposure

• Sustainability-linked finance

• Environmental innovation

• Supply-chain decarbonization

Machine learning methods like random forests, gradient boosting, explainable AI and causal machine learning can be used in future research to detect non-linear interactions between environmental and financial factors.

The use of machine learning together with panel econometrics is a very interesting approach since the sustainability-profitability relationship is likely to be non-linear.

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