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Integrating Environmental Science, Public Policy, and Business Governance to Evaluate ESG Commitments in Emerging Economies

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Abstract: Over time, Environmental, Social and Governance (ESG) frameworks have become their go-to instruments to assess the long-term sustainability of businesses in terms of ethical responsibility and organizational health. In recent years, considerations of environmental, social and governance factors have played an ever-greater role in investment decisions, public policy making and corporate governance at global level. Despite the growing adoption of ESG in developed economies, the implementation and assessment of ESG practices across emerging economies are challenging given institutional constraints, regulatory fragmentation, and heterogenous socio-economic contexts. Because emerging markets go through very rapid industrialization, urbanization and resource consumption, they are the most important segments of global sustainability effort. As such, analyzing how ESG pledges can be suitably assessed in these territories requires a multidisciplinary approach encompassing all aspects of science behind human action: environmental studies, public policy and corporate governance. The study envisions a framework for conducting ESG commitment evaluation specifically in emerging economies by examining the intersectional lens of, and integrating all three disciplines. Environmental science gives people the scientific tools and metrics needed to judge greenness by assessing things like carbon emissions, resource consumption, pollution levels or biodiversity loss. Public policy sets the regulatory environment, environmental standards, and sustainability stimuli that shape corporate conduct and accountability. On the other hand, business governance is about integrating sustainability into organizations through mechanisms like board oversight, transparency, ethical leadership and stakeholder engagement.

This study uses a qualitative research approach based primarily on secondary literature and comparative analysis to explore ESG uptake within four emerging economies—India, China, Brazil and Indonesia. These countries have also diverse economic structures, regulatory systems, and environmental challenges (Purchase et al., 2021), providing valuable insights into how sustainability governance associates with corporate responsibility. The analysis reveals how ESG practices and reporting standards are shaped by national policy frameworks, environmental priorities, and corporate governance structures. The findings imply that beneficial ESG evaluation requires concerted alignment of environmental metrics with regulatory policies and governance mechanisms. In many emerging economies, inconsistencies in regulatory enforcement combined with lack of data transparency and disparate reporting standards continue to make ESG assessment difficult. But progressive policy initiatives, technological innovation and increased investor pressure are slowly firming up ESG accountability. The study also introduces a holistic ESG assessment framework by integrating environmental performance indicators with regulatory adherence indices and governance transparency criteria. Such an interdisciplinary framework can guide policy makers, investors, and corporate leaders to enhance sustainability governance and facilitate strengthening of ESG compliance in emerging economies.

Keywords: Environmental, Social, and Governance (ESG) Frameworks, Emerging Economies, Sustainability Governance, Environmental Science Integration, Public Policy And Regulation, Corporate Governance Mechanisms, ESG Assessment Frameworks.

I. INTRODUCTION

Global economic development is increasingly falling prey to environmental sustainability and responsible corporate governance. Due to the rising awareness trends related to climate change, environmental degradation, social inequality and companies responsibility the necessity for businesses to run sustainably and ethically has grown. In addressing these concerns, Environmental, Social and Governance (ESG) frameworks have become established metrics for assessing corporate sustainability



behaviour over the long-term. ESG frameworks examine whether companies mitigate environmental harm, embrace social responsibility and establish transparent, responsive governance systems.

In the past 20 years, ESG issues have become increasingly relevant to investors, policymakers, and corporate stakeholders. ESG indicators are now widely used by financial institutions and global investors to assess corporate risk management, sustainability performance and ethical leadership. Broader and bolder it may be in all the assessments you make of those companies. Companies with strong environmental, social, and governance ("ESG") practices tend to have better risk management frameworks in place that can help them anticipate new regulations; but their reputations can also play a crucial role in determining how well they weather these winds of change – reputation changes slowly over time yet can take an instant off -- best embodies this context[6]. Consequently, ESG has emerged as a fundamental strategic element in the context of corporate governance and investment choices across global financial markets.

ESG frameworks are emerging as important in shaping the future of global investments, however their implementation in developing economies is complex and uneven. Emerging Markets and Global Sustainability Emerging markets, including various Asian nations, Latin American countries, and parts of Africa, have a major impact on global sustainability initiatives as they grow their economies rapidly, expand their industries, and use more energy. However, they also face mounting environmental threats including deforestation, air and water pollution, biodiversity loss and climate vulnerability. These environmental pressures are frequently exacerbated by limited institutional capacity, regulatory fragmentation and governance challenges.

Sustainability reporting and environmental protection regulatory frameworks in many emerging economies are still in transition. Multiple governments have implemented policies prompting companies to be sustainable and responsible in the conduct of their businesses but enforcement may still vary or be weak. In addition, numerous corporations in developing markets continue to operate on a resource-constrained basis or face operational pressures that can materially impede the adoption of comprehensive ESG practice. These challenges make the case for evaluation mechanisms that can meaningfully assess corporate ESG commitments in a wider range of economic and regulatory contexts. A multidisciplinary approach is critical to analysis of and commitment for ESG in emerging economies. Environmental science gives you the scientific bases to quantify the ecological consequences of industrial processes in terms of greenhouse gas emissions, use of water resources, waste generation and ecosystem degradation. If your company has an environmental crisis management issue that can be addressed sequentially through environmental risk assessments or audits. Such scientific environmental indicators allow researchers and policymakers to quantify the outcomes associated with sustainability, as well as to determine whether corporate statements about going green result in real-world improvements.

A third important dimension in ESG governance is public policy. Environmental laws, government regulations, and sustainability policies are decisive in determining corporate behavior and accountability. Policy tools such as carbon pricing, environmental reporting obligations, green finance initiatives and corporate disclosures regulations can have a considerable impact on how companies adopt sustainable practices in their businesses. Good policies can help build incentives and ensure compliance while rewarding businesses that take on more environmentally friendly practices. The third pillar in evaluating ESG is business governance. Corporate governance mechanisms refer to how sustainability commitments are integrated into organizational decision-making sessions. Models of effective governance include e.g. board oversight over environmental strategies, transparency mechanisms in reporting to stakeholders and ethics in management practices. Such governance mechanisms allow sustainability objectives not only to be rhetorical commitments, but also to feature in the long-term corporate credo and the operational practice files.

Existing ESG literature has mainly concerned the developed markets, while there is an increasing recognition that tackling sustainability governance issues in emerging markets will require context-specific solutions. Variations in economic and regulatory systems, cultural influences, and environmental priorities mean that ESG frameworks are designed and evaluated differently across jurisdictions. As such, an integrated framework of ESG commitments under consideration in emerging economies requires interaction between the scientific side (environment), the public policy and governance systems. This research seeks to add to the increasing pool of ESG literature through creating a comprehensive framework for the assessment of ESG pledges concerning emerging markets. The research is based on four large emerging markets (India, China, Brazil and Indonesia) which are characterized by very different economies, policy environments and sustainability challenges. Through cross-national comparative analysis of ESG implementation in these countries, the study aims to discover consistencies, motivations and governance systems that shape corporate sustainability efforts.

By leveraging comparative analysis, this study underscored that national regulatory frameworks, environmental priorities, and governance structures mediate ESG. The white paper also notes major challenges to better ESG assessment, such as regulatory fragmentation, data transparency issues and the potential for corporate greenwashing. The limitations of current ESG frameworks must be addressed if we are to ensure that they accurately capture corporate sustainability performance and meaningfully contribute to positive environmental and social change.

Overall, this research highlights the necessity of incorporating environmental science, public policy and corporate governance in assessing ESG commitments in developing countries. Information obtained leads to meaningful insights that add value by combining diverse perspectives making it beyond simple observation which is required for equality. Everyone from policymakers and investors to corporate leaders should adopt a multidimensional approach.

II. LITERATURE REVIEW

The Environmental, Social, and Governance (ESG) concept has gained more relevance in the modern context of the discussion of the sustainability of the corporation and responsible business activities. ESG models are meant to measure the non-financial performance of companies and concentrate on the manner in which companies handle the impacts of the environment, their social responsibilities as well as their clear governance mechanisms. During the last decade, the issue of ESG has become a widely discussed matter among policymakers and investors, as well as corporate executives, as a critical measure of organizational sustainability in the long perspective and moral responsibility. The increased importance of ESG is closely connected to the issues of global issues regarding climate change, environmental damage, social injustice, and corporate fraud. Conventional approaches to financial analysis usually have lack of capturing the expanded environmental and social effects of company operations. Consequently, scholars and organizations have come up with the ESG scales to evaluate the behavior of corporations other than financial performance. The metrics give an organized method of comprehending how organizations can contribute to sustainable development without reducing the growth of the economy.

According to scholarly studies, ESG frameworks affect the way corporations make decisions, the way they invest and the regulatory policies. Investors are becoming more and more dependent on the ESG disclosures when evaluating the corporate risk, reputation, and long-term value generation. High ESG companies are considered to be more resilient since they have shown to be proactive in risk management, responsible in their use of resources and are able to engage with their stakeholders effectively. This means that ESG integration is now a major issue in the international financial markets, which determine both investment flows and the corporate sustainability strategies.

Nevertheless, the practice of ESG is quite diverse in foreign countries and economies. The developed economies usually possess institutional enforcement mechanisms, well-developed reporting systems, and regulatory frameworks that facilitate the use of ESG. Conversely, the emerging economies have peculiar problems in ESG implementation because of limited regulation, inadequate institutions, and economic development issues. The pace of industrialization, population and high demand of natural resources subject these economies to a lot of environmental pressure which makes sustainability governance not only necessary but also complicated. According to research studies conducted on the adoption of ESG in emerging markets, institutional environments are significant factors that determine corporate sustainability practices. The policies of the government, legal provisions, and financial provisions have an impact on how businesses conduct themselves in relation to environmental protection, social responsibility, and transparency of governance. In a good number of situations, firms engage in ESG activities not just based on morality matters, but also dictated by the regulations, investor requirements, and the competition in the market.

Although the literature on ESG frameworks has increased, researchers still discuss the relevance of the ESG reporting and its effects to corporate performance. According to some research, high ESG performance can lead to improved corporate reputation, confidence by investors, and sustainable financial viability. According to other researchers, expenses involved in the execution of sustainability activities might pose short term financial difficulties to business especially in business sectors where environmental compliance requirements are high. These opposite conclusions demonstrate the fact that ESG commitments are quite difficult to evaluate and require more comprehensive research methods. Besides the corporate performance aspects, the ESG frameworks are also becoming perceived as means of attaining the larger societal objectives, such as sustainable development and environmental protection. The United Nations and the World Bank are international organizations that note the need of responsible corporate conducts in global issues like climate change, poverty alleviation, and the economic growth of the economy. ESG frameworks are thus mechanisms that can be used in aligning corporate approaches with the global sustainability goals.

A. Environmental Science and Public Policy Perspectives in ESG

The environmental science offers the knowledge basis needed to assess the environmental aspect of ESG frameworks. Through scientific research, it is possible to measure and analyze the effects of the environment related to industrial operations, such as greenhouse gas emissions, air and water pollution, consumption of resources, and loss of biodiversity. Such environmental indicators play a critical role in finding out whether the corporate sustainability commitment leads to any ecological change.

The evaluation of the environment frequently depends on the use of scientific approaches, e.g. carbon footprint, life-cycle assessment, environmental impact assessments. The tools enable researchers and policymakers to assess the environmental impacts of business activities and determine ways of minimizing environmental damage. Through incorporating scientific information in the process of evaluation of the sustainability, the stakeholders will be able to make more informed decisions regarding the sustainability performance and environmental risk management. The role of the public policy in defining environmental governance in ESG frameworks is also quite important. Governments set environmental policies, sustainability policies, and disclosure policies that affect the corporate behavior. Carbon pricing, emissions, and incentives on renewable energy, and environment reporting policy, are among the policies that promote businesses to utilize environmentally friendly practices.

Public policy frameworks regarding sustainability keep on changing in developing economies. Although most governments have enacted environmental policies and sustainability programs, implementation tools can be weak because of the institutional bottlenecks and other economic demands. Consequently, ESG implementation effectiveness usually lies in the power of regulatory bodies and the capacity of governments to watch and implement the environmental standards.

Policy frameworks can also provide incentives to the companies to invest in sustainable technologies and green innovation. Indicatively, the governments can offer tax subsidies or financial incentives to promote the use of renewable sources of energy, energy efficiency, and production process that are not harmful to the environment. These policy measures facilitate the shift in the more sustainable economic systems as well as enhance the ESG accountability.

B. Corporate Governance and ESG Accountability within the Emerging Economies

Another basic element of ESG structures is corporate governance, which is concerned with the administration, regulation, and responsibility of organizations to their stakeholders. Governance mechanisms dictate the integration of sustainability commitments into the process of making corporate decisions and strategic operations. Good governance systems are supportive of transparency, good leadership and responsible management. Corporate governance studies focus on the role of the board of control, accountability of the executive and participation of the stakeholders in ensuring business sustainability. The role of boards of directors is vital in determining corporate sustainability plans, tracking of the environmental risks, and adherence to the regulatory standards. Independent and diverse boards are usually in a better position to manage ESG problems since they are able to enter into various viewpoints when making a decision.

Transparency and disclosure are also important aspects of governance in the ESG frameworks. The sustainability reporting enables the companies to inform the investors, regulators, and the population about their effects on the environment and society. Structured reporting systems like sustainability reports and ESG disclosures give stakeholders a clue on the performance of the corporations, risk management policies, and sustainability activities. Nevertheless, the issue of governance is also overwhelming in most of the emerging economies. Meager regulatory supervision, low corporate transparency, and ineffective accountability systems have the ability to lessen the efficiency of ESG efforts. There might be a situation where the companies are doing greenwashing (sustainability statements are exaggerated or misleading). This sort of practice undermines the trust in the stakeholders and underlines the necessity of the improvement of the governing standards and monitoring systems.

Against all these odds, there is an increasing evidence that better corporate governance can augment ESG performance in emerging markets. Those companies that are transparent, enhance board governance and are fully involved with stakeholders have higher chances of attaining sustainable business results. Governance reforms thus are an important approach towards enhanced ESG accountability and a measure to make sure that sustainability pledges have been put into force.

III. RESEARCH METHODOLOGY

This chapter describes the research design, methods of data collection and approaches to analysis adopted in studying the intersection of environmental science, public policy and business governance for assessment of ESG commitments in emerging

economies. The method offers a well-organized system for investigating ESG implementation in varied institutional and economic contexts. As ESG covers topics such as environmental sustainability, regulatory designs and corporate governance systems, the analysis is interdisciplinary in nature drawing from literature in environmental studies, policy making and corporate governance.

A. Research Design and Approach

Using a qualitative research approach, this study explores the intricate interconnections of environmental science with public policy and corporate governance in regard to ESG evaluation. Such features of ESG, which encompasses complex set of elements including institutional structures, policy environments and organizational strategies are more amenable to qualitative rather than quantitative measurement. ESG practices are influenced by many variables including regulatory architecture, organizational governance mechanisms and environmental priorities that cannot be as easily examined through quantitative analysis.

The study is implemented with a conceptual and comparative research design. Theoretical insights on ESG constructs and sustainability governance are enabled through conceptual analysis. This allows the researcher to explore the ways that environmental science, public policy, and corporate governance work together to produce ESG commitments within varied economies. A comparative analysis assesses ESG practices among the selected emerging economies, aiming to identify similarities, differences and contextual factors affecting sustainability governance across countries. The study aims to understand the influence of institutional environments on corporate sustainability strategies and ESG reporting by comparing different national contexts.

The study examines four large emerging markets—India, China, Brazil and Indonesia. The three countries chosen are intended to illustrate how developing economies with different economic systems, policy frameworks, and environmental challenges address these issues within the larger emerging markets category. India is an emerging economy with regulatory initiatives for promoting corporate sustainability reporting and responsible business practices. China is a state-driven model of sustainability governance in which government policies strongly shape corporate environmental behaviour and green innovation. Brazil serves as an case study of a resources-based economy where environmental governance is intricately linked with the management of natural resources and biodiversity conservation. Indonesia is an economy in transition—a transitional industrial economy, and a transitional energy economy pursuing sustainable development.

B. Data Collection and Analytical Framework

This study draws heavily on secondary-level data sources to explore ESG adoption in GECs. It was identified through secondary data collection from various academic papers, government policy documentation, sustainability reports and international organizations reports. Articles in academic journals summarising theoretical and empirical research on ESG frameworks, corporate sustainability strategies and governance mechanisms. Theoretical constructs may also help illuminate how different types of government institutions affect corporate responsibility and sustainability disclosure. Organisations publish corporate sustainability reports or ESG disclosures demonstratively explaining their environmental and social impact to different stakeholders.

There are several advantages of using secondary data sources for this research. This helps to bring in different viewpoints from already published academic literature and policy examination, enabling a study of ESG practices over various countries without the constraints of primary data collection. Matafome (2014) noted that various existing environmental indicators, policy frameworks, and governance models love not to be neglected due to their indispensable value in comparative analysis of policies. This also provides a measure of assurance that the research is developing on well-trodden academic terrain and documented corporate edifice.

We utilized an analytical framework that takes into consideration three limbs of ESG evaluation: environmental science, public policy, and corporate governance. Examining carbon emissions, resource consumption, pollution management and ecological conservation, environmental science indicators measure corporate environmental performance. Such indicators can help assess if corporate sustainability commitments translate to measurable environmental progress.

Such frameworks are public policies that alter companies' behavior and their adoption of ESG through government regulations, environmental laws (such as carbon emissions laws), sustainability policies, legislation concerning water usage or chemicals in production processes. Policy tools like environmental regulations, sustainability reporting obligations, and incentives for green investments are also important drivers of corporate sustainability strategies. The study examines how these

regulatory frameworks influence the implementation and monitoring of ESG commitments across different national contexts. There is an examination of corporate governance mechanisms, as one of the key areas for ESG consideration. Governance structures define how sustainability commitments are embedded into corporate decision-making processes and operational strategies. It delves into governance factors, including board oversight, sustainability reporting and transparency in their process, ethical leadership and stakeholder engagement. Mechanical levers for keeping track of ESG promises.

It involves reviewing and synthesizing existing literature, policy frameworks and corporate sustainability disclosures to identify patterns in EGS implementation by the countries selected. Incorporating environmental indicators, regulatory analysis, and governance evaluation, the study advances a holistic view of how ESG pledges can undergo scrutiny in emerging economies.

While the methodology offers a framework for analyzing ESG governance, there are some caveats to consider. Second, using secondary data indicates that there may be limitations to the study regarding its ability to incorporate up-to-date information on a wide scope of corporate sustainability trends or reforms of policies. Moreover, ESG reporting guidelines differ by country and sector, making it difficult to compare sustainability performance between countries with different environments. Notwithstanding these challenges, our method provides a robust underpinning for analysing ESG governance and the key factors which influence corporate sustainability commitments in emerging economies.

IV. CASE STUDIES AND ANALYSIS OF ESG IMPLEMENTATION IN EMERGING ECONOMIES

The chapter provides a comparative study of the Environmental, Social, and Governance (ESG) application in the selected emerging economies. This chapter aims to explore the relationship between environmental science, corporate governance, and public policy to impact ESG commitments in various contexts in countries. As a result of the rapid industrialization process, population growth and demand on natural resources, emerging economies are often faced with complex sustainability issues. Meanwhile, these nations are gaining prominence in the world sustainability and climate policy.

To learn more about the concept of ESG as it is applied in practice, this chapter examines the case studies of India, China, Brazil, and Indonesia. Those nations are synonymous of different economic frameworks, regulatory frameworks, and environmental emphases. Through these case studies, the paper identifies the contribution of government policies, corporate governance and environmental management strategies to ESG performance.

A. India ESG Governance and Sustainability Programs.

India has also realized the need to attach much importance to the concept of ESGs in the process of enhancing sustainable development and responsible business conduct. Being one of the fastest-growing economies in the world, India has to cope with serious environmental issues such as air contamination, water shortage, and growing greenhouse gas emissions. To address it, the corporate sector and Indian government have come up with some initiatives in order to incorporate sustainability in economic growth.

The governmental policies have been highly instrumental in promoting the uptake of ESG among Indian corporations. The regulatory frameworks make large listed companies publish their sustainability performance in a systematized reporting mechanism. The purpose of these reporting requirements is to bring more corporate transparency and accountability and to allow investors and other stakeholders to assess the environmental and social impact of corporate activities.



Figure 1: Renewable Energy and Corporate Sustainability Initiatives in India

The Indian big corporations have been proactive in incorporating the ESG principles in their business strategies as well. Firms in industries like energy, production and information technology are investing heavily in renewable energy, sustainable

supply chain and community development initiatives. The development of renewable energy sources such as solar and wind energy concerns has now become part and parcel of the corporate environmental responsibility programs in India.

Corporate reforms in governance have also helped in enhancing ESG practices. Within large companies, the boards of directors have an increased responsibility of ensuring that they have sustainability strategies and that they compliantly adhere to the environmental regulations. The issue of ESG has been included in the long-term strategic planning of many organizations, which have also created special sustainability committee.

Although these have been made, there are still issues in the execution of ESG framework in India. Smaller companies are usually met by financial and technological impediments which restrict them to embrace holistic sustainability practices. However, the increasing focus on the sustainability reporting and the renewable energy investment suggests that India is slowly consolidating its ESG governance system.

Table 1: Key ESG Indicators in India

Indicator	Example Data
Renewable Energy Capacity	Over 170 GW installed renewable capacity
Corporate Sustainability Reporting	Mandatory for top listed companies
Major ESG Focus Areas	Renewable energy, CSR programs, pollution control
Key Challenge	Implementation among small and medium enterprises

B. The ESG Development by states and green innovation in China

China is a peculiar example of the ESG implementation with a high degree of government intervention and extensive technological development. China is the second-largest economy in the world that has undergone a rapid industrialization process in the last few decades. Such breaknecks growth has caused major environmental problems such as air pollution, emission of carbon and ecological degradation. To this end the Chinese government has come up with a range of environmental policies that focus on sustainable economic development.

The state-based initiatives have been of central focus in the ESG strategy of China. Regulatory policies, financial incentives, and green investment programmes are some of the government policies that promote environmental responsible practices amongst companies. In recent years, environmental regulations have turned tougher and companies had to trim down emissions, enhance efficiency in the consumption of energy, and switch to more environment-friendly production technologies.

Another key motivator of ESG performance has been technological innovation in China. The nation has invested heavily in renewable sources of energy such as solar power, wind power and electric vehicles. Chinese firms have developed to become the world leaders in the production of clean energy and green infrastructure. These inventions do not only enhance the sustainability in the environment but also aid in the economic development and competitiveness of industries.



Figure 2: Green Technology and Sustainable Industrial Development in China

The Chinese firms are also adopting corporate governance structures that put into consideration ESG considerations. A lot of businesses nowadays are starting to publish sustainability reports and use environmental performance indicators in their corporate strategy. Nevertheless, the areas of governance transparency and independent oversight still seem to be the areas of improvement.

Table 2: Key ESG Indicators in China

Indicator	Example Data
Renewable Energy Capacity	Largest renewable energy producer globally
Electric Vehicle Production	Leading global EV manufacturing market
Government Policy Role	Strong state-led environmental regulations
Key ESG Strategy	Green technology and industrial innovation

Altogether, the case of China shows that effective public policy frameworks and technological breakthrough can help to hasten the implementation of the ESG principles in the developing economies.

C. Natural Resource Governance and Sustainability Issue in Brazil and Indonesia.

Brazil and Indonesia are excellent examples of the emerging economies in which the implementation of ESG is tightly interconnected with the issue of natural resources management and environmental protection. The two nations enjoy an abundance of natural resources and biodiversity besides experiencing serious environmental problems relating to industrialization and resource mining.

The administration of the Amazon rainforest and the extensive energy market in Brazil has a significant impact on the ESG situation in Brazil. Conservation of the environment is of great importance in saving the lives of the biodiversity and ensuring that the effects of climate change are mitigated. The Brazilian organizations working in the energy and natural resource sectors have been adopting the sustainability programs to ensure that the environmental harm is minimized and better ecological protection is achieved. These measures involve the funding in the biodiversity research, environmental monitoring schemes and renewable energy conservation.



Figure 3: Natural Resource Management and Sustainability Initiatives in Brazil and Indonesia

Nevertheless, Brazil still has the problem of governance in the context of environmental protection and deforestation. The political change and inconsistency in the policy implementation of environmental protection also underline the significance of intensive regulatory institutions in the ESG governance. The same issue of sustainability is evident in Indonesia because of the active industrialization and exploitation of natural resources. The nation has done so much in ensuring that it achieves sustainable growth by investing in renewable energy, integrating sustainable mining, and having the green infrastructural plans. Electric mobility and renewable energy government policies are the steps to a better carbon reduction and the environmental sustainability.

In Brazil, as well as in Indonesia, the ESG practices are being reinforced gradually by corporate governance reforms. Businesses are moving towards the sustainability reporting structure and taking part in the international ESG standards to enhance the transparency and attract foreign investment.

These case studies show that development of ESG in emerging economies is determined by various environmental factors, regulatory frameworks, and governance. Even though sustainability problems in different countries are unique, the combination of environmental science, government policy and corporate governance is still critical to building on ESG pledges and ensuring sustainable economic growth.

V. IMPLICATIONS FOR ESG EVALUATION FRAMEWORKS

The comparative study about Environmental, Social, and Governance (ESG) practices in the emerging economies has a number of valuable implications regarding the creation of the relevant ESG evaluation systems. The role of emerging markets is thus great in advancing global economic growth and environmental sustainability but they tend to work in complicated institutional settings entailing diversified regulation, differing governance potential, and different environmental concerns. Consequently, assessing ESG commitments under these circumstances will have to be based on flexible, interdisciplinary, and regionally sensitive frameworks. The significance of incorporating environmental science in ESG assessment systems is one of the main implications of this research. Environmental indicators give the scientific foundation of the ecological impact of the corporate activities. Greenhouse gas emission, energy consumption, water consumption, waste management, and biodiversity protection are metrics that can be used to figure out whether companies are making significant contributions to environmental sustainability. The absence of dependable environmental measurements makes the ESG assessments be more of a show than a substantive exercise. Accordingly, there is a necessity to introduce scientifically-based environmental indicators to make ESG assessment systems credible and effective.

The other important implication involves the issue of the role of the public policy in determining the ESG performance. Government regulations, environmental policies and sustainability policies are some of the variables that affect the adoption and implementation of ESG practices by companies. Public policy tends to be the major influence of corporate sustainability behavior in emerging economies. Euromat regulatory standards associated with environmental protection, sustainability reporting, and corporate accountability are stimulating businesses to incorporate the ESG principles in their operation strategy. Meanwhile, green financing programs, tax incentives to invest in renewable energy sources, and subsidies of sustainability technologies can also be increased to encourage corporations to engage in sustainability efforts.

Nonetheless, the level of institutional enforcement mechanisms largely determines the efficiency of the public policy in enhancing the practice of ESGs. The effect of the ESG policies can be diminished by weak regulatory authorities or failures to apply the policies uniformly to allow businesses to evade compliance. Otherwise, companies can be prone to being involved in the so-called greenwashing in which organizations publicly state that they support sustainability projects but do not make any significant changes to the environment or society. This underscores the necessity to strengthen regulatory controls and standard reporting mechanisms that have the potential to enhance transparency and accountability. Another important aspect of ESG assessment systems is corporate governance. The governance structures define the process of integrating sustainability commitments into the corporate decision-making and the series of long-term strategic planning. Good governance measures entail independence in the boards, clear reporting systems, sound leadership style, and stakeholder participation. Business enterprises that incorporate the practice of ESG in the governance mechanisms have a greater possibility of carrying out sustainability initiatives effectively and ensure responsibility to investors, regulatory bodies and society.

The comparative case studies also show that the ESG frameworks should be flexible to national conditions. The emerging economies vary in many aspects concerning economic development, industrial structure, environmental issues and regulatory capacity. As an example, countries with resource-based economies can focus on the protection of biodiversity and natural resources control and management whereas the economies that are rapidly growing in the industrial sector might be more concerned with the elucidation of emissions and pollution. One universal ESG framework might not, therefore, reflect the country-specific sustainability concerns and institutional contexts.

The other implication is the increased role of technology and innovation in enhancing ESG evaluation. Environmental monitoring and sustainability reporting could be improved with the use of digital technologies including big data analytics, remote sensing, and artificial intelligence. Such technologies enable regulators, investors, and researchers to trace the environmental performance more objectively and determine the possible risks faster. The innovation of technology could also contribute to the elaboration of the sustainable business models, such as the renewable energy system, the circular economy, and the energy-efficient production process.

The future of ESG evaluation frameworks is also determined by investor expectations and financial market dynamics. With the increased application of ESG ratings and sustainability disclosures, global investors can assess the corporate risk and long-term financial performance. Businesses that show high ESG scores can enjoy the added advantage of greater access to capital, greater reputational benefits, and higher investor trust. With the ever-growing field of sustainable finance, ESG assessment systems will become important in making investment choices and promoting responsible corporate conduct.

Moreover, stakeholder involvement has also been a significant aspect of the ESG governance. Companies are becoming more obliged to put into consideration the interests of the employees, the local community, the consumers, and the environmental groups during the formulation of the corporate strategies. Good ESG systems thus demand systems that enable the stakeholders to be involved in the process of decision making on sustainability. Accountability and transparency of the communication and dialogue with stakeholders can enhance good governance and assist organizations to recognize possible environmental and social risks. Lastly, the conclusions of the paper indicate that interdisciplinary work is necessary to reinforce ESG assessment systems. Corporate leaders, financial institutions, as well as environmental scientists and policymakers should collaborate in order to come up with holistic sustainability assessment model. Academic researchers and industry practitioners can also work together and develop innovative evaluation tools and sustainability metrics.

In general, the implications of this study demonstrate that it is necessary to have integrated ESG assessment schemes that incorporate environmental science, public policy, and corporate governance aspects. These frameworks may yield a better insight into the corporate sustainability performance and help in developing policies and practices that will foster the long-term environmental protection, social responsibility, and economic stability in the emerging economies.

VI. CONCLUSION

Sustainability, climate responsibility and ethical corporate practices have become an important aspect of contemporary business analysis as the world progressively focuses on these issues. This study focused on the use of environmental science, public policy, and corporate governance as a holistic strategy of assessing ESG commitments in emerging economies. The paper has centred on the multifaceted institutional and economic contexts in which ESG adoption is developed and explained how the interdisciplinary approaches are required to interpret sustainability governance in fast-emerging markets.

As the results of this paper have shown, ESG frameworks are critical instruments to evaluate corporate responsibility using other financial performance indicators. Environmental science is the scientific basis of the assessment of ecological impacts i.e. carbon emissions, resource consumption, pollution management, and biodiversity protection. Public policy is designed to provide regulatory procedures that motivate organizations to work towards sustainable practices whereas corporate governance systems create accountability, transparency, and ethical leadership to execute ESG strategies. The scrutiny of the emerging economies indicates that there is a high degree of variance in the adoption of ESG practices in various national settings. India, China and Brazil are examples of countries that have various models of sustainability governance due to their economic, policy and environmental issues. The development of sustainability reporting and renewable energy investments in India shows that regulatory structures may interact with corporate efforts to enhance ESG performance. The state-led model in China emphasizes the contribution of robust government policies and technological every now and then, to green development. The experience of Brazil lays stress on the role of natural resource governance and environmental protection in sustainable development objectives.

Although these developments have been made, the study also reveals some of the challenges that constrain the success of the application of ESG in the emerging economies. The fact of regulatory fragmentation, the lack of data transparency, and the unity of the sustainability reporting standards usually impede the proper assessment of corporate ESG performance. In other instances, some organizations can be involved in meaningless sustainability practices without actually making any significant environmental changes, a phenomenon that is usually called greenwashing. These problems demonstrate the necessity of the more strict regulatory enforcement tools and the uniformity of reporting structures.

There is also another significant conclusion of the study and it is the increasing role of technological innovation and sustainable finance in the development of ESG practices. Regulators and investors are becoming better able to evaluate the performance of corporate sustainability through the use of digital technologies, environmental monitoring systems, and data analytics tools. Meanwhile, ESG is being included in the investment decision-making process of global financial markets. The portrayal of a company as very healthy in terms of ESG performance is often seen to be more resilient and able to cope with long-term environmental and social risks.

Another key issue highlighted in the research is the role of stakeholders in governing ESG. It is assumed that modern corporations should take into account the interests of the employees, local people, investors, and environmental agencies when creating the sustainability strategies. The successful stakeholder engagement may increase the corporate transparency, risk management, and the credibility of the sustainability initiatives.

On the whole, the importance of the combination of environmental science, public policy, and corporate governance to assess ESG commitments in emerging economies is identified in this study. An interdisciplinary assessment model is able to offer

a more precise approach to corporate sustainability performance and aid in the creation of such policies and practices that can facilitate the responsible conduct of the business.

The future research directions would be to develop the quantitative ESG evaluation models and carrying out empirical research on the long-term effects of ESG practices on economic growth, environmental protection and social development. Moreover, increased transnational cooperation between policymakers, researchers, and the leaders of industries will also be necessary to enhance ESG standards and make sure that the sustainability efforts can play a significant role in meeting the global sustainable development goals.

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