GREEN FINANCE AND GOVERNANCE: THE EFFECT OF CLIMATE CHANGE

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Abstract

This study aims to investigate the implementation of climate change policy, governance practices, and green financing and the impact of environment, social, and governance (ESG), specifically on the environment, which includes emissions and climate change policy on stock price and firm's profitability. Qualitative and quantitative methods are employed. An in-depth interview is conducted with nine non-listed firms across Sumatera chosen based on the most significant emissions contribution in Sumatera for the qualitative approach. Furthermore, this research covers green finance variables, including financing spent to finance investments that can reduce carbon levels. An ordinary least square (OLS) is employed for the quantitative analysis. The observations are listed banks on Indonesia Stock Exchange. Eight banks reported ESG during the observation period from 2002 to 2021. The result reveals that ESG, such as environmental, resource use, innovation, and emission policy and practice, positively and significantly influence stock price and profitability which is consistent with Nawaz et al. (2021). This might indicate that ESG are important, as the investors observe. The choice of resources used, innovation in the product/services concerning environmental factors, environmental investment, and climate change action are crucial in affecting the stock price as one of the indicators of investors' sentiment. In addition, this also indicates that the greater the company focuses on the environment, the higher the profitability and the reinvestment rate.

Keywords: Climate Change, Green Financing, Environment, Social, and Governance (ESG), Profitability

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1. INTRODUCTION

In today's era, the challenge that is the focus to be solved is climate change. The health and well-being of the entire world's population will be impacted by climate change. Another risk that is quite influential from climate change is the economic and financial system (Climate-Related Market Risk Subcommittee et al., 2020).

This climate change has an impact on global

warming. Global warming is caused by greenhouse gas emissions. This greenhouse gas emission is based on several chemical elements, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). Increasing greenhouse gas emissions will increase global temperatures over time because solar energy is trapped in the Earth's atmosphere (Riebeek, 2010). William Nordhaus' Nobel Laureate in the 1970s became a foundation or foothold for researchers in the study of climate change, where researchers observed the relationship between economic activity and climate change. In economic activities, many use input materials in the form of materials derived from fossils. The use of fossil fuels can not only increase economic growth but can also increase the risk of increasing greenhouse gas emissions. If this kind of economic activity continues, it will provide a difficult response to economic activity itself in the future (Giglio et al., 2021).

A survey conducted by the World Economic Forum (2022) shows that the failure of climate action and extreme weather ranks first out of 10 global risks over the next 10 years. Judging from global issues, environmental issues such as climate action failure, extreme weather, biodiversity loss, erosion of social cohesion, damage to the human environment, and natural resource crisis are very important (World Economic Forum, 2022). Most of the research has been done on the financial aspects of climate change. However, research on how climate change affects hedging and pricing risks, how investors perceive climate change risks, and how investors make investment decisions due to climate risks.

According to Guild (2020), Indonesia, China, India, and Vietnam are big countries that have the potential to encourage the development of green finance due to rapid economic growth. In addition, the demand for investment in the manufacturing sector is huge. According to the Asian Development Bank (ADB), the need for infrastructure investment in Asia is still very large. From 2016–2030 it will surpass US$26 trillion, including US$14.7 trillion in the energy sector and US$8.4 trillion in the transport sector (Asian Development Bank, 2017).

However, Indonesia is also one of the world's 10 largest emitters of greenhouse gases. The World Resources Institute's (WRI) report (Kamins et al., 2018) shows that 10 countries contribute 68.71% of greenhouse gas emissions. The ten countries include China, the United States, the European Union, India, Russia, Japan, Brazil, Indonesia, Iran, and Canada (Damassa et al., 2016). The Government of Indonesia ratified the Paris Agreement through Law No. 16 of 2016 concerning the Ratification of the Paris Agreement on the United Nations Framework Convention on Climate Change. Indonesia also aims to reduce greenhouse gas emissions by 41 per cent by 2030. Based on emissions, the emissions that make the biggest contribution are electricity/heat, transportation, manufacturing, agriculture, building, waste, process, and fugitive industries. Specifically, for Indonesia, the emissions that contribute a lot are electricity, agriculture, transport, waste, and manufacturing. Only Indonesia and Brazil in the waste sector are among the top five sectors that make a big contribution. This study investigates: 1) the implementation of climate change policy, governance practices, and green financing and 2) the impact of environment, social, and governance (ESG), specifically on the environment, which includes emissions and climate change policy on stock price and firm's profitability. Qualitative and quantitative methods are employed. For the qualitative analysis, an in-depth interview is conducted with nine non-listed firms across Sumatera. The province is chosen based on the most significant emissions contribution in Sumatera. The respondents are the top firm management, Financial Services Authority (*OJK*), Bank of Indonesia (*BI*) officials, Ministry of Environment, Investment Coordinating Board (*BKPM*), and relevant non-governmental organizations (NGOs), both centrally and regionally. Furthermore, this research covers green finance variables, including financing spent to finance investments that can reduce carbon levels. For the quantitative analysis, an ordinary least square (OLS) is employed, and there are two OLS models, regression Model 1 and regression Model 2. The observations are listed banks on Indonesia Stock Exchange. Eight banks reported ESG during the observation period. The annual financial statement and the ESG statement are utilized to derive the variables used in this paper from 2002 to 2021. The result reveals that the majority of the firms have been aware of green finance and green investment and have implemented green governance in every operational process (green concept) starting from the main business activities that focus on the advantages of social and economic industries. The company supports the green financing program by establishing policies that are adjusted to the National Commitment, namely through various operational activities that are mitigating towards a low-carbon economy by reducing, reusing, and recycling with the development principles recommended by the government. Moreover, for sustainable financing, for state-owned banks, the distribution of sustainable financing is still relatively small for renewable energy, energy efficiency, pollution prevention and control, and environmentally friendly transportation. Furthermore, ESG such as environmental, resource use, innovation, and emission policy and practice have a positive and significant impact on the stock price and profitability and this finding is considered new and could support the government to enact more policies to support green financing and investment for a sustainable environment.

The structure of this paper is as follows. Section 2 reviews the relevant literature. Section 3 analyses the methodology that has been used to conduct empirical research on green finance and climate change. Sections 4 and 5 provide findings and conclusions subsequently.

2. LITERATURE REVIEW

2.1. Climate change

Climate change continues to make the business world in a state of transition to better conditions. This climate transition change aims to make policies and action actions not only create a strong economic

climate but also low greenhouse gas emissions. These climate change transition goals support the targets set out in the Paris Agreement (International Capital Market Association [ICMA], 2020). Many studies have been conducted on asset prices in various asset classes due to climate change. The abundance of research conducted in recent years has made important advances in financial literature (Giglio et al., 2021).

This climate change not only has an impact on business but also has an impact on society in general and all creatures on Planet Earth are called climate risk (Benz-Saliasi, 2020). Physical risk, transition risk, industry risk, and social risk are classifications of climate risk. The increasing frequency and intensity of disasters that arise floods, landslides, storms, fires, droughts and heat waves, and rising sea levels are part of the physical risk. At first, disaster was considered a common thing but there was an awareness that considered disaster to be the result of climate change (Benz-Saliasi, 2020). Thus, the risk received directly due to the impact of climate change due to economic activity is a definition of physical risk. The same is also revealed by (Giglio et al., 2021), this physical risk can threaten the company's production facilities, and damage the value of real estate located near the coast due to rising sea levels. Regulatory changes related to mitigation addressing climate change are part of the transition risk. Companies that still rely on fossil fuels will face industry risks due to the emergence of new energy-efficient technologies and the use of renewable energy sources. Climate change can give rise to new trends and consumer behaviour as a result of risks. Each risk has a significant financial impact on the assets, operations, and valuation of the company as a whole.

Physical risk is calculated using the BlackRock model (BlackRock, 2016), i.e., the total amount of greenhouse gas (GHG) emissions (or carbon dioxide if GHG is not available), total water consumption, and total waste disposal. Physical risk is equal to the function of GHG emissions, water consumption, and waste disposal.

A transition is a transition from a condition to a better state, but there is no standard yet. The current economic condition is to try to achieve a low-carbon economy so it is called transition risk. Many changes are related to the risks of this transition, these changes concern changes in policies, obligations, and technologies that support the reduction of carbon emissions (Benz-Saliasi, 2020).

The purpose of these changes will affect the company's operations and create new business models to promote a better low-carbon market economy and social welfare mechanisms. The carbon tax is one alternative that can be used for companies that still use fossil fuels. The implementation of a carbon tax will prevent companies from obtaining large profits or even negative (Giglio et al., 2021). Still expensive investment in environmentally friendly technologies, carbon tax incentives need to be given and the imposition of lower interest rates on loans also needs to be given to companies that can create environmentally friendly technologies. No less important is to make people aware to make or use of low-carbon materials. The purpose of these changes will affect the company's operations and create new business models to promote a better low-carbon market economy and social welfare mechanisms. The carbon tax is one alternative that can be used for companies that still use fossil fuels. The implementation of a carbon tax will prevent companies from obtaining large profits or even negative (Giglio et al., 2021). Still expensive investment in environmentally friendly technologies, carbon tax incentives need to be given and the imposition of lower interest rates on loans also needs to be given to companies that can create environmentally friendly technologies. No less important is to make people aware to make or use low-carbon materials.

The government is obliged to make regulations and policies that determine the success of implementation in a period of the risk of transition to a low-carbon climate. Conditions will be even worse if the regulations and policies are made unsuccessful and the company's carbon use disclosure efforts do not go well, it will result in large financial risks and can harm the company. The study calculates transition risk based on Carbon Disclosure Project (CDP) assessments and industry categories

The company's efforts to address climate change, particularly in environmental issues, are the goal of CDP score measurement. The CDP score shows the company's performance in addressing the climate, particularly environmental issues. There are four approaches used to see the success of the company's leadership in tackling climate change. The four approaches are disclosure, awareness, management and leadership. The disclosure concerns how complete it is to respond to CDP's list of questions. Awareness of how companies respond to climate issues, risks, and impacts on their business. Management covers the extent to which companies are aligning to implement regulations, policies, and strategies to address climate issues. Leadership concerns the role of leaders in governance as a best practice in climate management. These four approaches are more intuitive for interpreting climate risks by sector. Total climate risk is defined as climate risk consisting of physical risk and transition risk.

Content analysis methods are used to measure the disclosure of carbon emissions. Measurements based on documents and text using Global Reporting Initiative (GRI) indicator criteria 305 as part of the 300 series (environmental aspects). Indicators of carbon emission disclosure include 1) management disclosures and 2) carbon emission intensity, and 3) carbon emission reduction. Next is to assess each disclosure item, scoring each item, where a score of one for each item revealed and a value of zero if not revealed. The last is, to sum up all the scores per section.

Studies on sustainable production have been widely carried out and have mixed results (Frantzeskaki & Loorbach, 2010; Markard et al., 2012). From the various studies that have been carried out, the research focus can be grouped on First, the transition management of research pioneer Rotmans et al. (2001) and Loorbach (2010); secondly, strategic niche management was pioneered by Kemp

et al. (1998); third, a multi-level perspective on socio-technical transitions was pioneered by Geels (2002), and all four systems of technological innovation pioneered by Jacobsson and Johnson (2000) and Jacobsson and Bergek (2011).

In the United States, beginning in 1994, several studies on environmental risks are associated with the willingness to disclose context information as a measure of an enterprise declared healthy from environmental problems, as is the case of Barth and McNichols (1994), Blacconiere and Patten (1994), Cormier and Magnan (1997), Campbell et al. (1998).

2.2. Carbon disclosure project and company value

Companies that disclose carbon emissions in the report have a higher corporate value than companies that do not disclose carbon emissions. The company's value will decrease by $212,000 if there is an increase of 1000 metric tons of carbon emissions. It is based on findings from Matsumura et al. (2014). The research produced findings in the form of efforts to promote green finance and climate change mitigation in study countries influenced by variables such as consumption of renewable energy sources, population, foreign investment, carbon dioxide, inflation, engineering assistance to companies, distribution of domestic financing to the private sector, and research and development (R&D).

Nawaz et al. (2021) examined the nexus between green finance and climate change using the difference-in-difference (DID) method and found the presence of differences. Variables such as recon, foreign direct investment, carbon dioxide, Human Development Index (HDI), and investment in the energy sector by the private sector are likely to have an impact on green financing and climate change mitigation. Overall, DID does not show significant differences between countries.

Furthermore, the dimensions of sustainable finance/banking have been identified as ESG, and the effect of ESG is apparent for firms who utilise ESG compared to those that do not though there are limited or no specified guidelines specified by the government for sustainable firm/banking practices (Backhouse & Wickham, 2020; Saxena et al., 2021). Thus, risk management related to ESG is vital in a firm/bank (Gouiaa et al., 2020).

2.3. Green economy and finance

Green economy or green growth are two terms that are often used in financing that pays attention to climate change. The term green economy is coined by United Nations Environment Programme (UNEP), while the term green growth is used by the Organisation for Economic Co-operation and Development (OECD), the World Bank, and the Global Green Growth Institute (GGGI). UNEP defines a green economy as an economic activity aimed at significantly reducing environmental risks and ecological scarcity with regard to improving human well-being and social equality. In simpler terms as a low-carbon, resource-efficient, and socially inclusive economy (Bassi & Fula, 2012). UNEP proposes '*Green Economy Initiative*', and OECD proposes a '*Green Growth Strategy*' that seeks to place economic performance within environmental and social boundaries. The OECD defines the Green Growth Report as the efforts of economic activity to promote economic growth and development while ensuring that natural assets continue to provide the environmental resources and services on which our well-being depends (OECD, 2011). Therefore, UNEP and OCDE focus on economic and development activities within environmental boundaries.

According to UNEP et al.'s (2021) Green Economy Report (GER), there are 10 important economic sectors that need attention to be encouraged by green financing. Four sectors are related to nature, natural resources and ecosystem services, namely agriculture, fisheries, water, and forests, and six sectors of economic activity are related to natural capital investment such as energy, manufacturing, wastewater, buildings, transportation, and tourism. UNEP proposes to provide two per cent of global gross domestic product (GDP) funds to invest in these ten sectors, so that not only economic benefits are obtained but significant environmental and social welfare improvements can be achieved, thus the green financial sector can be developed through green growth financially (Fedrigo-Fazio & ten Brink, 2012).

There are three instruments that can be used to accelerate transparency towards a green economy, namely 1) encouraging the public and the private sector to increase green investment, 2) using fiscal policies in the form of incentives for the development of green investment and higher taxes for the use of resources that can cause pollution, and 3) the implementation of green governance to ensure that regulations and policies made can be implemented properly through legal supermajority and fair.

2.4. Transition finance

The transition is related to the transition period from the old condition to the new condition, namely the transition to a more sustainable economy, but the new condition does not yet have standards. Therefore, this transitional finance is an effort to find various financial resources that can be used for a more sustainable economy or those related to a sustainable economy. There are many terms regarding this transition finance, including climate finance and climate transition finance. The following examples illustrate the concept with a clear and concise definition.

The term climate finance was coined by Boston Consulting Group (BCG) and Global Financial markets Association (GFMA) (2020). The term climate change is financing to finance green investment in order to transition to a low-carbon economy and a better climate order. This climate change financing is expected to be an initiative to mitigate climate change with the aim of reducing greenhouse gas emissions and becoming a key tool to promote climate resilience, infrastructure, and social and economic assets through climate change adaptation.

Climate transition finance is a financial instrument used to introduce a long-term strategy of

reducing greenhouse gas emissions, through concrete actions from companies involved to reduce emissions that consider tackling climate change in order to achieve a decarbonized society (Ehmann et al., 2022).

Caldecott (2020) equates transition finance with the provision and use of financial products and services to support partners, such as companies, authorities, and individuals, realizing harmony with environmental and social sustainability. A more macro concept was developed by the OECD. The OECD (2019) introduces the concept for developing countries, and how developing countries can gain access to green financing in the context of development carried out by these developing countries. In 2021, the OECD is making more micro-definitions more relevant to companies, and other sectors that are not targeted towards green financing by policymakers. The definition made by the OECD clearly uses the concept of "*just transition*". With this concept, it is hoped that changes towards a carbon-free economy can be enjoyed by the wider community without causing negative impacts on social life.

The *Climate Transition Finance Handbook* (ICMA, 2023) has developed a financing standard and bonds related to sustainable financing called sustainability-linked loans (SLLs) and sustainability-linked bonds (SLBs). Lenders and issuers should outline how to integrate their climate transition strategies based on a "*just transition*". Nevertheless, wherever the transition can endanger workers and society. In some of the above definitions of transitional finance, there is currently no consensus in the literature on which environmental and social aspects should be included.

To support the development of green finance, the Government of Indonesia, through OJK in 2014, issued a Roadmap of Sustainable Finance Phase I for the 2015–2019 period (Financial Services Authority [OJK], 2014) and a Roadmap for Sustainable Finance Phase II for the period 2021–2025 (Financial Services Authority [OJK], 2021). The Phase I Sustainable Finance Roadmap requires financial service institutions to prepare sustainable financial action plans, and public companies and issuers are also required to submit a sustainability report. In the Phase II Sustainable Finance Roadmap, there are several strategic programs, such as completing a green taxonomy as a guide in developing innovative products, sustainable finance, and sustainable financial disclosure.

Following up on the Phase I Sustainable Finance Roadmap, OJK has issued several regulations supporting sustainable finance, namely POJK No. 51/2017 Provisions related to implementing sustainable finance for Financial Service Authority (*Lembaga Jasa Keuangan, LJK*), issuers, and public companies. Furthermore, POJK No. 60/2017 concerning green bonds and green bond fee incentives, as well as incentives to support battery-based electric motorized vehicles, are supported by technical guidelines and policies.

In the implementation of POJK No. 60, the Government of Indonesia issued Sukuk, or sharia green bonds, worth US$ 1.25 billion in 2018. The issuance of this Sukuk by the government is the first green financing in Indonesia. The project, which is financed from the Tribe's fund, is not only intended to finance environmentally friendly investments but also follows Islamic sharia.

A pioneer private bank in green bond issuance is OCBC NISP. OCBC is a foreign bank owned by OCBC Bank Singapore, which also issued green bonds worth US$ 150 million at the end of 2018 under International Finance Corporation (IFC) guidance. There are two investment sectors financed from funds obtained from the sale of these green bonds, namely investment in the green building sector and wastewater management. As of the end of 2021, 153 issuers have voluntarily implemented sustainable finance. Among others, the issuance of global sustainability/green bonds by PT. Bank Rakyat Indonesia Tbk. (USD1.9 billion), PT. SMI (IDR500 billion), PT. Bank Mandiri (USD300 million), green loans (USD55.9 billion), and blended finance (USD2.46 billion). The implementation of sustainable finance is expected to have a positive impact on the company. This is because sustainable finance can be an added value in reaching investors concerned about ESG aspects.

The government has a very important role in green financing. With all the limitations that the government has for green funding, the role of the government for green industry start-up companies is needed. The transition or use of environmentally friendly materials or technologies is still inefficient, so the cost is still expensive. This is in line with the opinion of Noh (2014) that the government has an obligation to open wide access and introduce and encourage private fund investment in the green industry.

Limited financing by banks, because banks must comply with banking standards to maintain the level of bank health. The use of green materials and technologies is still a constraint on more expensive costs, so this can harm the banking itself. Therefore, green finance requires a variety of financial instruments, and the government must create a capital market environment and system to support green finance.

Based on Indonesia's Long-Term Strategy for Low Carbon and Climate Resilience by 2050, there are four strategic sectors to reduce carbon emissions, namely agriculture, energy, waste, and industrial process and product use (Government of Indonesia, 2021). In 2020, the Indonesian government issued the Indonesia Zero Emissions Application (EMISI App) to study, measure, track, and act on climate impacts. With this EMISI application, it can help application users to calculate, reduce, and absorb emissions.

In the previous year (Rizki et al., 2020) introduced the EMIN application for the transportation sector, with this application users of cars, motorcycles, trains, and buses can find out the amount of emissions and types of pollutants that arise from the vehicles used. In the year that was raised also an application for household activities. This application is useful for date houses to find out the amount of emissions caused by consumption activities of food, clothing, electricity, and household waste (Sari et al., 2021). The purpose of this existing EMISI application is to in addition to

educating and also provide people with awareness about the impact of their personal transportation and logistics activities (e.g., e-shopping and package delivery) on climate change and hope that app users can help reduce emissions and pollutants.

3. RESEARCH METHODOLOGY

This study uses qualitative and quantitative methods to examine climate change, green financing, and governance practice. The qualitative method is employed to investigate the implementation of climate change policy, governance practices, and green financing. The quantitative approach is used to examine the impact of ESG, specifically on the environment, which includes emissions and climate change policy on stock price and firm's profitability. For the qualitative analysis, an in-depth interview is conducted with nine non-listed firms across Sumatera. The province is chosen based on the most significant emissions contribution in Sumatra, taking into account the four provinces are included in the 10 provinces that contribute the most carbon emissions in Indonesia, including South Sumatera Province, Riau Province, North Sumatera Province, and Lampung Province (Climate Transparency, 2019).

For qualitative analysis, an in-depth interview is conducted with nine top management from the plantation industry, that is 1) PT. Swadaya Indopalma (PT. SIP) — Province South Sumatera, 2) KPN Plantation, Sumatra Mill — Province South Sumatera, 3) PT. Citra Riau Sarana (PT. CRS) — Province Riau, 4) PT. Sawit Mas Sejahtera (PT. SMS) — Province North Sumatera, 5) PT. Sawita — Province North Sumatera, 6) CV Bumi Waras — Province Central Lampung, 7) PT. Gula Putih Mataram (PT. GPM) (Sugar Group Company) — Province Lampung, 8) PT. Pemukasakti Manis Indah (PSMI) — Province Lampung and 9) PT. GGP Humas Jaya — Province Lampung. The interview related to climate change, green finance and the efforts made by companies to anticipate climate change and apply green finance to date.

For the quantitative analysis, an OLS is employed, and there are two OLS models, regression Model 1 and regression Model 2. We assumed that the data inside each of the samples are normal. Other than OLS, DID could be potentially used as an alternative method comparing the control and non-control groups to examine the difference. The observations are listed banks on Indonesia Stock Exchange. Eight banks reported ESG during the observation period. The annual financial statement and the ESG statement are utilized to derive the variables used in this paper from 2002 to 2021. Stock price, net margin, return on equity (*ROE*), return on assets (*ROA*), reinvestment rate, price-earnings (*P/E*) ratio, and enterprise value (*EV*) ratio are employed as dependent variables proxies. The independent variables are *ESG*, environmental pillar (*ENV*), social pillar (*SOC*), governance pillar (*GOV*), resource use (*ENV_RE*), emissions (*ENV_EM*), innovation (*ENV_IN*), corporate social responsibility (CSR) strategy (*GOV_CSR*) for Model 1 and policy emissions (*POL_EM*), targets emissions (*TAR_EM*), biodiversity impact reduction (*BIO_RED*), CO2 emissions (*CO2*), CO2 emissions per revenue (*CO_REV*), climate change commercial risks opportunities (*CLI_CH*), waste reduction (*WAS_RE*), e-waste reduction (*EWAS_RE*), environmental restoration (*ENV_INI*), environmental expenditures investments (*ENV_INV*), environmental investments (*ENV_INIT*), sustainable cities and communities (*SDG11*), responsible consumption and production (*SDG12*), climate action (*SDG13*), life below water (*SDG14*), and life on land (*SDG15*) for Model 2.

4. RESULTS AND DISCUSSION

4.1. Sustainable green financing from an authorized deposit taking financial institutions

For sustainable financing, for state-owned banks consisting of Bank Mandiri, Bank BNI, and BRI, the distribution of sustainable financing is still relatively small. For Bank BNI, the distribution of sustainable financing has reached 30 per cent. For Bank Mandiri, the distribution of sustainable financing has reached 20 per cent, and for BRI, the distribution of sustainable financing has reached 20 per cent. Based on the business sector, funds distribution for the Sustainable Business activities category mainly involves financing micro-, small and medium-sized enterprises (MSMEs) and terrestrial and marine living natural resources. It is still relatively small for distribution to the renewable energy sector and energy efficiency, only reaching 10 per cent each of the total sustainable business activities category sector (*KKUB*) financings. Total green or sustainable financing is as much as 20 per cent of the total financing. Green financing of Bank Mandiri is aimed at financing MSMEs as much as 50% and managing biological natural resources as much as 43%. For the BNI bank, the total distribution of green financing (financing in the sustainable business activities category sector) is only 30% of the total financing. The most sustainable business activities category financing provided is for MSMEs, as much as 68 per cent, and land and marine living natural resources, as much as 20 per cent. For renewable energy and energy efficiency, each is 10 per cent. Likewise, regional development banks, such as Bank Sumsel Babel and Bank Sumut, channel more sustainable funds to MSMEs.

There is also Bank Sumsel Babel providing financing for environmentally friendly buildings. As for national private banks, such as Bank Central Asia and Bank Dana, the distribution of funds by these two banks to the sustainable business activities category sector is still relatively small. The distribution of funds is also more in the MSMEs sector. The same is done by foreign private banks, such as HSBC, Maybank, and CIMN. The distribution of funds for sustainable financing is relatively large, with an average of 30 per cent of the total funding. However, most of the financing is given to MSMEs. Overall, there is still little funding for renewable energy, energy efficiency, pollution prevention and control, and environmentally friendly transportation.

Table 1. Sustainable financing

Sustainable business activities category (%)			
State-owned banks	***2021***	***2020***	***2019***
Bank Mandiri	19.52	17.73	17.58
Bank BNI	29.55	19.62	24.1
Bank BRI	58.95	55.13	54.36
State-owned regional development banks	***2021***	***2020***	***2019***
Bank Sumut	74.92	75.89	37.07
Bank Riau			
Bank Sumsel	14.08	10.31	
Bank Lampung	5.28	0	0
Private bank-domestic banks	***2021***	***2020***	***2019***
BCA	24.82	22.1	20.45
Danamon	16.37	20.06	23.02
Permata	24.79	27.23	34.46
Mega		26.81	22.63
Private bank-foreign banks	***2021***	***2020***	***2019***
HSBC	0	0	0
Maybank	37.45	38.48	34.63
CIMB	24.82	28.67	37.01

4.2. The implementation of green financing, and emission reductions

The results from qualitative analysis for the implementation of green financing, green investment, and emissions reductions are as follows:

4.2.1. PT. Swadaya Indopalma (PT. SIP) — Province South Sumatera

Respondent 1 has been aware of green finance and green investment since the Ministry of Finance launched it in 2018 in Bali. The Minister of Energy and Mineral Resources issued Regulation No. 18 in 2018 concerning a supplier company of Pertamina that should provide BioSolar mixed materials implementing the green concept in its operations. PT. SIP supports the green financing program by establishing policies that are adjusted to the National Commitment, namely green governance, through various operational activities that are mitigating a low carbon economy and implementing green governance with the Green Financing Concept -> Organizational Commitment -> Green Production -> Green Product (crude palm oil (CPO), palm cooking oil (RBD Palm Olein), solid food fat/ole food (cocoa butter substitute (CBS), cocoa butter equivalent (CBE), cocoa butter replacer (CBR)), oleochemicals (fatty acid (FA), fatty alcohols (FOH), glycerine), and bioenergy (biodiesel), including:

1) reduce — the use of fertilizer according to soil characteristics;

2) reuse — utilization of factory waste used for biogas (palm oil mill effluent);

3) recycle — save some leftover fresh fruit bunches (FFB) to keep the garden moist.

To reduce the threat of global warming as a result of increasing carbon emissions, PT. SIP implements policies that focus on the advantages of social and economic industries, including

1. The selection of plantation land according to the contours of the land by taking into account the environment, such as the distance commensurate with the river and not changing the landscape.

2. Use of superior seeds quickly harvest longevity (30 months of age ready to harvest, life span of up to 30 years), thereby reducing the use of fertilizers and pesticides;

3. Utilization of returned empty fruit sign waste to maintain the air humidity;

4. Processing of palm FFB waste into biosolar material according to the standards set by Pertamina.

4.2.2. PT. Citra Riau Sarana (PT. CRS) — Province Riau

Companies that apply the green concept in their operations based on the criteria of making the principle of sustainability into every business decision, supplying (supply) the needs of environmentally friendly products as a substitute for demand for goods and services that are not environmentally friendly, making "green" as a competitive advantage by implementing the principle of environmental preservation in every business operation, internalizing social aspects in the whole process of social responsibility activities (partnership/CSR).

The company supports green financing by making policies to contribute to the National Commitment to global warming issues through business activities that are prevention/mitigation and adaptation to climate change towards a competitive low-carbon economy through internal policies as follows:

1. Organizational commitment to restoring forests' social aspects (CSR for the community) and community development. Environment (wetting peatlands, restoration/reforestation), landscape initiatives (Co-Management of Fire Prevention, Co-Management of Habitat and Forests, Protection Program for Lowland Forest Landscapes, Guntung River Landscape — Indragiri Hilir, Riau);

2. Social justice (having a social responsibility to the surrounding community living in the vicinity of the company's operational locations by trying their best to ensure that the surrounding community has a positive impact on the company's presence and the rights of the community are fulfilled (right to environmental health, clean air, and clean water);

3. Effective as of July 1, 2018, PT. CRS joined the Stop Work Order (SWO). Formal instruction is issued to managers of all relevant plantation units. The Earth Equalizer Foundation regularly monitors compliance with the SWO;

4. Priority of the policies implemented by the 4Ps (pro-growth, pro-jobs, pro-poor, and pro-environment); through:

a) selection of seeds, selection of superior seeds (30 months of age ready to harvest, life span of up to 30 years) to reduce excessive use of fertilizers;

b) garden land according to the contours of the land by taking into account the environment, such as the distance commensurate with the river and not changing the landscape;

c) utilization of returned empty fruit sign waste to maintain the air humidity; d) processing Palm waste into biodiesel materials with Pertamina's superior standards.

5. The 4Ps concept has been stated in the operational concept, which becomes the related standard operational procedure (SOP) through:

a) pro-growth: efficiency and effectiveness;

b) jobs: human resources empowerment and collaboration with community partners to create harmonious relationships (CSR);

c) pro-poor: participate in improving the local community's economy with partnerships (CSR programs);

d) pro-environment: environmentally friendly waste treatment, utilization of waste into raw materials for other industries (drugs, soap, biosolar).

6. The concept of green governance is reflected in the vision and mission, which adopts the No Deforestation, No Peat, No Exploitation (NDPE) Policy and SOP through:

a) development and training of SOPs for free, prior, and informed consent (FPIC), the SOP for water management and training which provide concession maps and HCV-HCSA (high conservation values- high carbon stock approach) including FPIC. Its application to policies, among others, is the licensing system and plantation management, technical guidelines for oil palm cultivation and processing, and environmental management and monitoring;

b) continuous business improvement efforts, such: the company applies serial Flat Batching such as the application of quality standards for shell waste and biodiesel, solid waste is applied to palm oil and nutrients, recycle/reuse using an incinerator to convert empty shells into ash (fertilizer) with the final output are detergents, dispute and others used by the company. As well as shells (leftover FFB) are also used for boiler materials to reduce the use of biodiesel fuel;

c) supervision/monitoring carried out to evaluate the implementation of the green governance policy so that it runs according to the objectives is through Indonesian Palm Oil Standard (ISPO)/ISO, which is specifically for the palm oil processing industry) and Proper Certification (Public Disclosure Program for Environmental Compliance) to assess management performance company environment with measurable indicators to increase the company's role in environmental management while at the same time creating a stimulant effect in compliance with environmental regulations and adding value to natural resource maintenance, energy conservation, and community development.

7. Green financing schemes (green finance) can be relied upon in assisting the development of green industries with environmentally friendly governance, considering the ease of requirements, relatively large financing ceilings, and the imposition of relatively minor interest rates.

8. Green financing schemes or green investments have benefits for environmental sustainability, for example, overcoming or at least reducing the greenhouse effect from carbon emissions because all business activities are re-planned to environmentally friendly activities, minimum emissions/greenhouse gases.

9. There are no significant obstacles to implementing green financing, it just takes time and hard work to meet the required categories based on the ESG Palm Oil Industry Certification System.

4.2.3. PT. Sawit Mas Sejahtera (PT. SMS) — Province North Sumatra

Green financing implemented by PT. SMS since implementing the Forest Conservation Policy in 2011 ensures that the palm oil production process does not cause forest damage (deforestation) by identifying high conservation values (HCV) and high carbon stocks (HCS) as part of the procedure standard before starting the activity. The company supports the green financing program by establishing policies that are adjusted to the National Commitment, namely through various operational activities that are mitigating towards a low-carbon economy, including:

1) reducing — fertilizer use according to soil characteristics;

2) reuse — utilization of factory waste used for biogas (palm oil mill effluent);

3) recycle — FFB to keep the garden moist;

4) green products — CPO, palm cooking oil (RBD palm olein), solid food fat/ole food, (CBS, CBE, CBR), oleochemicals (FA, FOH, glycerine), and bioenergy (biodiesel).

The company implements the green financing concept as follows: Organizational Commitment -> Green Production -> Green Product through:

1) conserving and protecting biodiversity through identification and protection of HCV areas supported by a Zero Tolerance Policy;

2) contributing to protecting, restoring, and promoting the use of terrestrial ecosystems;

3) the company remains focused on making long-term efforts to prevent fire and smoke;

4) reducing GHG emissions through facilities that capture methane gas can reduce between 45–55% of operational emissions;

5) managing water footprint and energy consumption waste management, recycling 100% of waste (solid and liquid waste). Solid waste consists of empty leaves, fibre, and shells. Palm oil mill effluent (POME) is produced from the process of processing FFB into CPO; this waste is used as organic fertilizer and fuel;

6) ISO 9001:2015 and ISO 17025 accredited environmental parameter assessment.

The implementation of the Green Financing Policy as described in the Vision and Mission and issuing Forest Conservation Policy is part of the organization's commitment to cut the link between palm oil production and deforestation, which until now continues to be maximized. The supervision/monitoring is carried out to

evaluate the implementation of the policy so that it runs according to the expected objectives, namely by Monitoring the Guidelines for ISPO and having obtained the ISPO certificate, the company has received the MUTU-RSPO (roundtable) certificate. The company uses a green financing scheme in the sustainable financing category, which is included in the green financing category. The company has implemented the green concept, which is required to obtain a green financing scheme, in which the company must be environmentally friendly by implementing a reduce, reuse and recycle system.

4.2.4. KPN Plantation, Sumatra Mill — Province South Sumatra

KPN Plantation has implemented green governance in every operational process (green concept) starting from the main business activities, which include planting oil palm trees, harvesting, and processing fresh fruit bunches, producing crude palm oil, palm oil, crude palm kernel oil, and palm kernel skin. As a company that belongs to the palm oil industry, KPN Corporation is a sub-sector that develops from upstream to downstream and is very varied, ranging from plantations, CPO industry, palm cooking oil (RBD palm olein), food solid fats/oil food (CBS, CBE, CBR), oleochemicals (FA, FOH, glycerine), and bioenergy (biodiesel). Meanwhile, downstream products for export are dominated by intermediate palm oil derivative products (i.e., refined, bleached, and deodorized/RBD palm olein or cooking oil, RBD palm stearine, RBD palm oil) kernel. Each oil has its production chain journey. However, CPO has a much longer production chain and is used in more product variants. About 80% of palm oil and kernel oil are used in food products, while the remainder is used as raw material for non-food purposes. Palm oil derivatives can be found in ice cream products, cosmetics, soaps, shampoos, biscuits, milk fat substitutes, butter, margarine, the chemical industry, etc. In recent trends, the by-products of the oleochemical industry and crude palm oil are used as an energy source for power generation and biofuels and biodiesel, so the green concept is very suitable to be applied considering the priority of being environmentally friendly in every production process.

NDPE policies are an essential foundation embedded in operations to benefit people, the environment, and the economy. KPN Plantation's NDPE policy was launched on September 18, 2018 (after this was updated on October 22, 2019, for management reorganization from Gama Plantation to KPN Plantation), implementing an NDPE policy that aligns with new market demands and sustainability requirements. Conduct regular socialization of the NDPE policy to staff and workers in all processes, post-NDPE signage in all plantation offices, palm oil mill offices, and other identified places containing information on NDPE requirements that must be met and their relationship to the company's sustainability objectives and has an SOP for cultivation of oil palm on peat as a guide which then replaces the SOP with an SOP for water management as a form of implementing green governance.

KPN has formed an organizational commitment to industrial, social, and economic excellence, including CSR programs, supporting communities living around concession areas with the Social Forestry and Community Development Program currently in the pilot stage (in Kalimantan and Papua) to develop horticultural crop cultivation and sustainable livestock farming directed to become an integrated farming system which will eventually become a source of sustainable income for the local community.

KPN has developed procedures related to traceability since 2017. Every six months, the external FFB purchasing team updates supplier data. Verified supplier data, including evaluating each coordinate point of smallholder plantations to ensure compliance with the government-regulated Regional Spatial Plan (RTRW). It is proven to have been able to identify 100% traceability to plantations in all KPN Corporation palm oil mills, even down to land size data, GPS coordinates of land points, and land ownership status. A significant effort to reorganize groundwater management within the planted area. This plan was expanded to include a range of interventions to raise the groundwater table in the remaining peat forest. All efforts are aimed at slowing the irreversible subsidence of the peat, which is a significant source of carbon emissions

In implementing sustainable finance, a project/activity can be declared sustainable if the activities consider ESG aspects. Economic sustainability is defined as a bank activity that positively impacts economic growth, asset maintenance (capital maintenance), and efficient use of resources and investment. Environmental sustainability can be defined as an activity that efficiently maintains and maintains the carrying capacity and capacity of the environment. The implementation of company policies has been equipped with procedure guidelines related to green financing as described in the vision and mission, which adopts the NDPE policy and SOP.

4.2.5. PT. Sawita — Province North Sumatra

Regarding the palm oil industry's potential to contribute significantly to encouraging development in a country like Indonesia, especially in remote areas, green financing is very reliable, considering that what is required is indeed fundamental things such as an assessment of the problem profile and potential risks involved faced, such as the legality of business land (location permits and plantation business permits), environmental effect analysis (*analisis mengenai dampak lingkungan hidup, AMDAL*) and environmental permits (monitoring compliance with company commitments in environmental and social impact management), business use rights and building use rights, compliance with peatlands and other requirements related to palm oil production management and technical. regarding green governance, PT. Sawita has also implemented the 4Ps policies in every business operation, which is strategically stated in the green concept, namely being environmentally friendly in various operating processes.

PT. Sawita has operational concepts such as:

1) pro-growth — efficiency and effectiveness;

2) pro jobs — human resources empowerment and collaboration with community partners to create harmonious relationships (CSR);

3) pro-poor — participate in improving the local community's economy with partnerships (CSR programs);

4) pro-environment — environmentally friendly waste treatment, utilization of waste into raw materials for other industries (drugs, soap, bio solar).

There is continuous increase in business such as:

1) the company applies serial Flat Batching, such as implementing quality standards for shell waste and biodiesel;

2) solid waste is applied to oil palm trees and nutrients;

3) recycle/reuse using an incinerator turns empty shells into ash (fertilizer), with the final output being detergents, disinfectants, and others used by the company;

4) shells are also used for boiler materials reducing the use of biodiesel fuel.

4.2.6. CV Bumi Waras — Province Central Lampung

The company does not produce a lot of carbon emissions from the use of liquid fertilizer and biogas because the products produced are Native Tapioca Products (Native Tapioca Starch) which are produced from the extraction process of selected cassava raw materials using the sun drying method and also acid modified tapioca products (acid modified tapioca starch) produced by a natural fermentation process and the sun-drying method. Only a tiny portion of tapioca is processed by the oven drying method with heating fuel that has been switched from coal to palm shells as the oven burner.

In terms of green governance, the tapioca flour production process has been carried out through a green process which refers to an environmentally friendly process starting from reducing pesticides and fertilizers, regular harvesting periods to maintain tapioca levels and land nutrients, and the use of cassava without being peeled to minimize waste. The rest of the production was laid out so that the residual water in the tapioca product quality process makes residual water not immediately dumped into the ground but wasted in a particular reservoir.

Regarding green financing, CV Bumi Waras does not take advantage of green banking financing because the business owner also has a partnership business unit with People's Development Bank (*Bank Pembangunan Rakyat, BPR*) as supporting business capital. In contrast, the BPR owner is the owner of CV Bumi Waras. The BPR business is more focused on serving productive financing with suppliers of raw materials as its target market so they don't make much use of financing from public banks.

4.2.7. PT. Gula Putih Mataram (PT. GPM) (Sugar Group Company) — Province Lampung

PT. GPM is a company engaged in processing granulated sugar derived from sugar cane. In its governance, PT. GPM plantation has not yet fully implemented governance policies that support global emission reductions, including still using the burning method of sugarcane residues during replanting, using firewood and sugarcane as fuel in the process of forming sugar crystals, and not recycling of used sugarcane residues.

Regarding the principle of 4Ps development, the company has not fully implemented it, especially in the pro-environment category, where waste is not appropriately managed but is only limited to liquid waste flow and is discharged back into the plantation area (amount of liquid waste of 16,500 litres per ha). This will impact the loss of soil moisture, soil nutrient deficit, and even groundwater contamination coupled with the slash-and-burn replanting process, which produces large amounts of smoke. In the pro-jobs category, the company seems to ignore the workforce because it does not heed occupational health and safety (*keselamatan dan kesehatan kerja, K3*) in all production processes (personal protective equipment/masks).

Regarding green funding, the manager does not know for sure where the company's funding source comes from because the manager's access is limited to the implementation of the production process only (the financial sector is handled directly by the owner). Moreover, the concept of governance at PT. GPM also applies to 3 other subsidiaries of Sugar Group Company, namely PT. Sweet Indo Lampung (SIL) and Indo Lampung Perkasa (ILP) which are sugar-producing companies while PT. Indo Lampung Distillery (ILD) is a company that produces ethanol.

4.2.8. PT. Pemukasakti Manis Indah (PSMI) — Province Lampung

The company has applied the green industry concept in their business, namely meeting the indicators of reducing, reusing, and recycling with the development principles recommended by the government as stated in the work SOP:

1. Pro-growth — has a special department that handles pesticide and fertilizer issues. This department is in charge of making compost from solid waste with a natural composer process as the only fertilizer used (meets 40,000 tons of compost from 60,000 tons of compost per year). Natural pesticides periodically provide soil nutrients so that the soil does not harden (reuse and reduce), using the latest technology machines with shorter maturation times and large capacities to minimize fuel use.

2. Pro-jobs — empowering the surrounding community to become workers implementing production and establishing partnership programs in the form of plasma (even if the number of plasma is 15,000 ha larger than the number of nucleus estates is 7000 ha).

3. Pro-poor — participate in improving the surrounding community's economy with CSR (environmental development) in the form of village road infrastructure and sanitation facilities for residents' settlements.

4. Pro-environment — environmentally friendly waste treatment, namely making installations for processing liquid waste (waste water treatment plant, WWTP) so that the wastewater that is disposed of has gone through several stages of the filtering process that is accommodated in the lagoon, utilization of sugarcane leaf waste to become raw material for fertilizers, pesticides and

even sold to other industries (textiles and biogas) (recycle). The company's monitoring process is carried out in the form of a quality control audit and certification (ISO) periodically.

4.2.9. PT. GGP Humas Jaya —Province Lampung

The company engaged in the pineapple industry (garden, a pineapple canning factory, can factory, label factory, juice factory, and drum factory), which can process 3,500 tons of fresh pineapple daily with a plantation area of 33 thousand ha and utilizes 213 boreholes of groundwater. PT. GGP Humas Jaya has implemented a green concept in its governance, has its biogas electricity, drinking water supply system (*sistem penyediaan air minum, SPAM*), a drinking water supply system, and utilizes all things from the factory to create a zero waste condition, where pineapple leaf waste is reused as cattle feed material. cattle fattening) and compost fertilizer (to be a provider of bacteria composer).

In the production process, almost all of them apply an automatic process with high technology to create products that are not only of Indonesian national standard but also of international quality because they are exported to more than 40 countries outside Indonesia (labour just press buttons to operate the machine), using remote automatic sprinklers installed in the middle of the pineapple field and the use of modern harvesting tools to remove the remaining pineapple leaves. As a form of social responsibility, PT. GGP Humas Jaya cooperates with farmer groups such as Tanggamus to cultivate fruit trees other than pineapple, such as banana mas, guava, etc.

PT. GGP Humas Jaya has been classified as one of the green investment companies because it has implemented development principles such as the use of environmentally friendly input materials, the application of the concept of reducing, reuse, recycling, and recovery, low energy intensity (use of electricity and fuel), volume. The water used is lower with plant sprinkler technology and meets environmental quality standards, low carbon technology and the use of alternative energy (biogas from pineapple leaf waste) while implementing quality control in every production process.

The governance of PT. GGP Humas Jaya has been classified as environmentally friendly as evidenced by obtaining a Kosher Passover Certificate, Indonesia Export Award, Kalpitaru Award at Lampung Province, KEHATI Award at National Level, Higher Level Predicate from British Retail Consortium (BRC) UK & International Food Standard (IFS) German and French and to ensure the safety of employees, SMK3 (Occupational Health and Safety Management System) and SA 8000 (Social Accountability) certification have been implemented.

4.3. The impact of ESG on stock price and firm's profitability

The results from quantitative analysis for the impact of *ESG*, specifically on the environment, which includes emissions and climate change policy on stock price and firm's profitability, are as follows as can be seen in Table A.1., the result for Model 1 reveals that *ESG*, *ENV*, *ENV_RE*, and *ENV_IN* have a positive and significant impact on the stock price. This indicates that *ESG* are important, as the investors observe. Moreover, the choice of resources used and innovation in the product/ services concerning environmental factors are crucial in affecting the stock price as one of the indicators of investors' sentiment. The results for *ROA*, *ROE*, and *reinvestment rate* are relatively similar in that the *ENV, ENV_RE*, and CSR strategy (*GOV_CSR*) are positive and significant. This indicates that the greater the company focuses on the environment, the environmental resources used, and the CSR, the higher the profitability (*ROE* and *ROA*) and the *reinvestment rate*. In contrast, no significant results were found in *P/E* and *EV* variables.

As can be seen from Table A.2., the result for Model 2 reveals that policy emissions (*POL_EM*), targets emissions (*TAR_EM*), CO2 emissions (*CO2*), CO2 emissions per revenue (*CO_REV*), waste reduction (*WAS_RE*), environmental restoration (*ENV_INI*), environmental expenditures investments (*ENV_INV*), environmental investments (*ENV_INIT*), climate action (*SDG13*), and life below water (*SDG14*) have a significant impact on the stock price. This indicates that the emissions policy and practice are essential, as the investors observe. Moreover, the choice of resources used, environmental investment, and climate change action are crucial in affecting the stock price indicators of investors' sentiment. The results for *net margin*, *ROA*, *ROE*, *reinvestment rate*, and *P/E* are relatively similar in those CO2 emissions (*CO2*), CO2 emissions per revenue (*CO_REV*), climate change commercial risks opportunities (*CLI_CH*), waste reduction (*WAS_RE*), e-waste reduction (*EWAS_RE*), environmental restoration (*ENV_INI*), environmental expenditures investments (*ENV_INV*), environmental investments (*ENV_INIT*), sustainable cities and communities (*SDG11*), responsible consumption and production (*SDG12*), and life below water (*SDG14*) are significant.

Moreover, the significant positive result also indicates that investors are highly aware of the current emissions and climate change issues addressed as *ESG*. The result is in line with Backhouse and Wickham (2020), Saxena et al. (2021), that found firms utilising ESG have higher sustainable finance, which relates to risk management (Gouiaa et al., 2020).

5. CONCLUSION

The result reveals that the majority of the firms have been aware of green finance and green investment and have implemented green governance in every operational process (green concept) starting from the main business activities that focus on the advantages of social and economic industries. The company supports the green financing program by establishing policies that are adjusted to the National Commitment, namely through various operational activities that are mitigating towards a low-carbon economy by reducing, reusing, and recycling with the development principles recommended by the government. Moreover, for sustainable financing, for state-owned banks, the distribution of sustainable financing is still relatively small for renewable energy, energy efficiency, pollution prevention and control,

and environmentally friendly transportation. Furthermore, ESG such as environmental, resource use, innovation, and emission policy and practice have a positive and significant impact on the stock price and profitability. This indicates that ESG are important, as the investors observe. The choice of resources used, innovation in the product/services concerning environmental factors, environmental investment, and climate change action are crucial in affecting the stock price as one of the indicators of investors' sentiment. In addition, this also indicates that the greater the company focuses on the environment, the higher the profitability and the reinvestment rate. Overall, it can be concluded that environmental management is pivotal in affecting the firm's performance. The focus on environmental issues which reduces emissions can increase the firms' competitiveness and make the firms environmentally responsible for the earth. Improved environmental performance can be sought from the adaptation of techniques emphasizing waste reduction and process/product redesign in the quest to reduce environmental impact. The significant effect of the ESG should encourage more policies in the future for sustainable environment and sustainable firm. This study is limited to the number of respondents used and the research period; further research should consider larger samples, making the result more significant.

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APPENDIX

Table A.1. Regression result for Model 1

Variables	*Measure*	*Stock price*	*Net margin*	*ROE*	*ROA*	*Reinvestment rate*	*P/E*	*EV*
ESG	Coeff.	1.704	-1.111	-0.813	0.126	-0.53	0.7	-0.495
	t	1.789	-0.913	-0.608	0.096	-0.391	0.539	-0.319
	Sig.	0.076	0.363	0.544	0.924	0.697	0.591	0.75
ENV	Coeff.	0.741	1.01	0.907	0.73	0.974	0.342	0.095
	t	3.303	3.651	3.379	2.771	3.577	1.133	0.304
	Sig.	0.001	0	0.001	0.006	0	0.259	0.762
SOC	Coeff.	-0.311	-0.507	0.605	-0.195	0.51	-0.071	0.208
	t	-0.607	-0.769	0.864	-0.284	0.718	-0.101	0.256
	Sig.	0.545	0.443	0.389	0.777	0.474	0.919	0.799
GOV	Coeff.	-0.416	1.017	0.403	0.276	0.149	-0.444	0.205
	t	-0.869	1.639	0.617	0.431	0.225	-0.68	0.269
	Sig.	0.386	0.104	0.538	0.667	0.823	0.497	0.788
ENV_RE	Coeff.	0.407	0.115	-0.6	-0.353	-0.651	0.084	-0.007
	t	3.096	0.643	-3.797	-2.277	-4.06	0.477	-0.04
	Sig.	0.002	0.521	0	0.024	0	0.634	0.969
ENV_EM	Coeff.	-0.279	0.222	0.251	0.39	0.185	0.362	-0.016
	t	-1.401	0.809	1.043	1.653	0.76	1.349	-0.057
	Sig.	0.164	0.42	0.299	0.101	0.449	0.18	0.954
ENV_IN	Coeff.	0.331	-0.301	-0.177	-0.151	-0.295	-0.098	0.104
	t	1.834	-1.373	-0.809	-0.701	-1.329	-0.413	0.401
	Sig.	0.069	0.172	0.42	0.484	0.186	0.681	0.689
GOV_CSR	Coeff.	0.001	-0.084	-0.458	-0.509	-0.345	-0.112	0.024
	t	0.005	-0.386	-2.308	-2.612	-1.713	-0.509	0.104
	Sig.	0.996	0.7	0.023	0.01	0.089	0.611	0.918

Table A.2. Regression result for Model 2

Variables	*Measure*	*Stock price*	*Net margin*	*ROE*	*ROA*	*Reinvestment rate*	*P/E*	*EV*
POL_EM	Coeff.	0.255	0.625	0.061	0.112	0.072	-0.237	-0.024
	t	2.124	3.947	0.415	0.774	0.473	-1.466	-0.124
	Sig.	0.036	0	0.679	0.441	0.637	0.145	0.902
TAR_EM	Coeff.	-0.12	-0.046	0.024	0.064	0.057	0.04	0.022
	t	-1.741	-0.539	0.287	0.775	0.655	0.441	0.19
	Sig.	0.084	0.591	0.775	0.44	0.514	0.66	0.85
BIO_RED	Coeff.	0.222	0.256	-0.005	0.117	0.11	0.045	-0.089
	t	1.471	1.374	-0.025	0.631	0.571	0.228	-0.318
	Sig.	0.144	0.172	0.98	0.529	0.569	0.82	0.751
CO2	Coeff.	0.878	0.909	0.482	0.753	0.594	-0.605	-0.072
	t	3.651	3.023	1.741	2.735	2.068	-1.895	-0.21
	Sig.	0	0.003	0.084	0.007	0.041	0.06	0.834
CO_REV	Coeff.	-0.806	-0.465	-0.241	-0.464	-0.432	0.752	0.112
	t	-3.392	-1.589	-0.859	-1.662	-1.483	2.396	0.308
	Sig.	0.001	0.115	0.392	0.099	0.141	0.018	0.759
CLI_CH	Coeff.	0.109	0.092	0.088	0.097	0.005	-0.207	-0.045
	t	1.234	0.854	0.78	0.869	0.045	-1.766	-0.263
	Sig.	0.22	0.395	0.437	0.386	0.964	0.08	0.793
WAS_RE	Coeff.	0.482	-0.268	-0.553	-0.367	-0.56	0.091	-0.041
	t	4.566	-1.994	-4.313	-2.878	-4.209	0.639	-0.238
	Sig.	0	0.049	0	0.005	0	0.524	0.812
EWAS_RE	Coeff.	-0.073	0.182	0.105	0.011	0.044	-0.102	-0.015
	t	-0.909	1.858	1.013	0.109	0.409	-0.959	-0.109
	Sig.	0.365	0.066	0.313	0.913	0.683	0.339	0.914
ENV_INI	Coeff.	0.196	-0.465	0.226	0.203	0.152	0.215	-0.056
	t	2.148	-3.809	2.033	1.832	1.314	1.743	-0.378
	Sig.	0.034	0	0.044	0.069	0.191	0.084	0.706
ENV_INV	Coeff.	-0.271	0.351	0.379	0.287	0.323	0.106	-0.046
	t	-2.954	3.038	3.404	2.587	2.79	0.861	-0.306
	Sig.	0.004	0.003	0.001	0.011	0.006	0.391	0.761
ENV_INIT	Coeff.	0.208	-0.182	-0.212	0.056	-0.124	0.181	0.036
	t	2.12	-1.517	-1.756	0.464	-0.991	1.394	0.215
	Sig.	0.036	0.132	0.082	0.644	0.324	0.166	0.83
SDG11	Coeff.	0.122	-0.672	-0.35	-0.317	-0.33	-0.287	-0.026
	t	0.816	-3.653	-2.005	-1.829	-1.823	-1.444	-0.115
	Sig.	0.416	0	0.047	0.07	0.071	0.151	0.909
SDG12	Coeff.	-0.04	-0.297	-0.029	-0.072	-0.062	-0.276	0.023
	t	-0.217	-1.331	-0.139	-0.348	-0.287	-1.137	0.089
	Sig.	0.828	0.186	0.89	0.728	0.774	0.258	0.929
SDG13	Coeff.	-0.232	-0.047	0.058	0.098	0.062	0.276	0.016
	t	-2.288	-0.363	0.483	0.827	0.497	2.045	0.101
	Sig.	0.024	0.717	0.63	0.41	0.62	0.043	0.919
SDG14	Coeff.	-0.16	0.04	0.141	0.021	0.166	-0.239	0.006
	t	-2.047	0.424	1.592	0.238	1.803	-2.311	0.047
	Sig.	0.043	0.672	0.114	0.812	0.074	0.022	0.963
SDG15	Coeff.	0.039	0.429	0.102	-0.017	0.203	0.43	0.049
	t	0.199	1.776	0.448	-0.077	0.853	1.64	0.161
	Sig.	0.843	0.078	0.655	0.939	0.395	0.104	0.873