# CHAPTER 1

# INTRODUCTION

## 1.1    Introduction

The increase in awareness of the possible impact caused by carbon emission and world temperature increase has made more and more countries to agree, pursue, and put effort into achieving the goal to maintain the increase of world temperature within 1,5 degree Celsius (Setiawan et al., 2021; J. Zhao et al., 2023). The world has experienced rising sea levels due to the ice in Antarctica melting. The rising of rainfall, added to irregular climate has shown to many people the severest of climate change. In some places, flooding and excessive drought happen due to extreme rainfall or heat. Experts have warned that the increase in world temperature could erase a lot of biodiversity (Greenfield, 2023). In combating this issue, governments in many nations have put up an agreement to tackle climate change. This agreement is called the Paris Agreement.

This agreement is being implemented in many ways. Starting from green insurance, green investment, green incentives, and policies to disclosure of the green report, environmental tax, fiscal policy, and many more. However, there are need to determine, what segments or sectors of the industry need to be focused on based on who emits the most carbon. Ritchie's research found that the world's most carbon emission contribution comes from the electricity and heat sector/ energy sector (Ritchie et al., 2020). To make matters worse, energy sector demands keep growing as it was a necessity due to the increase in population (C2ES, 2019). Energy prices are also commonly being subsidized by the government as a form of green incentive and to make it affordable for middle to low-income populations, against inflation or other economic

situations, to tackle energy poverty and support economic growth. All of this effort was taken in order to make the earth habitable for the current and future generations, or so-called green future.

Green future itself has many definitions. Some define it as the effort to preserve natural resources by using them only when needed, reducing over-consumption, and the establishment of re-cycling culture (Maryville University, 2022). The OECD argues that the green future definition is to foster economic growth and development while preserving the natural resource. However, to manage the resource and the process. We must manage and limit the carbon emitted and emphasize the impact on the environment, including the people. The term used for managing and limiting the carbon emitted was the green economy.

The green economy is defined as low-carbon, resource-efficient, and socially inclusive by the UN (UN, 2018). In achieving a green economy, all stakeholders involved with the industry need to be aware and supportive of the issue. Meanwhile, the mining industry is the backbone of the energy sector and also one of the hardest to change. The majority of stakeholder were already aware of the sustainability issue, and this resulted in the company publicizing a sustainable report that shows how they manage and take responsibility for the environmental damage of their operational activity. This includes how much carbon they emit and how they take care of it (Rahim et al., 2024). The other more developed countries/ richer countries also start to engage in FDI and investment in green companies and/or countries that have green projects, and green industries or industries that are under the process of transition to support the process of a greener economy (Barabanov et al., 2021; M. Chen et al., 2023; Hieu, 2022; Kabir & Rakov, 2023; Yan et al., 2023).

Part of pursuing a green economy is the use of green incentives by the government. Green incentives are an important aspect in promoting green investment, stimulating the technology innovation process, and motivating

businesses to adopt greener systems such as transition into using and/or producing renewable energy (Lv & Zhou, 2023; Zhu et al., 2024). However, research by Yan argues that green incentives to promote the transition towards using and producing green energy only work in countries that are not heavily dependent on the export of natural resources (Yan et al., 2023). Yan also uses the term "resources curse", to describe the heavily natural resource-dependent countries' unwillingness to invest in renewable energy nor to adopt green business practices (Yan et al., 2023). Indonesia could be considered one of the countries that has been, and up till now, heavily depended on natural resources as their export commodities (Maulana & PP, 2024; Setiawan et al., 2021). This makes Indonesia prone to be affected by the resource curse.

Indonesia is already faced with the impact of climate change. As one of the top 10 carbon emissions, Indonesia seems to still struggling with incentives for the mining sector especially in the coal mining industry to transition into renewable energy (Setiawan et al., 2021). The severity of climate change in Indonesia even gives a shocking event. On 21st February 2024, there was the first tornado appeared which stunned the government considering it had never happened before (Theresia & Lewis, 2024). Not to mention the number of harvest failures due to irregular rainfall, flooding, and many more. This condition has further increased the government's incentives in fighting against climate change. Even though, these days, Indonesia is faced with a dilemma. Either choose economic growth that relies on Indonesia's natural resources or pursue a green transition that has long-term benefits but sacrifices the current growth leading to an increase in impact on the poorest groups (Setiawan et al., 2021).

The struggle faced by countries to pursue a green economic and green future may vary, and so does the process. If we take a look at China, China has taken the initiative in creating pollution liability insurance, with the term 'green insurances', even when they still become the major coal miner and consumer

with 4 billion tons produced in a year (Q. Chen et al., 2022; Maguire, 2023). Green insurance itself serves as a tool to alleviate the incentive of a company or organization to invest in overseas industries with lesser environmental regulation (Q. Chen et al., 2022). China, with its strong industrial sector, uses its government authorities to promote green insurance within its institutions. Meanwhile, Russia, with a more extractive sector, put more effort into designing policy on investment projects that lead to energy-saving projects (Kabir & Rakov, 2023). There are actual processes for both of them to shift their financing focus toward making their mining sector greener. Since green financing has become more important to help and grow the transition towards green and renewable energy (Zademach & Dichtl, 2016).

Looking at Indonesia's situation and process in combating climate change. Indonesia has created a regulation since 2012 to increase the usage of alternative energy and renewable energy for the government electricity company (PT PLN). This was stated in Presidential Regulation Number 4 of 2010 concerning assignments to PT PLN (Persero) to accelerate the development of power plants that use renewable energy, coal, and gas. However, Indonesia doesn't specify the green incentives other than in the form of government subsidies that come from the ABPN or state budget. There are no other forms of government incentives other than government subsidies such as tax incentives. There are also no tax incentive specifications on where, who, when, and how tax incentives will be given. Even though there are subsidies to support green economic. It doesn't specify the amount given to incentivized private companies, and there is no clear key metric on how the government determines the effectiveness of their green incentives in supporting green transition and green investment (Kementerian Keuangan et al., 2022).

Looking at the current outlook of Indonesia. Indonesia's government seems to still lack the seriousness in addressing climate change issues and pursuing a green future through green economics. The reasons may come from

the situation that Indonesia still needs to push its economic growth (Kabir & Rakov, 2023) which directly influences electricity consumption, which mostly relies on coal power plants (Endang Larasati, 2022; Maulana & PP, 2024; Setiawan et al., 2021). Moreover, Indonesia has not developed its government sustainability report or increased the information within the state budget that shows the process of incentivizing the public and private companies and helps to increase the transparency of the government project and process the government towards a greener future.

Meanwhile, the green economy also has an impact on the stock market. Private company stock price is influenced by the stockholder, and as the stockholder's awareness of climate change increases, so do their preferences in choosing stock (Abu-Ghunmi et al., 2023; Kabir & Rakov, 2023; Yan et al., 2023). It was also important to note the effect of other forms of the green incentive, as part of tools to achieve a green economy, such as tax incentives, carbon quotas, etc on the transition process (Borghesi et al., 2022; Hieu, 2022). Which has not been implemented in Indonesia. Private company stock market price is also determined by their assets and liabilities (Lv & Zhou, 2023; Sukamulja, 2021). Thus, the availability of credit, funding, and investment are crucial. Therefore, in order to gain the funds needed in the future, or in the present for the purpose of transition. Companies need to prepare to modernize their business process and enter the global economy.

The implication of entering a global economy, that values a green economy to pursue a greener future, toward the stock market isn't only limited to foreign investment opportunities (Lv & Zhou, 2023). But it also opens the chance for private company to transition their operational process to be more green, and also more effective and efficient (M. Chen et al., 2023; Kabir & Rakov, 2023). In ASEAN, including Indonesia, the members keep updating their policies, slowly but surely, to address environmental issues more seriously (Hieu, 2022; Setiawan et al., 2021). Not to mention the degree of understanding

of the citizens are becoming more aware and care about environmental issues (Zhu et al., 2024). Therefore, a green economy will impact not only the private company stock price but also the funding availability and reduce the risk of conducting green transition and green investment.

Failure to adapt to the green economy may impact the private company. The form of impact could start from low funding, low customer preferences, and low technological adoption rate, to losing its market share in global competition or reduction of its competitiveness. This risk applies especially to the mining industry. That may get sanctioned by international standards or due to low-quality products with high carbon emitted in the production process. Which are not preferable or not up to international industry standards (M. Chen et al., 2023). It implies that failure to adopt will not only impact the stock price, assets, liabilities, and competitiveness of the private mining company, but will also lower the government's economic growth, and economic power by diminishing workplace availability, low GDP growth, and loss from the upcoming sanction.

To adapt and transition, the government needs to have a strategy such as utilizing green finances through green incentives. Green incentives come in many forms. Highlighting the alternative of green incentives. There are other alternatives to giving incentives other than subsidies to help the mining industry transition in Indonesia. Adjusted tax incentives, green insurance, and soft loans are also some of the paths Indonesia can take to increase the transition rate, especially in mining industries (Hieu, 2022). The categories also may vary such as carbon tax, fuel tax, environment/ ecological tax, renewable energy tax, etc. This institutional and political framework will incentivize private companies to adopt the green economic model in their business value proposition (Barabanov et al., 2021; Zademach & Dichtl, 2016). The model of giving tax incentives and adjusted tax rates has been adopted by 19 countries according to PWC (PWC,

2024). PWC also categorized the tax into several categories such as fuel taxes, renewable energy taxes, carbon/ emission taxes, and more.

Another method of green incentives was green insurance. Which reduces the amount of the risk of pollution accidents by involving third parties (Q. Chen et al., 2022). The implication is that, as time goes by the framework towards a green future has been updated by the Indonesian government. There will be more third parties involved in helping the government to pursue green economics and, also the regulation will be more demanding for the private companies and financial institutions to get involved.

**Figure 1 Green Incentives & Tax Landscape**



Sources: (PWC, 2024)

The outlook of the mining industry in Indonesia is already progressing, in terms of transition into a greener future. Big private companies in Indonesia already have their good corporate governance (GCG) program and it was covered in their sustainability report. Since it was not only affecting their value but also increasing the positive response within the stock market (Rahim et al., 2024). The awareness of stakeholders also increases the willingness of the mining company to engage and contribute to developing sustainable and low-carbon practices (Setiawan et al., 2021).

There are many companies within mining industries that were listed in the stock market. The researcher decides to choose the listed coal mining company with the biggest market capitalization (Stockbit, 2024). However, considering the research requirements. The company that was chosen was the one that has availability of the data from 2012 to 2022, and fulfills other criteria. Therefore, the list of private mining companies chosen from the biggest market capitalization is BYAN, DSSA, ADRO, GEMS, and PTBA.

The purpose of this research is to explore the effect of the GDP per capita, international coal prices, government green incentives through subsidies, private coal mining company return of assets, debt-to-equity ratio, and stock market value. Private company financial performance from the financial statement can be used to determine the company's performance on transitioning into green economic practices (Rahim et al., 2024).

## 1.2    Problem Statement

The current incentives and methods of green incentives that Indonesia can use have been comprehensively explained above. The incentives that Indonesia utilizes still only give subsidies with no clear incentives for green transition nor utilize other financial institutions in investing in renewable energy and energy transition, especially in private coal mining industries. The other green incentive methods such as categorization of tax rates and incentives, soft loans, and green insurances haven't been implemented. On the other hand, the challenge faced by traditional sectors such as coal mining companies has increased due to the increase in global commitment to pursue a greener future. Even if there is an increase in emphasizing a greener future and the importance of Indonesia coal mining companies in supporting the green future agenda, the relation of government incentives and other economic and financial factors such

as GDP per capita, International coal price, private coal mining company stock market, ROA, and D/E is not well understood and explored yet.

This made the researcher would like to explore the effectiveness of the current Indonesian framework and strategy in incentivizing private coal mining companies to conduct green transition and investment in green projects. This research will also explore the effect of GDP per capita and international coal price, which represent Indonesia's economic and situation, on motivating the company to transition due to the importance of insight, and implications that could help the policy maker to be informed in policy creation, especially for the coal mining sector. Therefore, the researcher thinks that there could be an effect of the variable mentioned above in helping private coal mining companies transition into using renewable energies and greener practices, and the government in creating a better policy framework. This research will explore whether there a interrelation relationships, that affect one another, in the government subsidies, GDP per capita, international coal price, private coal mining company stock price, return of assets, and debt to equity ratio.

## 1.3 Scope of The Research

This research discussion will be limited and only discuss the private coal mining company that fulfills the criteria. The boundaries are mentioned below:

a.  The data gathered and used is from 2012 to 2022.

b.  The data of the company used only in the last month of the respective year

c.  The data of government incentives, GDP per capita, and international coal price used is the quarterly data from 2012 to 2022

d.  The government incentives that were used are the energy subsidies from the state budget or APBN

e.  The data are converted to rupiah using adjusted currency differences

## 1.4 Originality of Writing

This research is written originally by the researcher. There has not been any same topic that has been discussed. This research is also the first one that explores the possibility of Granger causality between the variables. All writing, assessment, analysis, figures, conclusions, and recommendations within this research are explored and learned by the researcher himself and supported by previous research that explores the process of pursuing transition in a company. Therefore, this work of research is original and did not copy nor imitate other research that existed already.

## 1.5 Research Objective

The researcher has set the objective of this research to explore the interrelation relationships of government green incentives, GDP per capita, international coal price, listed private coal mining stock price, ROA, and D/E ratio. This research will try to explore the relationship of government energy subsidies with green incentives, international coal price fluctuation, and private coal company's financial performances. This research would also measure the effect of green incentives on the economic growth measured with GDP per capita. The effect of company stock price effect on the green incentives also becomes the research objective. This research will also try to analyze the readiness or the process of green transition of the company, and the relation with the green incentives, GDP per capita, and international coal prices with the VAR Granger causality method. Thus, the researcher hopes this research could provide an insight and contribute to the future research.

## 1.6 Potential Research Contribution

After some analysis has been made, the researcher believes that the potential contribution of this research may be useful for:

a. Government

1. Determine the effectiveness of Indonesian government subsidies towards listed private coal mining companies' financial performance

2. Undermine the effect of GDP per capita and international coal price in motivating and incentivizing listed private coal mining companies to transition into renewable energies/ greener practices.

3. Exploring the effect of Indonesia's green incentives, GDP per capita, and International coal price

4. Enable the Indonesian government to see the relation and effect of green subsidies towards private companies within the coal mining sector.

5. Inspire the Indonesian government to utilize other green initiative methods and involve third parties to help private coal mining companies adopt green business practices.

6. Support the Indonesia government in increasing their reference and data in order to create more effective fiscal policy and other policies to achieve a greener economy and greener future.

b. Industry leader

1. Help to incentivize private coal mining companies to transition into greener practices and/or renewable energy

2. Help market leaders to make better-informed investment decisions on sustainable and green practices

3. Help market leader to optimize their financial performances while emphasizing the importance of a green future

4. Help market leaders develop robust risk management strategies

5. Help market leader to continue and improve their commitments to the environment

c.  Further researcher

1. Help further research by providing a robust framework to explore other sectors.

2. Help further researcher to broaden their understanding of sustainable finance.

3. Help further researchers in understanding the different effects of government conditions, government strategy, and company financial condition on different sectors and nations.

4. Encourage further researchers to conduct interdisciplinary research that combines insight from multiple fields such as finance, economics, public policy, and environmental science that provide a more holistic approach to sustainability research.

**1.7    Writing Systematic Order**

CHAPTER I INTRODUCTION

Research background, problem statement, scope of the research, research originality, research objectives, and potential research contributions are discussed in the chapter.

CHAPTER II LITERATURE REVIEW

In this chapter, comprehensions extensively consist of theoretical background, hypothesis development, and previous research.

CHAPTER III RESEARCH METHODOLOGY

The chapter depicts and explains the sampling approach, data and data gathering, variables and variables measurement, and methods of analysis.

CHAPTER IV DATA COLLECTION AND ANALYSIS

This chapter emphasizes the presentation of researched data, its assessment, and analysis, including the report of observation results.

CHAPTER V CONCLUSION AND RECOMMENDATION

Conclusions, implications, limitations, and recommendations are both concisely and comprehensively pointed out in this chapter.