

The Influence of Green Tax Implementation and Social Responsibility Programs on Environmentally Sustainable Development in The Manufacturing Industry

Mela Amelia¹, Yanti², Lilis Lasmini³

Program Study Accounting, Faculty Economics and Business, University of Buana Perjuangan, Indonesia
Corresponding author: Yanti

ABSTRACT : *The issue of climate change related to carbon emissions has become an alarming global phenomenon. The manufacturing sector contributes significantly to global greenhouse gas emissions. Therefore, efforts to mitigate climate change through the implementation of green taxes and Social Responsibility Programs are important for manufacturing industry. This research aims to analyze the effect of implementing green tax and Social Responsibility Programs on environmentally sustainable development in manufacturing industry. A quantitative approach is used with the research object of manufacturing industry listed on the Indonesia Stock Exchange in 2020-2022. Analyzed using Partial Least Square (PLS) method. The research results show that the implementation of green tax has a significant effect on environmentally sustainable development, while Social Responsibility Programs do not have a significant effect. These findings indicate that green tax policies are effective in encouraging companies to switch to more environmentally friendly business practices, but Social Responsibility Programs have not been fully integrated with environmental sustainability efforts. This research contributes to the literature related to fiscal policy instruments and corporate social responsibility practices in supporting environmentally sound sustainable development in the manufacturing sector.*

KEYWORDS: *Green tax; Social responsibility; Environmentally sustainable development; Manufacturing industry*

I. INTRODUCTION

Climate change related to carbon emissions has become a global phenomenon and a serious issue at present. Awareness of the gap between the level of economic prosperity and the level of environmental pollution continues to be a concern worldwide (Padilla-lozano & Collazzo, 2022). Industrialization, which is marked by the expansion of industrial activities within company activities that focus on the single goal of seeking profit, means that in every industrial activity, the financial aspect is prioritized by generating the highest possible profit (Agustina et al., 2019). However, increased industrial productivity is often achieved by neglecting social values, causing dangerous consequences for environmental sustainability. (Garcia-Lamarca et al., 2021). However, increased industrial productivity is often achieved by neglecting social values, resulting in adverse effects on the environment (Garcia-Lamarca et al., 2021). In 2023, the Intergovernmental Panel on Climate Change (IPCC) stated that the manufacturing sector contributed to the global increase in greenhouse gas emissions. Meanwhile, the European Commission revealed that the inventory of greenhouse gases not only includes carbon dioxide (CO₂) emissions but also other gases such as dinitrogen oxide (N₂O), methane (CH₄), and fluorinated gases (F gases) (Singh & Gahlot, 2023). These gases are the largest contributors to GHGs in the atmosphere, causing global warming. Pollutants in waste pose a serious threat to environmental sustainability (Lasmini et al., 2022). The industrial sector contributes a very significant global carbon dioxide (CO₂) emission, with a percentage of 24% (14 GtCO₂-eq) of the total world GHG emissions (IPCC, 2023). The high carbon emissions from these manufacturing activities mainly come from the consumption and use of large amounts of energy. The burning of fossil fuels to produce electricity and heat in the manufacturing production process is the main source of greenhouse gas emissions. Based on the Environmental Performance Index released in 2022, the condition of environmental sustainability and protection in Indonesia is still considered very poor. Indonesia's score and ranking are relatively low, both in global comparison and among Asia-Pacific countries (Ahdiat, 2022).

Environmental sustainability has emerged as the paramount priority in striking an equilibrium between economic prosperity, societal well-being, and ecological conservation. The issue of sustainable environment

regarding global warming is related to many things, including the implementation of green tax and economic growth. Conversely, economic development also depends on the activities of the manufacturing sector. This causes a dilemma (trade-off) between economic growth and environmental preservation. The manufacturing industry plays a crucial role in this change because the rapid and consistent increase in manufacturing sector activities has put tremendous The immense stress imposed on environmental conditions, nature's bounties, and the social fabric of humanity (Sadiq et al., 2023) .

Companies have social responsibility as an effort to realize sustainable environmental development. One of them is through social responsibility activities, which are the company's way of communicating with its environment. Corporate social responsibility is a principle that mandates businesses to prioritize the triple bottom line approach, encompassing societal, financial, and ecological considerations (Sabrina, 2022).). This concept requires companies not only to prioritize economic profits in their operations, But also to pay attention to and solve social and environmental problems as a form of responsibility in carrying out business activities. Social responsibility encourages companies to run a sustainable and ethical business by balancing social, economic, and environmental aspects.

One of the policy instruments that can be implemented in mitigation efforts by manufacturing industry to support environmentally sustainable development is the green tax, which is the implementation of taxes for production activities that are not environmentally friendly. Meanwhile, Social Responsibility Programs such as environmental conservation, energy efficiency, and recycling are part of the company's social responsibility toward the environment. The combination of the government's green tax policy implementation and the increase in Social Responsibility Programs by companies is expected to encourage manufacturing industry to transform toward a more environmentally sustainable business.

There has been a lot of research on green tax and social responsibility, but previous studies have mostly analyzed green tax and social responsibility separately towards environmentally sustainable development. Research conducted by (Wahyuningsih, Muyassaroh, & Eka, 2021) explains that this green tax policy is motivated by the increasing environmental damage due to waste pollution and emissions produced by the activities of several large industries that do not prioritize environmentally friendly aspects. This is in line with the research of (Yuliasih & Susetyo, 2020) that in environmentally friendly operational practices and environmental management certification, the implementation is still low. Therefore, encouragement is needed for the industrial sector to gradually implement environmental standards and prioritize sustainability aspects. Most of the literature on the implementation of green tax and corporate social responsibility comes from developed countries. Empirical research in developing countries is still very limited. Previous research has not extensively linked the implementation of green tax and social responsibility with the achievement of environmentally sustainable goals, so it needs to be further investigated.

Based on the explanation in the background, the research questions in this study are:

RQ1: How does the implementation of green tax influence environmentally sustainable development in manufacturing industry?

RQ2: How does social responsibility activity influence environmentally sustainable development in manufacturing industry?

II. LITERATURE REVIEW HIPOTESIS DEVELOPMENT

Green economy Theory

The notion of a green economy amalgamates economic, environmental, and societal tenets to foster holistic, sustainable progress (Makmun, 2020). The concept of the green economy was first introduced in 1989 through a book titled "Blueprint for a Green Economy" written by Edward Barbier (Nugraha et al., 2024). UNEP defines the green economy as an economic system that balances long-term social welfare improvement, economic sustainability, and environmental protection and social aspects (Gibbs & O'Neill, 2017). Social responsibility has become the strategic focus of a number of companies (Shen & Lin, 2022). The green economy strategy aims to develop the carbon market, promote environmentally friendly technological innovation, and increase efficient and low-carbon emission investments (Margono et al., 2022). In its implementation, the motivation for companies to carry out environmentally friendly activities is driven by many factors (Tathiana & Taihito, n.d.). To realize a green economy, policies are needed that regulate the use of natural resources and environmental management in a proper and wise manner.

The green economy theory serves as a theoretical basis for explaining the relationship between business practices, the environment, and sustainable development. One of the policy instruments in the green economy is the green tax, which aims to reduce negative impacts on the environment (Empiris et al., 2022). Social responsibility is one of the responsibilities carried out by companies to be able to behave ethically, as an effort to maximize the positive impact on economic, social and environmental aspects (Novianti Arnas et al., 2019). Sustainable development efforts are one form of environmental preservation amidst the many economic and social developments (Hernimawati et al., 2020). Current climate change and global warming demand a transformation towards a more sustainable and socially inclusive green economy with the participation of

various stakeholders to realize a balanced economic activity system in terms of economy, social, and environment (Hepburn et al., 2021)

Environmental Accounting

Environmental accounting represents a strategic initiative that integrates environmental cost implications within the accounting procedures embraced by corporations and governmental entities (Wijayanto et al., 2021). Improving environmental performance encourages companies to increase disclosure of information measuring business activities, the results of which are reported to stakeholders (Yanti et al., 2022). Therefore, companies must be able to develop into organizations that can generate direct benefits for the community (Kurniadi & Wardoyo, 2022). Environmental accounting is important to help business entities and stakeholders understand the role of ecosystems in supporting long-term operational sustainability (Wijayanto et al., 2021). Within the realm of environmental accounting, terminologies such as "full," "total," "true," and "life cycle" are employed to underscore the notion that conventional accounting methodologies are deficient, as they neglect to factor in costs associated with environmental implications (Unud, n.d.). In addition, the integration of environmental costs into the accounting system of manufacturing industry is expected to encourage accountability and transparency of their social and environmental impacts, as well as open up opportunities for environmentally friendly product and process innovation (Wahyuningsih, Muyassaroh, & Eka, 2021). Environmental accounting can improve the position and credibility of a business, which has a lasting positive impact (Ye, 2023). The application of environmental accounting allows management to make strategic decisions that are responsible for environmental sustainability, while increasing company valuation by evaluating the extent to which the scope of environmental accounting implementation has encouraged social accountability of manufacturing industry.

Green tax

Organization for Economic Cooperation and Development defines a green tax as a form of levy imposed on certain economic units whose activities can have an impact on environmental conditions (Kumala et al., 2021). Tax in its operational function is intended to regulate and implement government policies in the implementation of social and economic policies (Studi, Fakultas, et al., 2022). Taxation has been used as an instrument to control and prevent environmental damage (Irianto et al., 2018). In this case, the green tax is a concept with the application of the polluter pays principle, including transportation taxes, pollution taxes, carbon taxes, energy taxes, and natural resource taxes (Mpofu, 2022). A green tax is a fiscally neutral levy that offers three potential advantages: enhancing environmental quality, minimizing tax burdens, and bolstering job creation (Kurniadi & Wardoyo, 2022). The preparation of the green tax has two considerations, including the balance of emission measurement and the set tax rate (Mitta & Budi, 2022). To implement corporate social responsibility policies and sustainable development, companies need to integrate environmental considerations into every business decision and focus on achieving net zero emission targets. The green tax is used as one mechanism to increase environmental conservation efforts (incentives) and to prevent and address environmental damage and pollution (disincentives) to ecosystems to encourage reduction of pollution and unsustainable use of natural resources by providing financial incentives that direct individuals, businesses, or industries to switch to more environmentally friendly practices (Putra & Adry, 2022).

Social Responsibility

Social responsibility is the obligation of a company to make a positive contribution to society through sustainable business practices (Apriani & Khairani, 2023). Social responsibility is a matter of social virtue, and its basis is voluntary (Agustina et al., 2019). Social responsibility is utilized as an effort to maintain good relations with all parties related to the company, both internal and external (Yuliasih & Susetyo, 2020). The level of social responsibility affects the improvement of the company's economic performance results (Oktamayuni, 2021). However, waste and emissions produced by companies often have an impact on the company's environment, reflecting inefficient operations (Wijayanto et al., 2021). Consequently, embracing social responsibility initiatives presents an opportune avenue to enhance environmental management performance, concurrently fulfilling the mandates of environmental conservation (Padilla-lozano & Collazzo, 2022). The role and obligations of companies regarding social responsibility increase awareness of social issues and environmental damage (Khan et al., 2021). Social Responsibility Programs have an impact on the company's image in the eyes of the community and improve the company's economic performance (Yuliasih & Susetyo, 2020). The scope of social responsibility according to (Novianti Arnas et al., 2019) is a very broad and complex environment, especially to realize community development from various fields and pay attention to the environment in an effort to achieve environmentally sustainable development.

Environmentally Sustainable Development

The World Commission on Environment and Development (WCED) has delineated the tenets of sustainable development, placing emphasis on environmental conservation and the concurrent pursuit of economic and societal sustainability. Sustainable development is defined as an ongoing development process that takes into account the natural resources used within reasonable limits and shifts to more environmentally friendly natural resources (Sabrina, 2022). The encouragement to integrate sustainable technology is an effort to support sustainable development (Wahyuningsih, Muyassaroh, & Eka, 2021). Sustainable development goals include providing opportunities for people to live in peace, reducing poverty and hunger, improving global health, and protecting the environment (Bórawski et al., 2022). Sustainable development also emphasizes the importance of strategic capabilities leading to product management, pollution prevention, and sustainable development, as well as how strategic capabilities lead to competitive advantage (Rehman et al., 2022). Sustainable development is the result of social development and economic growth that significantly affects policy choices (Proses & Dan, 2019). This sustainable development is intended as a form of rejection of current activities that damage the future environment. Sustainable development focuses on pursuing growth and progress in a manner that fulfills socio-economic requirements while simultaneously mitigating severe detrimental effects that endanger the environment and deplete natural resources (Bórawski et al., 2022). The pursuit of sustainable development underscores the critical need to harmonize environmental conservation, equitable social policies, and economic advancement into a cohesive and balanced approach (Mpofu, 2022). Sustainable development efforts balance the need to improve environmental well-being while obtaining social and economic benefits.

III. RESEARCH FRAMEWORK AND HIPOTESIS DEVELOPMENT

Research Framework

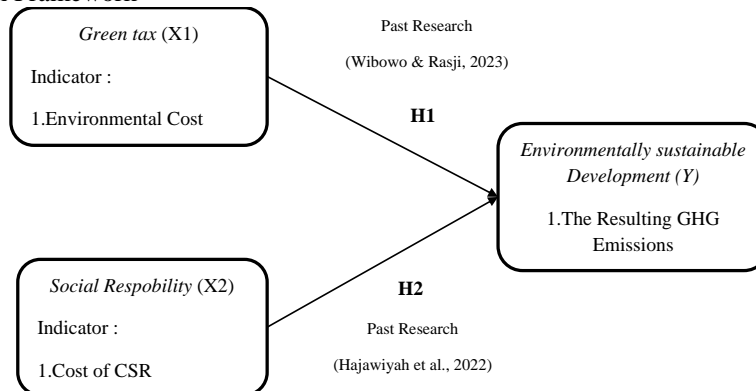


Figure 1. Conceptual Framework

Research Hypotheses

The effect of green tax implementation on environmentally sustainable development in the manufacturing industry

The green tax is an environmentally friendly fiscal policy instrument that can help internalize the costs due to carbon emissions in the industrial sector. The implementation of the green tax policy increases company competitiveness with sustainable business practices (Wibowo & Rasji, 2023). Green taxation serves as an incentive for corporations to bolster their investments in eco-friendly initiatives, curtail pollutant discharges, and enhance their overall environmental sustainability practices (Empiris et al., 2022). The green tax policy aims to promote renewable energy so manufacturing industry that implement environmentally sustainable development, such as energy efficiency, the use of renewable energy, contribute to climate change mitigation. The implementation of an ecological-based taxation scheme such as the green tax has a positive impact in supporting business actors to protect the environment (Wahyuningsih, Muyassaroh, & Eka, 2021). With the effective implementation of the green tax, It yields beneficial effects on the enhancement of environmentally sustainable practices and outcomes Manufacturing industry will switch to more environmentally friendly production processes, utilize renewable raw materials, or implement better recycling. The research results (Mpofu, 2022) state that the green tax policy can direct the behavior of the industrial and public sectors to be more responsible for nature conservation, which is in line with research conducted (Studi, Akuntansi, et al., 2022) regarding the implementation of the green tax policy has effectiveness in suppressing the rate of GHG emissions as an effort to mitigate climate change. The research results (Aristantia, 2021). Overall, Green taxation serves as a crucial policy tool in the endeavors to curb greenhouse gas emissions and foster the toward transition an economy with minimal carbon footprint. Environmentally sustainable development is an indicator of the success of manufacturing industry in integrating the principles of sustainable development in business practices for mitigating the impact of production on climate change.

Based on the description above, the hypothesis proposed in this study is:

H1: The implementation of green tax has a significant effect on the environmentally sustainable development of manufacturing industry.

The Effect of Social Responsibility Programs on Environmentally Sustainable Development in Manufacturing Industry

Social responsibility is the company's commitment to fulfill its responsibilities to society and the environment in operating economically, socially, and environmentally. The obligation to carry out social responsibility is the right of a business entity whose main job is related to natural resources, energy utilization, and environmental damage (Irianto et al., 2018). Social Responsibility Programs provide social legitimacy and support from stakeholders to companies to implement environmental sustainability practices (Agustina et al., 2019). States that the commitment of a number of companies to implement social responsibility shows a contribution to the achievement of sustainable development goals in the future. Social responsibility ensures that the company's operational and production processes are environmentally friendly and pay attention to affected communities, which is realized through various activities (Novianti Arnas et al., 2019). This is in line with the research of (Marsdenia & Martani, 2018) that Social Responsibility Programs have a positive effect on the environment, the higher the company's social responsibility performance, the better the company's environmental sustainability practices. By implementing social responsibility activities, companies can contribute to efforts to address climate change through strategic steps to control greenhouse gas emissions (Hajawiyah et al., 2022). To achieve environmentally sustainable development, one of the community empowerment programs that can be carried out by companies is CSR (Yuliasih & Susetyo, 2020). The achievement of environmentally sustainable development shows a balance between the economic interests of the company and long-term ecological sustainability. Thus, social responsibility has a strategic role for the efforts of manufacturing industry in realizing environmentally friendly sustainable development as part of mitigating global climate change.

Based on the description above, the hypothesis proposed in this study is:

H2: The implementation of Social Responsibility Programs a positive effect on the achievement of environmentally sustainable development in manufacturing industry.

RESEARCH METHODS

This study employed a quantitative approach. The objects used in this research were manufacturing industry listed on the Indonesia Stock Exchange from 2020 to 2022, sourced from the website www.idx.co.id, with a total sample of 99 companies. The sampling method utilized criteria with a purposive sampling model. Data collection was conducted through library research, recording data listed on the IDX obtained through the annual report web page, which could be used to calculate environmental costs, environmental performance costs, and Social Responsibility. The collected data were analyzed using the Smart PLS (Partial Least Square) test tool, consisting of Measurement Model analysis, structural analysis, and hypothesis testing.

V. RESULTS AND DISCUSSION

Table 1. Hypothesis Testing Results

	Original Sample (O)	Sample Mean (M)	Coefficient Intervals		Standard Deviation (STDEV)	T Statistic (IO/STDEVI)	P Values
			2.5%	97.5%			
GT -> ESD	0.321	0.302	-0.018	0.513	0.124	2.591	0.010
SR -> ESD	0.016	0.017	-0.117	0.179	0.073	0.219	0.827

Source: Data processed (2024)

Based on the path coefficient, t-statistic, and p-value, it can be seen that Green tax has a significant positive influence on Environmentally Sustainable Development with a t-statistic value of $2.591 > 1.96$ and a p-value of $0.010 < 0.05$. Within a 95% confidence interval, the influence of green tax on environmentally sustainable development lies between -0.018 and 0.513 . Meanwhile, Social Responsibility does not have a significant influence on Environmentally Sustainable Development with a t-statistic value of $0.219 < 1.96$ and a p-value of $0.827 > 0.05$. Within a 95% confidence interval, the influence of social responsibility on environmentally sustainable development lies between -0.117 and 0.179 .

The Impact of Green tax Implementation on Environmentally Sustainable Development in Manufacturing industry

The hypothesis testing results in this study prove that the implementation of the green tax policy has a significant influence on the achievement of environmentally sustainable development in manufacturing industry. This conclusion is supported by the data from the path coefficient test results, which show a t-statistic value of 2.591, where this figure is greater than the reference value of 1.96 at a 5% significance level (alpha). Additionally, the P-value of 0.010 is also smaller than the 0.05 threshold. Consequently, the H1 hypothesis postulated in this research can be upheld, leading to the conclusion that the imposition of green taxation exerts a statistically significant influence on the advancement of environmentally sustainable practices within manufacturing enterprises. Tax policies and regulations have the potential to be utilized as instruments in encouraging or inhibiting certain activities. The green tax is implemented as an effort to prevent environmentally damaging actions, whether carried out by the community or companies. Therefore, the implementation of this green tax is expected to encourage decision-making and actions that are more environmentally conscious, which is an important aspect of environmentally sustainable development for a company (Wahyuningsih, Muyassaroh, & Eka, 2021). This finding is in line with the theory that green tax refers to the introduction of taxes imposed on activities that produce carbon emissions and pollution, as well as activities that pollute the environment (Aristantia, 2021). This finding is also consistent with previous research (Wahyuningsih, Muyassaroh, Faizal, et al., 2021) showing green tax as an environmental economic instrument in realizing sustainable and environmentally friendly development. The implementation of green tax by companies is a manifestation of their responsibility in preserving the environment (Hernimawati et al., 2020).

The Influence of Social Responsibility Programs on Environmentally Sustainable Development in Manufacturing industry

The hypothesis testing results in this study prove that Social Responsibility Programs don't have a significant influence on environmentally sustainable development in manufacturing industry. This conclusion is supported by the data from the path coefficient test results, The findings reveal a t-statistic value of 0.219 for the relationship examined, which falls below the reference threshold of 1.96 at the 5% significance level (alpha = 0.05). Moreover, the associated P-value of 0.827 exceeds the 0.05 cut-off criterion. Given these statistical results that fail to meet the required thresholds, the H1 hypothesis proposed in this study lacks sufficient evidence for acceptance and must consequently be rejected. It can be concluded that Social Responsibility Programs do not significantly influence environmentally sustainable development in manufacturing industry. Social Responsibility Programs provide benefits by strengthening the relationship between companies, communities, and the surrounding environment (Padilla-lozano & Collazzo, 2022). Companies are not limited to the internal scope of the company, but also include the surrounding community and involve various other stakeholders. The parties involved include business partners, suppliers, customers, government authorities, and non-governmental organizations representing the interests of local communities and the environment. However, the implementation of Social Responsibility Programs does not necessarily guarantee the achievement of environmental sustainability. The scope of corporate social responsibility is very broad and complex, especially in efforts to integrate societal developments from various fields while paying attention to environmental sustainability to realize sustainable development. This finding contradicts the theory of the green economy, which has a vision of sustainable development that combines economic efficiency and environmental responsibility (Nugraha et al., 2024). This finding also contradicts the research hypothesis built based on previous studies, such as a study conducted by (Yuliasih & Susetyo, 2020) To achieve environmentally sustainable development, one of the community empowerment programs is Social Responsibility Programs that can be carried out by companies.

One possible reason for the insignificant influence of social responsibility on environmentally sustainable development in this study is that the Social Responsibility Programs carried out by manufacturing industry focus more on the social and community aspects, These factors encompass initiatives aimed at empowering local communities as well as assessing and managing the direct ramifications of the company's operational activities on the social conditions, traditional customs, and cultural fabric of the local communities situated in close proximity (Junarto, 2023). Another possibility is that environmental-related Social Responsibility Programs are still symbolic or only an effort to build a positive company image (Iswati & Setiawan, 2020).

IV. CONCLUSION

The conclusion of this research is that the implementation of the green tax has a significant positive influence on environmentally sustainable development in manufacturing industry. The green tax is implemented as an effort to prevent environmentally damaging actions, whether carried out by the community or companies. Therefore, the implementation of this green tax is expected to encourage decision-making and actions that are

more environmentally conscious. Meanwhile, Social Responsibility Programs don't have a significant influence on environmentally sustainable development in manufacturing industry. This result rejects the research hypothesis and differs from previous research findings; the implementation of Social Responsibility Programs does not necessarily guarantee the achievement of environmental sustainability. The scope of social responsibility is a very broad and complex area, especially in terms of integrating societal developments from various fields and paying attention to environmental sustainability in the effort to achieve sustainable development. Furthermore, there are several contributions from this research that can be used to add to the research literature on green tax, social responsibility, and environmentally sustainable development.

There are several limitations to this research. First, this research only focuses on manufacturing industry, so generalization to other sectors needs to be done. Second, the social responsibility variable in this research is measured generally. Future research is suggested to add or replace variables that can influence environmentally sustainable development, such as financial performance and corporate governance, and expand the sample scope to other sectors to obtain more accurate and consistent research results from the variables used

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