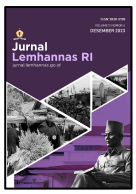

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Carbon Tax Transformation Strategy in Sustainable Economic Development towards Green Economy in Indonesia

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Abstract

Purpose: This study aims to analyze Indonesia's carbon tax policy in supporting the transformation to a sustainable green economy. The study focuses on reducing carbon emissions as well as increasing state revenue as strategic aspects of carbon tax implementation.

Study Design/Methodology/Approach: This research uses a descriptive qualitative approach with a literature study method. Secondary data was obtained from relevant books, journals, news, and websites. Analysis was conducted using the Miles and Huberman method, which includes data collection, data reduction, data presentation, and conclusion drawing.

Findings: The results show that carbon tax has the potential to be an effective instrument in supporting green economy transformation by reducing carbon emissions and increasing state revenue. However, this policy faces challenges, such as public resistance, political barriers, and its impact on certain economic sectors. Therefore, strong regulations and supporting policies are needed to ensure effective implementation.

Originality/Value: This research contributes to understanding carbon tax policy as a sustainability instrument in Indonesia. Practical implications include the need for a phased and inclusive approach to ensure policy effectiveness and sustainability. Further research can be conducted to explore the impact of carbon tax on strategic economic sectors to ensure optimal implementation.

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INTRODUCTION

The problem of global warming remains a major challenge that requires long-term solutions to reduce its impact or at least slow down the accumulation of greenhouse gases in the atmosphere, including carbon dioxide resulting from human activities such as fossil fuel combustion and deforestation. Two alternative solutions are removing carbon from the atmosphere and reducing greenhouse gas production. In addition, international cooperation such as the Paris Agreement was also initiated as a collective effort to deal with this problem (Aristantia, 2021). The agreement was approved by 196 countries and officially came into force in November 2016 after receiving ratification from all countries. In Indonesia, the Paris Agreement was ratified through Law No. 16 of 2016. Implementation of the Paris Agreement began in 2020 as a step to reduce carbon emissions (Harinowo, 2022).

Despite these international commitments, Indonesia continues to face structural and policy-related challenges in reducing carbon emissions effectively. The country's dependence on coal as the primary energy source, combined with industrial and transportation sector emissions, has made achieving the Paris Agreement targets more difficult. Additionally, the economic implications of transitioning to a low-carbon economy remain a concern, particularly regarding the potential economic downturn in carbon-intensive industries and its impact on employment and investment flows. These factors indicate that a comprehensive policy framework, including a well-designed carbon tax, is essential to balance economic growth and environmental sustainability.

In 2023, Indonesia remains one of the largest carbon emitters in the world, mainly from the fossil energy sector and land use change. From the fossil energy sector, carbon emissions are still high, while from the land use change sector, the contribution reaches 43.59% of total emissions. As of July 2023, Indonesia managed to reduce carbon emissions by 118 million tons, which is 32.9% of the annual target of 358 million tons (Madaniberkelanjutan.id, n.d.). This was done through various measures such as the use of renewable energy, household electrification, and nature conservation and restoration (Zahira, 2023). In addition, Indonesia has committed to reducing carbon emissions by 29% independently and up to 41% with international assistance by 2030. This commitment was made at the Climate Change Conference in Copenhagen as part of the global effort to tackle the greenhouse effect (Saputri et al., 2024).

While these reductions indicate progress, there are still significant gaps in policy execution and enforcement, particularly in ensuring that carbon reduction strategies align with Indonesia’s economic resilience and energy security. The need for policy coherence and inter-agency coordination is crucial, as fragmented policies often result in ineffective

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implementation and overlapping regulations. Furthermore, the lack of financial incentives for industries to transition towards greener energy sources remains a major hurdle.

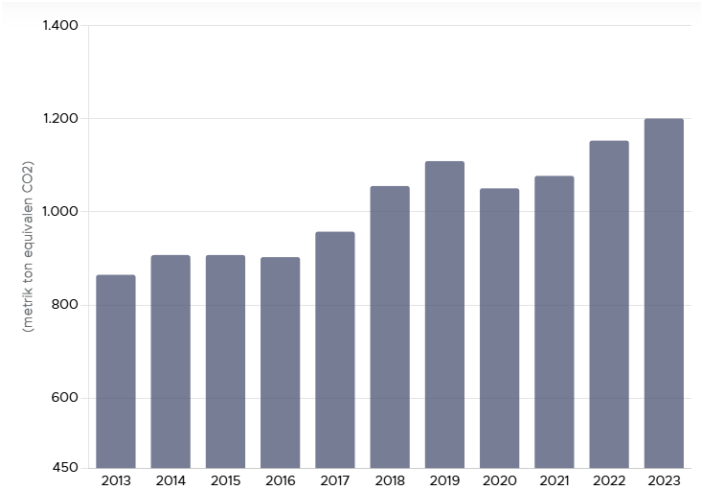

Figure 1. Indonesia's Greenhouse Gas Emissions 2013-2023

Source: (Alfathi, 2024)

To address these challenges, the Indonesian government has enacted a carbon tax policy as a measure to reduce greenhouse gas (GHG) emissions. This policy was enacted on October 7, 2021 through the Harmonization of Tax Regulations Law (HPP Law) Number 7 of 2021 by the Indonesian Ministry of Finance. A carbon tax is a type of tax imposed on the use of fossil fuels to reduce the negative impacts of GHG emissions, such as climate change and air pollution. With the implementation of this tax, the increased cost of fossil fuels is expected to reduce demand for their use (Saputri et al., 2024). Chapter VI Article 13 initially set the amount of carbon tax at IDR 75.00 per kilogram of CO2 emissions. However, after much debate, the value was revised to IDR 30.00 per kilogram or equivalent unit on October 29, 2021. This policy is not only aimed at controlling negative impacts on the environment, but is also expected to increase state revenue and support economic development. In addition, this policy encourages industries to transform into green companies by reducing carbon use (Aulia & Pasha, 2024).

However, the effectiveness of the carbon tax remains questionable, given the relatively low tax rate and delayed implementation timeline. Critics argue that IDR 30.00 per kilogram of CO2 is insufficient to incentivize businesses to shift towards low-carbon alternatives. Additionally, the scope of industries covered under the carbon tax remains limited, as it initially applies only to coal-fired power plants. This raises concerns regarding its overall impact on emission reductions and the broader industrial sector.

E-ISSN: 2830-5728

Moreover, public opposition and lobbying efforts from fossil fuel industries have further complicated the process, leading to policy delays and uncertainties in implementation.

Climate control in Indonesia, especially to achieve carbon-neutral targets, requires a huge investment. Minister of Finance Sri Mulyani mentioned that the investment needs reached 365 billion US dollars, with the government's contribution amounting to 26%. If the carbon dioxide emission reduction target is raised to 41%, investment needs are projected to increase to 479 billion US dollars. Nonetheless, the implementation of a carbon tax reflects the government's commitment to reduce greenhouse gas (GHG) emissions by 29% on its own or up to 41% with international support. However, the implementation of the carbon tax originally scheduled for April 1, 2022, which was planned to apply only to coal-fired power plants, was postponed until 2025 (Aulia & Pasha, 2024). This delay was based on various considerations, including the impact of high economic growth on increasing carbon dioxide emissions (Wahyudi, 2023).

This delay has sparked concerns regarding Indonesia’s ability to meet its Nationally Determined Contributions (NDCs) under the Paris Agreement. Many climate policy experts argue that postponing the tax could lead to weaker enforcement mechanisms and diminished investor confidence in Indonesia’s green economy transition. Additionally, the delayed timeline increases the risk of policy inconsistencies, particularly as new administrations may introduce policy revisions that could undermine the carbon tax's intended objectives.

Based on the explanation above, this study aims to analyze Indonesia’s carbon tax policy as an instrument to control greenhouse gas (GHG) emissions in supporting the transition to a green economy. Through this study, it is expected to identify the potential and challenges faced in implementing the policy, as well as strategies that can be adopted to ensure its success. The study also aims to explore how the implementation of a carbon tax can contribute to a significant reduction in carbon emissions, encourage the transformation of industries to become more environmentally friendly (green companies), and support sustainable economic development.

Furthermore, this research seeks to highlight the security and economic risks associated with delayed carbon tax implementation, particularly in energy-dependent sectors and carbon-intensive industries. By understanding these risks and opportunities, this study aims to provide relevant recommendations for policymakers and stakeholders in an effort to achieve Indonesia's carbon-neutral target by 2060, while ensuring economic resilience and energy security in the process.

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E-ISSN: 2830-5728

Literature Review

Carbon Tax

Carbon tax is one of the policy instruments implemented to address greenhouse gas (GHG) emissions, particularly carbon dioxide (CO2), resulting from production and consumption activities. This instrument aims to provide economic incentives to businesses and communities to reduce GHG emissions. Carbon tax encourages behavior change by imposing additional taxes on activities or products that produce carbon emissions (Pandey, F., Kuntjoro, Y. D., Uksan, A., & Sundari, S, 2022). Meanwhile, according to Tjoanto & Tambunan (2022), a carbon tax provides clarity regarding the costs that must be borne and does not set a specific limit on emissions. In addition, this instrument is relatively easy to design and manage because the government already has experience in implementing various types of taxes. However, a report by the United Nations (2021) states that one of the weaknesses of a carbon tax is the need for periodic adjustments to the rate in order to achieve the expected emission reduction target.

Specifically, a carbon tax has several objectives, including (Nabilah, 2023):

a) Provide economic incentives. A carbon tax is designed to provide economic pressure that encourages companies and individuals to reduce GHG emissions. By taxing activities that generate emissions, the government creates financial motivation for businesses to shift to cleaner and greener practices.

b) Encourage the use of renewable energy. A carbon tax aims to accelerate the transition from fossil fuel use to renewable energy. A tax burden on carbon emissions creates an economic incentive for producers and consumers to choose more sustainable energy sources.

c) Reduce dependence on fossil fuels. By taxing the use of fossil fuels, this policy seeks to reduce society's dependence on these energy sources, which are major contributors to GHG emissions. The government utilizes this instrument to encourage the search for and adoption of cleaner energy alternatives.

d) Generate revenue for environmental projects. Revenue raised from carbon taxes can be allocated to support various environmental projects, such as investments in renewable energy, emission reduction programs, or other sustainable development initiatives. This creates an additional source of funds that can strengthen environmental protection efforts.

Green Economy

The Green Economy concept is an approach to economic development that emphasizes a balance between economic growth, environmental conservation, and

E-ISSN: 2830-5728

improved social welfare. This concept is often associated with efforts to realize sustainable development by integrating economic, social and environmental aspects. Green Economy involves various practices, such as the use of renewable energy, reducing pollution, and implementing recycling systems (Rahmawati & Bayangkara, 2024).

The main principles in the Green Economy include several things, among others: efficiency in the sustainable use of natural resources, reduction of greenhouse gas emissions and other pollutants, investment in the development and utilization of renewable energy such as solar, wind, and water, innovation in environmentally friendly technologies, and preservation of biodiversity and natural ecosystems. More than just environmentally friendly practices, the Green Economy also involves social and economic aspects, such as green job creation, poverty alleviation, and sustainable infrastructure development.

The green economy concept has an important role as a policy guide in sustainable development. This approach integrates ecological aspects at both local and global levels, while adjusting to long-term dynamics and challenges. The green economy is a model of economic growth that is not only in line with environmental conservation, but also focuses on improving the quality of the ecosystem as a whole (Adiba et al., 2024). From a scientific perspective, this concept involves the development of innovative technologies and environmentally friendly industrial sectors. The goal is to create a better environment, improve its quality, and reduce the potential risks of possible environmental threats (Lumbanraja & Lumbanraja, 2023).

Greenhouse Gas Emissions

The greenhouse effect is a phenomenon in which gases such as carbon dioxide, methane and water vapor in the Earth's atmosphere trap some of the sun's heat reflected back from the Earth's surface. This effect plays an important role in keeping the Earth's temperature warm enough to support life. Without the greenhouse effect, the average temperature on Earth would be very low, creating conditions that are not ideal or even possible for the survival of life as it exists today (Irma & Gusmira, 2024). Carbon gas produced by burning fossil energy sources, such as coal, oil and organic materials, is one of the main causes of greenhouse gas emissions. Various factors influence these emissions, with industrial activity being one of the biggest contributors. Greenhouse gas emissions also result from deforestation, transportation pollution, and the accumulation and burning of waste. The higher the energy consumption, the greater the greenhouse gas emissions. The industrial sector has a dominant role in creating greenhouse gas emissions, which come from various activities, such as the agricultural industry, livestock, industrial waste, household waste, and other activities (Tauran et al., 2024).

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E-ISSN: 2830-5728

Sustainable Economic Development

The concept of sustainable development has received various criticisms and undergone diverse interpretations throughout time, making it one of the most frequently referenced concepts in the literature. The essence of sustainable development is rooted in the Triple Bottom Line principle, which emphasizes the importance of maintaining a balance between three main pillars: achieving economic returns (profit), social responsibility, and environmental preservation. Comprehensive sustainable development can only be realized if these three pillars can be kept in balance (Klarin, 2018).

Implicitly, there are two main aspects that are the focus of this concept, namely the importance of considering the limitations of natural resources and environmental impacts on development and consumption patterns, and the importance of maintaining well-being for future generations. Thus, the principle of sustainable development results in three axioms, namely: (a) treatment of the present and future that provides positive value in the long term, (b) understanding that environmental assets contribute to economic welfare, and (c) awareness of the limits caused by impacts on environmental assets (Solechah & Sugito, 2023).

METHODS

In writing this paper, the author uses a descriptive qualitative approach with a literature study method, utilizing secondary data from various sources such as books, national and international journals, policy documents, news articles, and government reports relevant to the topic of carbon tax. This research aims to explore various perspectives on carbon tax implementation, including viewpoints from academia, government institutions, industry, and the general public, to provide a comprehensive understanding of the issue (Karimah et al., 2024).

To ensure the credibility and reliability of the data, this study prioritizes sources that are peer-reviewed and published in reputable journals, while also incorporating policy documents from governmental and international institutions such as the Indonesian Ministry of Finance, the World Bank, and the United Nations Climate Reports. Additionally, this study examines comparative case studies from countries that have successfully implemented carbon taxes, such as Sweden, Canada, and Singapore, to evaluate potential economic and political challenges Indonesia might face.

The selection of literature follows a systematic review approach, where sources were screened based on relevance, publication year (2018-2024), and methodological rigor. The research process includes data collection, data reduction, data presentation, and

E-ISSN: 2830-5728

conclusion drawing, following the framework of Miles and Huberman (2014) (Assyakurrohim et al., 2023). The data collection stage involves gathering literature from credible sources, including policy papers, scholarly articles, and environmental reports. In the data reduction process, information is filtered and categorized based on its relevance to the research objectives, ensuring that only significant data is retained. The data presentation stage structures the findings into thematic categories, highlighting key issues such as the economic impact of carbon tax, policy challenges, and global best practices. Finally, in the conclusion drawing phase, findings are synthesized into actionable insights, which are then validated through cross-referencing with existing studies and empirical reports (Pringgar & Sujatmiko, 2020).

To provide a more structured policy evaluation, this study applies frameworks such as Cost-Benefit Analysis (CBA) and Stakeholder Analysis to assess the potential economic and social implications of a carbon tax in Indonesia. The CBA framework is used to analyze whether the economic benefits of emission reduction outweigh the potential economic drawbacks for industries. Meanwhile, Stakeholder Analysis helps identify resistance and support from key actors, including government agencies, business associations, environmental organizations, and the general public.

To enhance the validity and reliability of this study, a triangulation method was applied by comparing findings from multiple data sources, ensuring that the study does not rely on a single perspective but instead incorporates viewpoints from economic, environmental, and policy-based frameworks. Additionally, bias reduction strategies were implemented by critically evaluating the methodological limitations of the reviewed studies, ensuring a balanced discussion.

While this study primarily employs a qualitative approach, future research could integrate quantitative data analysis, such as economic modeling or impact assessment metrics, to provide a more empirical evaluation of carbon tax policies. This would allow for a robust policy recommendation framework, particularly in assessing the cost-benefit implications of carbon tax implementation in Indonesia.

By adopting this methodological approach, the study aims to provide a comprehensive and well-validated analysis of the potential and challenges of carbon tax policies in Indonesia. Furthermore, this research is expected to contribute to a broader discourse on environmental taxation, sustainable economic development, and climate change mitigation strategies by offering evidence-based insights that are applicable to both policymakers and academics.

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E-ISSN: 2830-5728

RESULT AND DISCUSSION

Opportunities and Benefits of Carbon Tax Implementation in Indonesia

Carbon tax has the opportunity to increase state revenue through the cash value generated from carbon emissions on the taxable object. The funds collected from this tax can be utilized to support the development of environmentally friendly technologies and provide assistance to people with vulnerable economic conditions. If managed properly and in accordance with its original purpose, carbon tax can be in line with the principles of Islamic Economics that are oriented towards the welfare of society. From a justice perspective, the establishment of carbon tax is done through a long process of discussion and socialization, and its implementation is designed in stages. This approach ensures that every impact of the carbon tax policy has been thoroughly considered, so that the final decision does not burden the parties involved (Ngatikoh & Faqih, 2020). However, in implementing a carbon tax, the government needs to determine which fuels or resources will be taxed and decide whether the tax will be applied at the upstream or downstream stage of the emission source (Dian, 2016). Upstream taxation, which involves fewer tax subjects, is considered more administratively efficient. In contrast, downstream taxation, such as on electricity consumption, can have a direct impact on consumers. However, this approach potentially incurs higher administrative costs (Achyar & Hakim, 2023).

Furthermore, a carbon tax has a range of significant benefits in supporting the energy transition towards more sustainable consumption and production patterns. One of the main benefits is its ability to reduce carbon emissions by creating economic incentives through increasing the price of carbon-based fuels. This policy encourages the energy, transportation and industrial sectors to gradually reduce their emissions. In addition, a carbon tax also stimulates the use of clean energy sources, such as renewable energy, by increasing their competitiveness against increasingly expensive fossil fuels. This contributes to the diversification of energy sources and reduces dependence on finite fossil fuels. Carbon taxes also play a role in driving low-carbon technology innovation and renewable energy development. The economic incentives generated from this policy encourage companies and individuals to seek more efficient and environmentally friendly solutions to reduce their emissions. As such, it spurs the development of technologies that support environmental sustainability. In addition, the revenue generated from the carbon tax can be allocated for various investments, such as sustainable infrastructure development, energy efficiency programs, renewable energy research and development, and support to sectors affected by this policy (Soekarno et al., 2024).

The implementation of a carbon tax in Indonesia reflects a strategic effort to support the transformation to a sustainable green economy. In the context of the social

E-ISSN: 2830-5728

characteristics of Indonesian society, this policy requires a cautious approach so that its impact can be optimally managed. As a first step, the government is focusing on the energy sector, particularly electricity production from coal-based power plants (PLTU), as the initial target of carbon tax implementation. This strategy allows the government to evaluate the effectiveness of the policy before gradually expanding its coverage to other sectors, taking into account the readiness of related sectors as well as national economic conditions at the time (Pratama et al., 2022).

This phased approach not only aims to significantly reduce carbon emissions in the long run but also provides incentives for economic actors to shift to the use of new renewable energy (EBT). By doing so, the carbon tax policy is able to encourage the transition to a more inclusive and sustainable green economy. This implementation is also in line with Indonesia's commitment to achieving the carbon emission reduction target as stated in the Nationally Determined Contribution (NDC), as well as supporting the achievement of broader sustainable development goals (SDGs). This strategy strengthens Indonesia's position in integrating economic development with environmental conservation, making it a model for the transformation to a low-carbon economy in the future.

Challenges in Implementing Carbon Tax in Indonesia

The implementation of a carbon tax in Indonesia is a strategic step to boost economic growth while reducing the carbon footprint that negatively impacts the global climate. From an economic perspective, Bahana Sekuritas in (ANTARA, 2021) estimates that the potential carbon tax revenue in the first year of implementation ranges from IDR29 trillion to IDR57 trillion, or equivalent to 0.2% to 0.3% of GDP. This estimate is based on the assumption of a tax rate of US$5-10 per tCO2 with 60% coverage of energy emissions. This step is in line with Indonesia's commitment in the Nationally Determined Contribution (NDC), which is to reduce emissions by 29% with domestic efforts and up to 41% with international support by 2030. However, there are various challenges that must be overcome in implementing this policy.

Then, there are three challenging factors that can hinder the process of implementing carbon tax in Indonesia. First, the political system and governance of government institutions. For example, in the rejection of members of parliament who have a conflict of interest, because they want to protect their business from the obligation to pay the tax. In addition, the attitude of politicians who tend to take a “wait and see” approach, waiting for how the public reacts to the carbon tax, is also an obstacle in accelerating the implementation of this policy (Tjoanto & Tambunan, 2022). Meanwhile, according to Dyarto & Setyawan, (2021) the government's lack of seriousness in

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eradicating corruption in Indonesia is also a factor that can reduce the level of public trust in the government. This creates additional challenges when introducing a carbon tax policy, and high public trust in the political system and government can facilitate public acceptance of carbon tax policies. Conversely, if this trust is low, the government will face difficulties in implementing the policy.

Second, the effect on business and economy. The impact of carbon tax policy on the business and economic sectors is a major challenge in its implementation in Indonesia. Many businesses are concerned that the implementation of a carbon tax will threaten the sustainability of their business. For example, the coal-dependent textile sector is expected to experience an increase in production costs of up to 9.25%, as stated by the Deputy Chairman of the Indonesian Textile Association. This increase will not only reduce the competitiveness of textile products, but could also impact the sustainability of the industry as a whole. In addition, this policy also affects the people's economy through the increase in vehicle fuel prices, which can have a domino effect on the prices of other goods and services, potentially suppressing people's purchasing power (Tjoanto & Tambunan, 2022).

Third, public rejection. Opposition to the implementation of a carbon tax in Indonesia comes mostly from businesses, which see this policy as a threat to the sustainability of their business. The Chairman of the Indonesian Chamber of Commerce and Industry revealed that as many as 18 business associations, representing hundreds of businesses, strongly rejected the implementation of carbon tax in Indonesia (Sukmana, 2021). This rejection is rooted in concerns that a carbon tax could have a negative impact on the national economy, especially for businesses that depend on fossil fuels. Entrepreneurs argue that this policy will increase operational costs, reduce competitiveness, and potentially even suppress business growth in various sectors. These concerns point to the need for supporting policies that can mitigate the economic impact for affected business sectors. In addition, the lack of public trust in the government is also a significant barrier to the success of this policy. Many doubt that the revenue generated from the carbon tax will be fully utilized for its primary purpose of reducing carbon emissions and supporting climate change mitigation (Tjoanto & Tambunan, 2022).

According to Maghfirani et al. (2022), there are several important aspects that need to be considered, such as the right time to impose a carbon tax, the need for supporting policies, the right mechanism to protect low-income households, and the compatibility of this policy with Indonesia's economic structure. In addition, strong regulations are needed to ensure the sustainability of the implementation. The timing is critical as the carbon tax has the potential to cause economic distortions. The imposition of this tax will likely lead to an increase in the price of goods and services related to carbon emissions. Therefore,

E-ISSN: 2830-5728

the government needs to carefully consider the timing of the implementation so that the impact on the economy can be minimized.

Strategy to Maximize Carbon Tax Potential

The establishment of a carbon tax must consider various factors to be in line with human values in Indonesia. First, the impact of carbon tax implementation needs to be analyzed in depth, including the potential increase in raw material prices that producers may charge to consumers. Second, the implementation of carbon tax must be adjusted to the real conditions in the field to ensure its rationality. Third, tax collection regulations must be designed in detail to prevent manipulation or fraud between regulators and taxpayers. Fourth, there needs to be clarity in the management of funds from the carbon tax so that their use remains in accordance with the original objectives, namely reducing carbon emissions and improving community welfare. Special supervision is also needed so that the funds collected are utilized to support the community's economic sector and environmental conservation efforts effectively (Achyar & Hakim, 2023).

To reduce the impact of economic distortions due to carbon tax implementation, the government should complement the policy with supporting policies. One of the supporting policies that can be implemented is the provision of incentives for the development of renewable energy sources. This policy provides producers with alternatives to utilize more environmentally friendly energy with lower carbon emissions, so that the increase in the price of goods and services can be minimized and public consumption is not disrupted. If incentives for renewable energy development are not provided, producers are likely to choose to pay carbon taxes rather than mitigate emissions, as carbon taxes have fixed costs that are easier to project. In contrast, cap-and-trade mechanisms introduce price uncertainty, which can increase business risk (Dian, 2016). This could potentially hinder the main objective of carbon tax implementation, which is to encourage the reduction of high-emission energy use (Maghfirani et al., 2022). Figure 2 shows some strategic recommendations that can be used by Indonesia in implementing a carbon tax.

Aspect	Country Experience	Recommendations for Indonesia
Set Tariffs and Structure Gradually	Singapore started with a low tax rate and gradually increased it to allow time for adaptation.	Start with a moderate tax rate and gradually increase it according to economic capacity and industry response.
Allocate Revenue for Green Innovation and Technology	Japan allocates carbon tax revenue for R&D in environmental technology.	Allocate carbon tax revenue to fund green technology innovation, renewable energy, and energy efficiency projects.

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E-ISSN: 2830-5728

Aspect	Country Experience	Recommendations for Indonesia
Use Economic Analysis Methods for Impact Evaluation	China uses the SAM (Social Accounting Matrix) method to map economic flows and their impact.	Implement the SAM method or similar approaches to understand the impact of carbon tax on the economy and environment.
Facilitate Industry Transition and Provide Support	Singapore provides incentives for companies to invest in clean technology.	Provide support such as tax incentives, training programs, and direct adaptation assistance.
Develop a Comprehensive Policy Framework	Japan and Singapore develop policy frameworks that support sustainability and innovation.	Integrate carbon tax into a broader climate strategy, including emission reduction policies and climate adaptation measures.
Engage Stakeholders in the Planning Process	The planning process involves various relevant parties, including industries, civil society, and academics.	Conduct public consultations and discussions with the industrial sector to gain input and support for effectively implemented policies.

Figure 2: Recommended Carbon Tax Implementation Strategies for Indonesia
Source: (Meila et al., 2024)

By implementing these recommendations, Indonesia can manage its carbon tax policy effectively and inclusively. Measures such as phasing in the rate, allocating revenue to green innovation, implementing impact evaluation methods such as SAM, and transition support for industries will help create a balance between economic sustainability and environmental preservation. In addition, integrating this policy with a comprehensive national climate strategy and involving various stakeholders in the planning process can ensure that the policy is widely accepted and works as intended. Ultimately, a well-designed carbon tax policy not only contributes to reducing carbon emissions, but also strengthens national economic resilience and creates new opportunities for innovation and sustainable development (Renata et al., 2024).

Furthermore, the implementation of a carbon tax by the government also has a strategic role in driving the transformation to a green, low-carbon economy and promoting the use of renewable energy (Pratama et al., 2022). This policy aims to motivate businesses to produce more environmentally friendly goods and services, invest in low-emission technologies, and adopt green technologies. A carbon tax also creates potential state revenue that can be fully allocated to support climate crisis mitigation programs, such as improving environmental quality (green dividend) and financing other green initiatives. This measure not only improves environmental quality but also contributes to sustainable state revenue, supporting sustainable development goals (SDGs), particularly related to carbon emission reduction (Meila et al., 2024).

In line with Indonesia's commitment in the Nationally Determined Contribution (NDC), this policy supports the achievement of long-term carbon emission reduction targets and encourages businesses to implement green company practices as part of their transformation. With this strategy, the government hopes to create synergy between sustainable economic development and environmental protection, ensuring a greener and more inclusive future for all.

E-ISSN: 2830-5728

CONCLUSION

The implementation of a carbon tax in Indonesia is a strategic policy to support the transition to a sustainable green economy by reducing carbon emissions, encouraging the use of renewable energy, and increasing state revenue. However, the effectiveness of this policy depends on its design and implementation, particularly in addressing economic and political challenges. While the carbon tax has the potential to significantly contribute to emission reduction goals, its current low tax rate and limited coverage raise concerns about its actual impact. Furthermore, public resistance and industrial concerns over the financial burden of the tax indicate that a comprehensive and phased approach is needed to ensure its success.

To enhance the effectiveness of this policy, the government must adopt strong regulations, complementary incentives, and transparent monitoring mechanisms. The allocation of carbon tax revenue should be clearly directed toward green technology innovation, infrastructure for renewable energy, and climate mitigation programs. Additionally, a stakeholder-inclusive approach involving government agencies, industries, academics, and civil society is essential to improve policy acceptance and compliance. Public engagement and business sector readiness must be reinforced through educational campaigns and targeted financial incentives, particularly for small and medium enterprises (SMEs) transitioning to low-carbon operations.

Further research is needed to explore complementary mechanisms, such as a cap-and-trade system, and to assess the economic and social impact of carbon tax implementation on key industrial sectors. A comparative analysis with other countries that have successfully implemented carbon taxes can provide valuable insights for policy refinement. By addressing these challenges through a well-structured carbon pricing strategy, Indonesia can strengthen its commitment to reducing greenhouse gas emissions, ensuring that economic growth and environmental sustainability are achieved in a balanced and equitable manner.

REFERENCE

Achyar, M., & Hakim, M. (2023). Urgensi Penerapan Carbon Tax di Indonesia Perspektif Ekonomi Islam. *LABATILA : Jurnal Ilmu Ekonomi Islam*, *7*(01), 1-13. https://doi.org/10.33507/lab.v7i01.1230

Adiba, A., Wijaya, R., & Marseto, M. (2024). Green Economy: Analisis Potensi Inovasi Sumpit Tanam "Go Green Chop" Sebagai Dasar Transformasi Ekonomi Sirkular. *Jurnal Ilmiah Wahana Pendidikan*, *10*(18), 144-152. https://doi.org/10.5281/zenodo.13866754

Alfathi, BR (2024). Perkembangan Emisi Gas Rumah Kaca Indonesia Tahun 2013-2023. GoodStats.Id. https://data.goodstats.id/statistic/perkembangan-emisi-gas-rumah-kaca-indonesia-tahun-2013-2023-aDUqo#:~:text=In2013 Indonesia produced,mt CO2eq%2Ftahun

ANTARA. (2021). Ekonom: Potensi pendapatan pajak karbon capai Rp57 triliun. https://www.antaranews.com/berita/2187310/ekonom-potensi-pendapatan-pajak-karbon-capai-rp57-triliun

DOI: 10.55960/jlri.v12i3.951

Aristantia, S. (2021). Pajak Karbon Sebagai Wujud Manifestasi Rahmatan Lil Alamin. *Maqdis: Jurnal Kajian Ekonomi Islam, 6*(2), 123 - 133. http://dx.doi.org/10.15548/maqdis.v6i2.510.

Assyakurrohim, D., Ikhram, D., Sirodj, R. A., & Afgani, M. W. (2023). Metode studi kasus dalam penelitian kualitatif. *Jurnal Pendidikan Sains Dan Komputer, 3*(1), 1-9. https://doi.org/10.47709/jpsk.v3i01.1951

Aulia, S., & Pasha, J. A. . (2024). Pajak Karbon dan Dilema Pembangunan Ekonomi Indonesia: Pembelajaran dari Negara Lain. *Jurnal Syntax Admiration*, *5*(7), 2667-2680. https://doi.org/10.46799/jsa.v5i6.1270

Ratnawati, D. (2016). Carbon Tax Sebagai Alternatif Kebijakan Untuk Mengatasi Eksternalitas Negatif Emisi Karbon di Indonesia. *Indonesian Treasury Review: Jurnal Perbendaharaan, Keuangan Negara Dan Kebijakan Publik*, *1*(2), 53-67. https://doi.org/https://doi.org/10.33105/itrev.v1i2.51

Dyarto, R., Setyawan, D. Understanding the political challenges of introducing a carbon tax in Indonesia. *Int. J. Environ. Sci. Technol.* **18**, 1479–1488 (2021). https://doi.org/10.1007/s13762-020-02925-4

Harinowo, C. (2022). *Menuju Zaman Renewable Energy*. Gramedia Pustaka Utama. ISBN: 978-602-06-6007-3

Febriani Irma, M., & Gusmira, E. (2024). Tingginya Kenaikan Suhu Akibat Peningkatan Emisi Gas Rumah Kaca di Indonesia . *JSSIT: Jurnal Sains Dan Sains Terapan*, *2*(1). https://doi.org/10.30631/jssit.v2i1.49

Karimah, M., Saputri, I. W., Adji, W. M., & Susilo, D. E. (2024). Studi Literatur: Aplikasi Nearpod sebagai Media Pembelajaran Berbasis STEM terhadap Kemampuan Literasi Numerasi Peserta Didik. *PRISMA, Prosiding Seminar Nasional Matematika, 7,* 524-528. https://proceeding.unnes.ac.id/prisma/article/view/2998

Klarin, T. (2018). The Concept of Sustainable Development: From its Beginning to the Contemporary Issues. *Zagreb International Review of Economics and Business, 21*(1), 67-94. https://doi.org/10.2478/zireb-2018-0005

Lumbanraja, P. C., & Lumbanraja, P. L. (2023). Analisis Variabel Ekonomi Hijau (Green Economy Variable) Terhadap Pendapatan Indonesia (Tahun 2011-2020) dengan Metode SEM-PLS. *Cendekia Niaga*, *7*(1), 61-73. https://doi.org/10.52391/jcn.v7i1.836

Madaniberkelanjutan.id. (n.d.). Emisi CO2 Fosil Dunia Mencapai Rekor Tertinggi pada Tahun 2023 Indonesia Menduduki Sepuluh Besar Penyumbang Emisi. Madaniberkelanjutan.id.

Maghfirani, H. N., Hanum, N., & Amani, R. D. (2022). Analisis Tantangan Penerapan Pajak Karbon di Indonesia. *Juremi: Jurnal Riset Ekonomi*, *1*(4), 314–321. https://doi.org/10.53625/juremi.v1i4.746

Meila, K. D., Dianty, A. ., & Veronica, L. . (2024). Penerapan Pajak Karbon dalam Mewujudkan Sustainability Development Goals Serta Dampaknya Terhadap Penerimaan Pajak di Indonesia. *Owner : Riset Dan Jurnal Akuntansi*, *8*(2), 1849-1864. https://doi.org/10.33395/owner.v8i2.2001

Nabilah, A. (2023). Penerapan Pajak Karbon di Indonesia: Kajian Ekonomi, Politik, Dan Sosial. *OPTIMAL Jurnal Ekonomi Dan Manajemen*, *4*(1), 11–21. https://doi.org/10.55606/optimal.v4i1.2552

Ngatikoh, S., & Faqih, A. (2020). Kebijakan Ekspor Impor: Strategi Meningkatkan Pertumbuhan Ekonomi di Indonesia. *LABATILA : Jurnal Ilmu Ekonomi Islam*, *4*(02), 167-190. https://doi.org/10.33507/labatila.v4i02.269

Pratama, B. A. ., Ramadhani, M. A. ., Lubis, P. M. ., & Firmansyah, A. (2022). Implementasi Pajak Karbon Di Indonesia: Potensi Penerimaan Negara Dan Penurunan Jumlah Emisi

Karbon. *JURNAL PAJAK INDONESIA (Indonesian Tax Review)*, *6*(2), 368–374. https://doi.org/10.31092/jpi.v6i2.1827

Pringgar, R. F., & Sujatmiko, B. (2021). Penelitian Kepustakaan (Library Research) Modul Pembelajaran Berbasis Augmented Reality Pada Pembelajaran Siswa. *IT-Edu : Jurnal Information Technology and Education*, *5*(1), 317–329. https://doi.org/10.26740/it-edu.v5i1.37489

Rahmawati, N., & Bayangkara, .Ketut, I. (2024). Peran Green Economy dalam Meningkatkan Aspek Kesejahteraan Sosial Masyarakat (Studi Literatur). *Inisiatif: Jurnal Ekonomi, Akuntansi Dan Manajemen*, *3*(3), 289–301. https://doi.org/10.30640/inisiatif.v3i3.2758

Renata, E., Laoli, P. E., & Paranduk, M. M. (2024). Preseden Hijau: Strategi Cerdas Penerapan Pajak Karbon Indonesia Untuk Mengatasi Emisi Karbon. *Seminar Nasional Akuntansi Dan Call for Paper*, *4*(1), 53–65. Retrieved from https://senapan.upnjatim.ac.id/index.php/senapan/article/view/969

Saputri, N., Uda, S., & Lendra, L. (2024). Implementasi Carbon Tax pada Sektor Konstruksi Berdasarkan Persepsi Kontraktor di Kota Palangka Raya. *Portal: Jurnal Teknik Sipil, 16*(3), 9-15. https://doi.org/10.30811/portal.v16i3.5544

Soekarno, G. R., Sundari, S., Boedoyo, M. S., & Sianipar, L. (2024). Pajak Karbon sebagai Instrumen Kebijakan untuk Mendorong Transisi Energi dan Pertumbuhan Ekonomi yang Berkelanjutan. *El-Mal: Jurnal Kajian Ekonomi & Bisnis Islam*, *5*(4), 2015–2026. https://doi.org/10.47467/elmal.v5i4.870

Solechah, W. M., & Sugito, S. (2023). Sustainable Economic Development as Indonesia's National Interest in the G-20 Presidency. *Dialektika : Jurnal Ekonomi Dan Ilmu Sosial*, *8*(1), 12–23. https://doi.org/10.36636/dialektika.v8i1.1487

Sukmana, Y. (2021). Pengusaha Tolak Rencana Implementasi Pajak Karbon. Kompas.Com. https://money.kompas.com/read/2021/08/24/195403626/pengusaha-tolak-rencana-implementasi-pajak-karbon?lgn_method=google&google_btn=onetap

Tauran, G. C., Sitompul, G. O., & Hutabarat, F. (2024). Penerapan Pajak Karbon Dan Energi Baru Terbarukan Terhadap Emisi Gas Rumah Kaca. *Journal of Economic, Bussines and Accounting (COSTING),* *7*(6), 2597-5234. https://doi.org/10.31539/costing.v7i6.13316

Tjoanto, A. K., & Tambunan, M. R. (2022). Tantangan dan Strategi dalam Proses Implementasi Kebijakan Pajak Karbon. *JRAP (Jurnal Riset Akuntansi Dan Perpajakan)*, *9*(2), 214 - 225. https://doi.org/10.35838/jrap.2022.009.02.20

Pandey, F., Kuntjoro, Y. D., Uksan, A., & Sundari, S. (2022). Rencana penerapan pajak karbon di Indonesia. *Jurnal Ketahanan*, *6*(2). https://doi.org/10.31316/jk.v6i2.3175

United Nations. (2021). *United Nations handbook on carbon taxation for developing countries*. United Nations Publications. https://desapublications.un.org/publications/united-nations-handbook-carbon-taxation-developing-countries

Wahyudi, A. A. (2023). *Pemulihan pasca-pandemi: Bagaimana ekonomi global menyusun strategi kembali ke jalur pertumbuhan*. *Circle Archive Ekonomi, 1*(2). http://www.circle-archive.com/index.php/carc/article/view/43

Zahira, N. (2023). *Indonesia sukses turunkan emisi karbon 118 juta ton hingga Juli 2023*. Katadata. https://katadata.co.id/ekonomi-hijau/ekonomi-sirkular/64d9f16177f9a/indonesia-sukses-turunkan-emisi-karbon-118-juta-ton-hingga-juli-2023.