

The Impact of Carbon Tax Implementation in Indonesia on Supporting Sustainable Development Goals

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ABSTRACT

This research aims to find out how the implementation of carbon tax in Indonesia can support the Sustainable Development Goals (SDGs). The author uses a descriptive qualitative approach, using secondary data. This research also uses documentation techniques in the information data collection process and uses data analysis methods with literature studies. The results show that the impact of carbon tax implementation in Indonesia can support Sustainable Development Goals by continuing to reduce greenhouse gas emissions in Indonesia. The above can support Sustainable Development Goals 13 (Climate Change).

Keywords: Carbon tax, sustainable development goals

INTRODUCTION

A carbon tax is a financial charge placed on fossil fuels' carbon content with the intention of lowering greenhouse gas emissions. By increasing their cost, fossil fuels, which are major contributors to climate change. Normally applied to coal, oil, and natural gas, the tax can also be applied to other greenhouse gases, such as methane (International Monetary Fund, 2019). One technique used by policymakers to cut carbon dioxide (CO₂) and other greenhouse gas emissions is carbon pricing. According to the US Environmental Protection Agency (2024), burning fossil fuels to provide electricity, power cars, make materials and products, and heat and cool rooms results in these emissions. Clearing forests, raising animals, and burning fossil fuels all have an impact on the climate and temperature of Earth. By adding significant amounts of greenhouse gases to those already naturally existing in the atmosphere, this intensifies the greenhouse effect and contributes to global warming (European Commission, 2020).

To shift cost responsibility to those who emit emissions is the aim of carbon pricing (MIT Climate, 2022). Carbon pricing is regarded by economists and policymakers as one of the most effective strategies for addressing climate change. This is due to the fact that carbon pricing incentivizes organizations to cut gas emissions and has an impact on every aspect of the economy, including energy and motor fuel. The market is given the flexibility to identify solutions to cut emissions thanks to carbon pricing. China, California, and the European Union are among the nations that have imposed carbon pricing (MIT Climate Portal, 2022).

According to research published in 2021 by the Intergovernmental Panel on Climate Change (IPCC), the average temperature of the Earth's surface in 2011 and 2020 was 1.1°C higher than it was at the close of the 19th century, prior to the industrial revolution. The Earth has warmed more during the last forty years than it has since 1850. Furthermore, global warming has accelerated beyond anything seen in the previous two millennia.

World leaders came to a breakthrough in addressing climate change and its detrimental effects on December 12, 2015, during the UN Climate Conference in Paris, France: the Paris Agreement. The agreement establishes a number of long-term objectives to direct all nations in lowering greenhouse gas emissions globally, which will significantly slow the rise in global temperature. It also mandates the five-year review of national commitments and the provision of funding to developing nations in order to reduce climate change, build resilience, and enhance adaptation to its effects. This is a legally binding agreement that is acknowledged on a global scale. As of November 4, 2016, 195 nations have ratified the Paris Agreement. It went

into effect on that day. Achieving the Sustainable Development Goals depends on this agreement being implemented.

The Paris Climate Agreement was signed at the UN Headquarters in 2016 by the Indonesian government, represented by President Joko Widodo through Minister of Environment and Forestry Dr. Siti Nurbaya. An enormous international accord to address current climate change is the Paris accord. Countries can communicate their obligations through the Nationally Determined Contribution (NDC) process. Indonesia has responded by passing Law No. 16/2016 on the Ratification of the Paris Agreement to the United Nations Framework Convention on Climate Change, ratifying the Paris Agreement in the process. The Harmonization of Tax Regulations enabled the Indonesian Ministry of Finance to enact a carbon tax on October 07, 2021.

The above-mentioned issues of rising carbon dioxide, increasing greenhouse gas emissions, and rising temperatures on the Earth's surface are some of the reasons for the need and importance of implementing a carbon tax. It is also important to know what challenges, obstacles will occur and overcome them. This is necessary to reduce the above. In an action that will be carried out, it cannot be separated from the impact on its implementation. The implementation of carbon tax in Indonesia will also cause impacts. These impacts are also expected to support the Sustainable Development Goals (SDGs).

Based on the background that has been discussed, this research has the objectives to find out the implementation of carbon tax in Indonesia in affecting the economic sector and country revenue. To find out the challenges and obstacles that may be faced in the implementation of carbon tax in Indonesia, and how to overcome them. To find out and analyze the impact of carbon tax implementation in Indonesia in supporting the Sustainable Development Goals. Based on the background that has been described, the researcher conducted a study under the title "The Impact of Carbon Tax Implementation in Indonesia on Supporting Sustainable Development Goals"

LITERATURE REVIEW

Adyana (2024) looked at the Indonesian Carbon Tax Implementation Study: An Economic, Political, and Social Analysis. Climate change, mostly brought on by rising emissions of greenhouse gases (GHGs), especially carbon dioxide (CO₂), is one of the most urgent problems facing the globe today. Given its status as the world's greatest emitter of greenhouse gases, Indonesia is especially susceptible to the effects of climate change. One strategic move to cut emissions and support global efforts to combat climate change is the implementation of a carbon tax. Indonesia's carbon price has a promising future from an economic standpoint. The anticipated tax income will be a significant source of funding and provide financial incentives for the shift to a low-carbon economy.

A study on Indonesia's carbon tax and its role in promoting sustainable economic growth and mitigating climate change was carried out by Manurung et al. (2022). According to this report, disasters caused by climate change occur in practically every nation. One of the calamities brought on by climate change is the *karhutla*, or wildfires of the forest and land. The summer months in Europe are generally a time of simultaneous forest and land fire disasters because of extremely high temperatures that can intensify the fires. Commission XI of the House of Representatives of the Republic of Indonesia should make sure that the government carries out the policies outlined in the carbon tax roadmap in order to attain sustainable economic growth, in line with the "polluter pays" theory.

The Analysis of Challenges Faced in the Implementation of Carbon Tax in Indonesia was examined by Maghfirani et al. (2022). The paper discusses the implementation of a carbon tax, often known as a pigouvian tax, as one of the measures taken by the Indonesian government to mitigate the negative externalities of carbon emissions. Indonesia's coal-fired power plant

industry will be governed by a restricted carbon price regime in 2022. There are various potential consequences that could arise from the adoption of the carbon pricing legislation. Thus, the purpose of this study is to outline the challenges Indonesia may encounter in the future when enacting a carbon price. In this study, the author employs a qualitative methodology with secondary data sources and a descriptive research design. The author concluded that Indonesia will have issues with the rise of economic distortions and their effects on low-income households.

The study "Challenges and Options for Implementing Carbon Tax Policies" was carried out by Tjoanto et al. (2022). The results of this study imply that the government's challenges in implementing the carbon tax law may be attributed to business and economic pressures, political and governance institutions in Indonesia, and popular opposition. Policies addressing climate change must be paired with revenue management strategies, coalitions supporting these policies must be formed, and most crucially, a carbon tax policy must be established in order to overcome these obstacles and accomplish long-term decarbonization.

Using Carbon Tax as a Strategy to Increase Tax Compliance is one way that Fandira et al. (2022) looked at meeting the Sustainable Development Goals for 2030. After being established in 2015, the Millennium Development Goals are being carried out through the Sustainable Development Agenda. Being the primary source of income for the nation, taxes are a hotly debated subject. Carbon emissions and other environmental problems are caused by the growth of the manufacturing sector, which is inextricably linked to this. This study looks into different tactics that the government might employ to boost tax compliance and lower carbon emissions in order to meet the Sustainable Development Goals for 2030. The study concluded that imposing a carbon price would be the government's best course of action. Both the increase in carbon prices and the rise in carbon emissions can be slowed down with the use of a carbon tax. Nevertheless, there are still a lot of problems that need to be solved before a carbon tax is put into place.

Sitorus et al. (2018) studied carbon prices, carbon damage, and economic growth in fifteen nations during a 27-year period. The research looked at how taxes and carbon damage affected the growth of economies in fifteen (15) different countries between 1990 and 2017. Panel data from fifteen nations with carbon price laws in place between 1990 and 2017 were used. Using Generalized Least Squares (GLS) estimate, the researchers looked at how taxes and carbon destruction affected economic growth. Therefore, carbon taxes can raise real gross domestic product per capita even when carbon damage prevents economic growth.

The critique of the carbon tax from the standpoint of Islamic justice was studied by Putri et al. (2023). This paper investigates the carbon tax that Indonesia is going to impose. Using a humanist-theocentric methodology, the study was carried out within the framework of Islamic justice. The study's findings demonstrate that some nations may be able to successfully adopt and execute a carbon price. The carbon tax is primarily intended to boost state revenue and cause misery for people, especially low-income families, rather than to adequately safeguard the environment. To avoid causing social disparity, the government should reassess how the carbon price is managed.

RESEARCH METHODS

The author uses a descriptive qualitative approach, using secondary data. This research also uses documentation techniques in the information data collection process and uses data analysis methods with literature studies.

RESEARCH RESULTS AND DISCUSSION

This finding is the result of a literature review of 10 journals found in the Publish or Perish 8 Application, Google Scholar and several official websites that discuss carbon tax, carbon tax regulation in Indonesia, the impact of carbon tax in Indonesia and climate change that occurs in the world and in Indonesia.

The Implementation of Carbon Tax in Indonesia Affect the Economic Sector And Country Revenue

Indonesia's carbon tax implementation is governed by Law No. 7 of 2021 on Harmonization of Tax Regulations. The law offers Indonesia a legitimate foundation on which to impose a carbon price. There's a good reason why Indonesia introduced a carbon price; these actions and goals are meant to encourage Indonesia to take part in solving the world's current issues.

Greenhouse gas emissions in the energy sector are obtained in 2 categories, namely gas emissions from fuel combustion and fugitive emissions in fuel production and supply activities (Ministry of Energy and Mineral Resources of the Republic of Indonesia, 2020). Gas emissions from fuel combustion are one of the main causes of air pollution and climate change. Meanwhile, fugitive carbon emissions are uncontrolled and often undetectable releases of greenhouse gases that occur during the fuel production and supply process. These emissions that must be controlled by the industrial sector are shown in Tables 1 and 2.

Table 1. Emission Sources from Fuel Combustion

NO	CATEGORIES	ACTIVITY
1.	Energy Producing Industry	- Oil and gas refineries - Power plants - Coal processing
2.	Manufacturing Industry	- Iron and steel - Chemistry - Food, beverage and tobacco processing - pulp, paper and printing - non-metallic minerals
3.	Transportation Industry	- Land Transportation - Water Transportation - Air Transportation
4.	Other Sectors	- Residential Activities - Commercial and Office Activities - Other non-specific activities

Source: Ministry of Environment and Forestry of the Republic of Indonesia, 2021

Tabel 2. Fugitive Carbon Emissions in Fuel Production and Supply Activities

No	ACTIVITY
1.	Fuel Mining Fugitives
2.	Oil and Gas Refinery Production Fugitives
3.	Other Emissions from Energy Production

Source: Ministry of Environment and Forestry of the Republic of Indonesia, 2021

The Cap and Tax Scheme is the method used in Indonesia to impose the carbon tax. Under the Cap Scheme, the maximum amount of carbon emissions that can be produced over a given time period is fixed. The amount of emissions that can be produced by specific industries, such coal-fired power plants, is capped by the government. This limit may be stated in various comparable units or tons of carbon dioxide (CO₂). In contrast, the Tax Scheme entails charging a carbon price on carbon emissions above the cap. An entity (person or

business) will be liable to a carbon tax at the rate determined by the government if its carbon emissions exceed the limit. By offering incentives to companies to lower their emissions in order to stay below a predetermined limit, the Cap and Tax plan seeks to promote the reduction of carbon emissions. Entities will have a financial incentive to adopt greener technology or decrease their usage of fossil fuels if a carbon tax is imposed on emissions that exceed the cap. Furthermore, by penalizing organizations that exceed emission limits financially, the Cap and Tax Scheme is anticipated to have the beneficial effect of reducing carbon emissions. The program might also promote investment and innovation in greener and cleaner technology. The plan is thought to be suitable for encouraging entities to lower their emissions and supporting the reduction of greenhouse gas emissions (Ministry of Energy and Mineral Resources, Republic of Indonesia 2021).

The carbon tax rate in Indonesia is 30,000 Indonesian Rupiah per kilogram of CO₂ equivalent (CO₂e) or equivalent unit. This rate is a component of the cap and tax structure used to impose the carbon tax in Indonesia, and it is applied to the quantity of emissions that above a predetermined limit. In order to combat global climate change, it seeks to reduce greenhouse gas emissions and assist in the fulfillment of the Nationally Determined Contribution (NDC). It is anticipated that the imposition of this tariff will promote carbon emission reductions and the shift to more ecologically friendly commercial ventures.

Indonesia's introduction of a carbon tax is expected to have a large beneficial economic impact. It can bring in tax money for the government, which it can then utilize to fund sustainable development initiatives and lessen its dependency on revenue streams that are detrimental to the environment. A carbon tax encourages businesses to concentrate on energy efficiency and environmentally friendly technologies, which furthers the shift to a low-carbon economy. This helps mitigate the effects of climate change and makes domestic industries more competitive on the international stage. Additionally, it opens up new avenues for investment in the green technology and renewable energy industries, boosting employment and the resilience of the national economy (Adyana, 2024).

A carbon tax is not only effective in reducing emissions, it can also increase government revenue. However, a CO₂ tax may also lead to higher prices due to increased production costs. A clear and measurable roadmap is needed for the carbon tax to be an effective policy tool in combating climate change and securing national revenue, while taking into account purchasing power and people's welfare. Since 2020, the state budget has diligently implemented countercyclical measures to help the recovery process. Carbon tax policies are not implemented in isolation, but are part of a comprehensive package aimed at reducing emissions and providing incentives to make the transition to a more sustainable economy (Manurung, et al. 2022).

Additionally, research has been done by Intan and Pratama (2022), who found potential revenue from Indonesia's carbon tax. The study's data set was collected between 2000 and 2019. The findings demonstrated that carbon emissions had a tendency to become more productive annually. This is because a lot of industries grow every year. As a result, conjecture over the potential introduction of a carbon tax in Indonesia is growing along with the quantity of carbon created by the nation's economic activity.

This is consistent with earlier studies that address the possible income the state could receive. The analysis used the lowest rate scheme of IDR 30,000 dioxide equivalent to determine the potential revenue from a carbon tax, assuming an annual increase in carbon emissions of 3.57%. The research provided an explanation and a table covering the years 2019 through 2025. The end result in 2025 can be attained with a possible revenue of approximately Rp 23.651 trillion, as shown in the table. The study's findings also lead the researcher to believe that the carbon tax's introduction may be planned to influence industry behavior and encourage

a shift to ecologically friendly business practices. Furthermore, research indicates that carbon taxes can lower emissions in a number of nations (Pratama et al., 2022).

Challenges and Obstacles That May Be Faced in the Implementation of Carbon Tax in Indonesia, and How They Can Be Overcome.

A carbon tax is difficult to implement. There are a number of factors to take into account, including the difficulties that may arise. A factor that needs to be taken into account is how soon the implementation period is going to happen. The implementation of the carbon tax must be done carefully in terms of time and momentum because it could lead to economic distortions. The selling price of goods and services that emit carbon emissions during production will unavoidably rise as a result of the imposition of a carbon tax. Consequently, the degree of public consumption of these goods and services will be impacted by the increase in selling price. When governments design policies related to carbon taxes, they should also consider the effects on low-income households (Maghfirani, et al. 2022).

The challenges of carbon tax implementation have also been carried out by Tjoanto, et al. (2022), the research mentioned several things, including:

- a) Political system and governance of government institutions : this can be a challenge because it can affect the number of businessmen turning into politicians and taking over elite positions in the political system. The involvement of business people in the political system and the number of parliamentarians who own businesses could potentially challenge the implementation of a carbon tax in Indonesia.
- b) Business and economic influences : the carbon tax policy is seen to threaten the competitiveness of companies due to concerns that the carbon tax will reduce the competitiveness of local businesses compared to countries that have not implemented a similar tax and the increase in production costs that the implementation of the carbon tax could cause the production costs of certain industries to increase. This could burden the public.
- c) The challenge that will be faced is resistance from the public : part of this public rejection will come from businesses. Carbon tax is considered to affect Indonesia's economy and business continuity, which is the main reason for rejection. In Indonesia, public rejection of carbon tax can also be caused by public distrust of the government's ability to manage carbon tax revenue. This distrust arises because the government can use carbon tax revenue to achieve its main goal, which is to reduce emissions.

Research by Doloksaribu, et al. (2024) also discusses the challenges of carbon tax implementation, where it is stated that the voluntary nature of carbon emissions disclosure in Indonesia leads to low levels of carbon disclosure as it shows that the level of awareness of carbon emissions issues among corporate business entities in Indonesia is still limited

Implementing a carbon tax in Indonesia could face several obstacles. The following can be explained as below:

- a) Awareness : Some parties may not be fully aware of the negative impacts of carbon emissions and the benefits of a carbon tax as a policy instrument to reduce emissions. Therefore, efforts to raise awareness of the importance of carbon tax need to be made.
- b) Understanding : Lack of understanding may lead to ambiguity in tax imposition, rate calculation, and compliance of related sectors. Therefore, there is a need for effective education and socialization to the public and business sector to improve understanding of the carbon tax.
- (c) Infrastructure Readiness : The implementation of carbon tax requires adequate infrastructure, especially in terms of carbon emission data collection and effective administration system. This infrastructure readiness may become an obstacle if it has not been met.

The challenges Indonesia will face in implementing a carbon tax are not easy. However, there are several ways or strategies that can be done in overcoming them. The research was conducted by Tjoanto, et al. (2022) some can be mentioned:

- a) To start with a gradual implementation : The carbon tax policy can be applied to several sectors that produce greenhouse gas emissions on a small scale first. Once the policy is well accepted, it can be gradually scaled up to all sectors that generate greenhouse gas emissions.
- b) Proper revenue management : There is a need for transparency and public appetite for the money generated from the carbon tax to be used for household compensation and transition financing. This suggests that modeling the ideal revenue management is critical to implementing a carbon tax policy. Environmentally friendly energy investment or development can also be undertaken by the Indonesian government to manage carbon tax revenues.
- c) Carbon tax policy in a series of other policies : It is necessary to ensure that the carbon tax policy in Indonesia can reduce greenhouse gas emissions, after which the next step that the government can take is to combine the policy with various other climate control policy instruments.

This is in line with research by Fandira, et al. (2022) which states that a good strategy is needed for the Indonesian government to combat excessive carbon emissions. Carbon tax can not only be used as a way to reduce the increase in carbon emissions. However, the implementation of carbon tax is expected to strengthen tax compliance, if it goes well, then it can slowly support the Sustainable Development Goals 2030.

Impact of Carbon Tax Implementation in Indonesia in Supporting Sustainable Development Goals

Implementing a carbon tax will certainly have impacts. This research will reveal some of the impacts that may arise and how these impacts can support the Sustainable Development Goals (SDGs) some of them are:

- a) Greenhouse Gas Emission Control
The Ministry of Energy and Mineral Resources of the Republic of Indonesia (2024), The Government of Indonesia succeeded in achieving the target of reducing Greenhouse Gas (GHG) emissions from the energy sector by 127.67 million tons CO₂e by 2023. This is proof that the Government of Indonesia continues to strive to control Greenhouse Gas Emissions, if this can be maintained it can support Sustainable Development Goals 13 (Climate Change).
- b) Renewable Energy Development
The implementation of a carbon tax can encourage the development of renewable energy. Carbon taxes provide incentives for economic actors to switch to cleaner and environmentally friendly energy sources, such as solar energy and wind energy. Renewable energy development has the potential to reduce the amount of fossil fuels used. This is in line with Sustainable Development Goals 7 (Clean and Affordable Energy) which aims to increase access to clean and sustainable energy.
- c) Distributional impact and Social justice.
Through the use of taxes can assist in the redistribution of wealth in society. This can help reduce the wealth gap between different groups and promote equality. With the implementation of carbon tax, it can have a positive impact on the distribution of primary social needs equally to all people, especially for low-income people. According to the researcher, revenue from the carbon tax can be used by the government for programs related to reducing the impact of the climate crisis and supporting environmental conservation initiatives. This could help achieve Sustainable Development Goals 1 (Poverty Eradication) and Sustainable Development Goals 10 (Reduction of Inequality).

This is also in line with research on the application of carbon tax to create Sustainability Development Goals (SDGs). Where in the research discusses how the application of carbon tax can reduce emissions in order to realize Sustainable Development Goals (SDGs) in the Asia Pacific region. The research chose the energy sector because energy consumption continues to increase; as a result of increased activity in burning carbohydrate fuels, this sector is the largest contributor to carbon dioxide worldwide. As a result, the carbon tax implemented by the government is expected to generate tax revenue from the energy sector worth IDR 23,280 trillion by 2025. These funds can be used to promote green growth and reduce carbon emissions to help achieve the Sustainability Development Goals (SDGs). Business behavior is expected to shift to green economic activities that produce lower carbon emissions (Meila, et al. 2024).

CONCLUSIONS AND SUGGESTION

Conclusions

The implementation of carbon tax in Indonesia is regulated in Law No. 7 of 2021 on Harmonization of Tax Regulations. This law provides the legal basis for the imposition of carbon tax in Indonesia. The carbon tax in Indonesia is implemented using a cap and tax scheme. The rate set for carbon tax in Indonesia is IDR 30,000 per kilogram of carbon dioxide equivalent (CO₂e). The implementation of a carbon tax can affect economic sectors that create new incentives to support Indonesia's economy in the future and the state revenue sector can increase. The funds will be used to support Indonesia's Sustainable Development Goals (SDGs). Indonesia's challenge and strategy in implementing a carbon tax is to find the right conditions to implement it and strengthen regulations to prevent fraud that can be committed by some parties. The impacts of carbon tax such as greenhouse gas emission control can support Sustainable Development Goal 13 (Climate Change), renewable energy development can support Sustainable Development Goal 7 (Affordable and Clean Energy), distribution and social justice impacts can support Sustainable Development Goal 1 (No Poverty) and Sustainable Development Goal 10 (Reduced Inequalities).

Suggestion

Future research can continue this research by focusing on unexplored aspects, examining more specific carbon tax policies, and examining the impact of carbon tax on other Sustainable Development Goals (SDGs).

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