

**PROBLEMS IN THE IMPLEMENTATION OF CARBON TAXES
AS AN INSTRUMENT TO PROMOTE A SUSTAINABLE
ECONOMY IN INDONESIA**

***PROBLEMATIKA PENERAPAN PAJAK KARBON SEBAGAI
INSTRUMEN PENDORONG EKONOMI BERKELANJUTAN DI
INDONESIA***

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ABSTRACT

This study discusses the problems of implementing carbon tax as an instrument for reducing greenhouse gas emissions and promoting sustainable economy in Indonesia. The carbon tax, which is regulated in Law No. 7 of 2021 and Government Regulation No. 50 of 2022, aims to minimize carbon emissions from the electricity, transportation, and manufacturing industries. However, its implementation has significant socioeconomic impacts, including increased production costs, higher prices, and pressure on people's purchasing power, especially among the lower-middle class. A normative analysis was conducted using a statute approach, a conceptual approach, and a comparative approach by examining the practices of other countries, such as Sweden, which has successfully integrated carbon tax with fiscal incentives, and Australia, which has demonstrated the negative risks of carbon tax without social compensation. The results of the study show that the unilateral implementation of carbon taxes can threaten public welfare and economic stability, thus requiring an ideal mechanism based on the principles of sustainable economics. This mechanism includes providing fiscal incentives, developing renewable energy such as geothermal, biomass, and solar energy, and implementing transparent and effective carbon trading, including cap and trade and emission offset systems. With this strategy, carbon emissions can be reduced effectively without sacrificing economic

growth and social welfare. These findings emphasize the need for inclusive, adaptive carbon tax policies that are integrated with economic incentives, clean technology, and multi-stakeholder participation as a model for sustainable environmental management.

Keywords : Carbon Tax, Sustainable Economy, Community Welfare, Renewable Energy, Carbon Trading.

ABSTRAK

Penelitian ini membahas problematika penerapan pajak karbon sebagai instrumen pengurangan emisi gas rumah kaca sekaligus pendorong ekonomi berkelanjutan di Indonesia. Pajak karbon yang diatur dalam UU No. 7 Tahun 2021 dan PP No. 50 Tahun 2022 bertujuan meminimalkan emisi karbon dari sektor ketenagalistrikan, transportasi, dan industri manufaktur. Namun, implementasinya menimbulkan dampak sosial-ekonomi signifikan, termasuk peningkatan biaya produksi, harga barang, dan tekanan terhadap daya beli masyarakat, terutama kelompok menengah ke bawah. Analisis normatif dilakukan melalui pendekatan peraturan perundang-undangan (statute approach), konseptual (conceptual approach), dan komparatif (comparative approach) dengan mengkaji praktik negara lain seperti Swedia yang berhasil mengintegrasikan pajak karbon dengan insentif fiskal, serta pengalaman Australia yang menunjukkan risiko negatif pajak karbon tanpa kompensasi sosial. Hasil penelitian menunjukkan bahwa penerapan pajak karbon secara unilateral dapat mengancam kesejahteraan masyarakat dan stabilitas ekonomi, sehingga diperlukan mekanisme ideal yang berbasis prinsip ekonomi berkelanjutan. Mekanisme tersebut mencakup pemberian insentif fiskal, pengembangan energi terbarukan seperti panas bumi, biomassa, dan energi surya, serta penerapan perdagangan karbon yang transparan dan efektif, termasuk cap and trade dan sistem offset emisi. Dengan strategi ini, pengurangan emisi karbon dapat dicapai secara efektif tanpa mengorbankan pertumbuhan ekonomi dan kesejahteraan sosial. Temuan ini menegaskan perlunya kebijakan pajak karbon yang inklusif, adaptif, dan terintegrasi dengan insentif ekonomi, teknologi bersih, dan partisipasi multi-stakeholder sebagai model pengelolaan lingkungan yang berkelanjutan.

Kata Kunci : Pajak Karbon, Ekonomi Berkelanjutan, Kesejahteraan Masyarakat, Energi Terbarukan, Perdagangan Karbon.

I. INTRODUCTION

Climate change has become a real and urgent global challenge. The phenomenon of rising global temperatures, melting polar ice caps, and

increased frequency of hydrometeorological disasters such as floods, droughts, and forest fires are direct consequences of accumulated greenhouse gas emissions, particularly carbon dioxide (CO₂). According to a report by the Intergovernmental Panel on Climate Change (IPCC), more than 95% of the increase in global temperatures is attributable to human activities, particularly the use of fossil fuels and industrial activities.¹ This is in line with the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), which explains that more than 95% of human activities cause an increase in global temperatures that affects various sectors, one of which is threatening economic stability. According to the Swiss Re Institute, if climate change increases by 3.2 degrees Celsius, it could minimize the decline in global economic gross domestic product by 11-18% or USD 23 trillion by 2050.²

As a developing country, Indonesia is not immune to this issue. The Global Carbon Project's 2023 report notes that Indonesia's carbon emissions reached 40.9 GtCO₂, placing it among the top 10 largest carbon-producing countries in the world. Even more ironically, this figure represents an increase of 18.3% compared to 2022.³ The escalation in carbon emissions is certainly far from Indonesia's commitment in the international agreement contained in the Paris Agreement to the United Nations Framework Convention on Climate Change to minimize greenhouse gas emissions.⁴ Indonesia's commitment to addressing high carbon emissions through the establishment of Nationally Determined Contributions, with a target of reducing carbon emissions by 31.89% nationally and 43.20% with international assistance by 2030.⁵ This fact shows the imbalance between normative commitments and their realization in the field.

¹ Rolnick, D., Donti, P. L., Kaack, L. H., Kochanski, K., Lacoste, A., Sankaran, K., ... Bengio, Y. (2023, February 28). Tackling Climate Change with Machine Learning. *ACM Computing Surveys*. Association for Computing Machinery. <https://doi.org/10.1145/3485128>.

² Center, K. I. (Agustus 2022). *Indonesia Carbon Trading Handbook*. Katadata Insight Center.

³ Madani. (2023). *Emisi CO2 Fosil Dunia Mencapai Rekor Tertinggi pada Tahun 2023 Indonesia Menduduki Sepuluh Besar Penyumbang Emisi*. Madaniberkelanjutan.id, accessed on November 21, 2024 at 2:00 a.m WIB. See inside <https://madaniberkelanjutan.id/siaran-pers-emisi-co2-fosil-dunia-mencapai-rekor-tertinggi-pada-tahun-2023-indonesia-menduduki-sepuluh-besar-penyumbang-emisi/>

⁴ Undang-undang Nomor 16 Tahun 2016 tentang Pengesahan Paris Agreement To The United Nations Framework Convention On Climate Change (Persetujuan Paris Atas Konvensi Kerangka Kerja Perserikatan Bangsa-Bangsa mengenai Perubahan Iklim), Lembar Negara Tahun 2016, No. 204, Tambahan Lembar Negara Nomor. 5939.

⁵ Limanseto, H. (2022, 25 Oktober). *Akselerasi Net Zero Emissions, Indonesia Deklarasikan Target Terbaru Penurunan Emisi Karbon*. Kementerian Koordinator Bidang Perekonomian, accessed on November 21, 2024 at 2:00 a.m WIB. See inside <https://ekon.go.id/publikasi/detail/4652/akselerasi-net-zero-emissions-indonesia-deklarasikan-target-terbaru-penurunan-emisi-karbon>

In the national context, climate change has a real impact on the socio-economic life of the community. Increasingly frequent floods and landslides cause damage to infrastructure and reduce economic productivity. On the other hand, the agricultural sector, which is the backbone of more than 29% of the working population, is vulnerable to extreme weather conditions.⁶ This situation shows that the social costs of climate change are much greater than the costs of controlling it.

To address these challenges, the Indonesian government has begun developing market-based policy instruments, one of which is a carbon tax. This tax is intended to internalize the external costs of carbon emissions into product prices and encourage businesses to switch to renewable energy.⁷ In addition, carbon taxes also have the potential to become a significant source of state revenue, which can be reallocated to fund the transition to a green economy.⁸

According to Kuki Soejachmoen, Executive Director of the Indonesia Research Institute for Decarbonization, with the ratification of the Paris Agreement, all countries have the right to sell and buy. Therefore, Indonesia needs to take advantage of and explore this opportunity.⁹ However, Indonesia also imposes a carbon tax on companies to reduce carbon emissions. The implementation of this carbon tax will increase industrial production costs and the selling price of carbon-producing products, such as the selling price of electricity and vehicle fuel. This will have an impact on the purchasing power of the community due to the surge in selling prices.

The implementation of carbon taxes in Indonesia is not without its problems. One of the main issues is the risk of rising energy and fuel prices, which has a direct impact on inflation. This can reduce people's purchasing power, especially among vulnerable groups, who are most affected by climate change. In an economic situation that has not yet fully recovered from the COVID-19 pandemic, this policy has the potential to cause social resistance if it is not accompanied by adequate compensation.¹⁰ In addition, the industrial sector also faces major challenges. The imposition of carbon taxes

⁶ Munawaroh, L., Amsiah, H. N., Djuru, M. D. A., & Shafrani, Y. S. (2025). Dampak Perubahan Iklim Terhadap Aktivitas Ekonomi Kota Purwokerto. *Jurnal Akademik Ekonomi Dan Manajemen*, 2(2), 783-796.

⁷ Nur Azizi MJ, A. K. (Mei 2023). Perdagangan Karbon: Mendorong Mitigasi Perubahan Iklim Diantara Mekanisme Pasar dan Prosedur Hukum. *Jurnal Selat*, Vol. 10, No. 2. p. 93.

⁸ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099045006072224607>, accessed on October 24, 2025 at 2:00 a.m WIB.

⁹ Indonesia Research Institute for Decarbonization, *Perdagangan Karbon sebagai Solusi Perubahan Iklim*. Diakses pada tanggal 22 November 2024 pukul 08.00 WIB. Lihat dalam <https://irid.or.id/perdagangan-karbon-sebagai-solusi-perubahan-iklim/>

¹⁰ Mintz-Woo, K., Dennig, F., Liu, H., & Schinko, T. (2021). Carbon pricing and COVID-19. *Climate Policy*, 21(10), 1272-1280. See also in <https://iesr.or.id/mencari-tahu-arti-pajak-karbon-dan-apa-saja-yang-kena-pajak-karbon/>, accessed on October 24, 2025 at 2:00 a.m WIB.

means increased production costs, which ultimately reduces the competitiveness of Indonesian products in the global market.¹¹ Many industrial sectors still rely heavily on fossil fuels due to limited renewable energy infrastructure. Thus, carbon tax policies can create a dilemma between promoting clean energy transition and maintaining the sustainability of national industrial sectors.

Another problem arises in terms of regulation and institutions. The mechanism for implementing carbon taxes in Indonesia is still relatively new, resulting in frequent legal uncertainty and overlapping authority between institutions. In addition, transparency in the management of carbon tax revenues has also become a public concern. If these revenues are not clearly allocated for sustainable development, public confidence in this policy will weaken.¹²

Globally, carbon tax instruments have been widely implemented in various countries. The European Union, for example, combines carbon taxes with carbon trading schemes through the EU Emission Trading System. Scandinavian countries have also successfully reduced emissions through environmentally-based fiscal instruments.¹³ However, the effectiveness of these instruments is highly dependent on policy design, transparency, and the socio-economic readiness of each country. Indonesia needs to learn from international experiences, but still adapt them to domestic conditions.

On the other hand, the implementation of carbon tax actually opens up opportunities for Indonesia. As a country with great potential for renewable energy—such as solar, wind, geothermal, and biomass energy—this policy could be a catalyst for green investment. If tax revenues are allocated for research, technology development, and renewable energy subsidies, the transition to a sustainable economy will be achieved more quickly.¹⁴

However, in social reality, public acceptance is a key factor. Many parties believe that this policy still does not fully favor vulnerable groups. If the government only emphasizes fiscal aspects without considering social justice, then the goal of sustainable development could turn into a new social burden. Therefore, a just transition approach is essential to ensure that carbon emission control policies do not create new inequalities.¹⁵

¹¹ Asian Development Bank (ADB), *Carbon Pricing for Green Recovery and Growth in Asia (November 2021)*, Manila: ADB, 2021. See inside <https://www.adb.org/sites/default/files/publication/746511/carbon-pricing-green-recovery-growth.pdf>, accessed on October 24, 2025 at 2:00 a.m WIB.

¹² Maghfirani, H. N., Hanum, N., & Amani, R. D. (2022). Analisis tantangan penerapan pajak karbon di Indonesia. *Juremi: Jurnal Riset Ekonomi*, 1(4), 314-321.

¹³ https://www.oecd.org/en/publications/effective-carbon-rates-2021_0e8e24f5-en.html, accessed on October 24, 2025 at 2:00 a.m WIB.

¹⁴ https://managenergy.ec.europa.eu/publications/renewables-2023-analysis-and-forecast-2028_en?prefLang=sk, accessed on October 24, 2025 at 2:00 a.m WIB.

¹⁵ Newell, P., & Mulvaney, D. (2013). The political economy of the 'just transition'. *The geographical journal*, 179(2), 132-140.

This background shows that the implementation of carbon tax in Indonesia is caught in a dilemma between economic, environmental, and social interests. On the one hand, carbon tax is an important instrument for achieving emission reduction targets and strengthening international commitments. However, on the other hand, this policy faces challenges in its implementation, ranging from its impact on public welfare and industrial competitiveness to legal certainty. Thus, it is important to conduct a study on the problems of implementing carbon tax. First, to analyze its impact on public welfare in efforts to reduce carbon emissions. Second, to formulate an ideal mechanism based on sustainable economic principles that can reduce emissions without sacrificing socio-economic stability. This study is expected to contribute to the formulation of a more equitable, effective, and sustainable environmental fiscal policy in Indonesia.

II. METHOD

This article utilizes normative legal research by placing legislation as a system construction¹⁶ and the rules contained therein.¹⁷ The approaches used include the statute approach to examine the legal provisions governing carbon taxes and environmental instruments; the conceptual approach¹⁸ to elaborate on the ideas of sustainable economy, environmental taxation, and fiscal justice theory; and a comparative approach by comparing the implementation of carbon taxation in Indonesia with other countries, thereby obtaining a comprehensive perspective on best practices and implementation challenges at the global level.

In addition to normative legal research, this paper also utilizes a juridical-empirical approach through secondary data analysis sourced from official government reports, research institutions, international publications, and academic studies. Data collection techniques were carried out through library research, while data analysis was conducted using descriptive-analytical qualitative methods with an emphasis on data reduction, data presentation, and conclusion drawing. With this combination of approaches, the study aims to comprehensively describe the problems surrounding the implementation of carbon taxes in Indonesia while offering an ideal framework for their implementation as an instrument to promote a sustainable economy.

III. ANALYSIS AND DISCUSSION

a. The Impact of Carbon Tax Implementation on Community Welfare in Efforts to Reduce Carbon Emissions

¹⁶ Amiruddin and Zainal Asikin, *Pengantar Metode Penelitian Hukum*, Ctk. Keenam (Jakarta: Rajawali Pers, 2012): p. 118.

¹⁷ Soerjono Soekanto, *Pengantar Penelitian Hukum* (Jakarta: UI Pres, 1984): p. 20.

¹⁸ Peter Mahmud Marzuki, *Penelitian Hukum* (Jakarta: Kencana Prenada Media Group, 2013): p. 135-136.

Carbon tax is a type of levy imposed on the use of hydrocarbon fuels or fossil fuels, such as coal, petroleum, and natural gas. This tax is intended to internalize the negative impact of carbon emissions on the environment while encouraging the transition to a green economy.¹⁹ The definition of carbon tax is a type of tax imposed on the use of hydrocarbon fuels.²⁰ These types of fuel contain hydrocarbons and are commonly referred to as fossil fuels, namely coal, petroleum, and natural gas. Carbon tax in Indonesia is stipulated in Law No. 7 of 2021 concerning Harmonization of Tax Regulations (HPP Law)²¹ and Government Regulation No. 50 of 2022 concerning Procedures for Exercising Tax Rights and Fulfilling Tax Obligations (Government Regulation on Procedures for Exercising Tax Rights and Fulfilling Tax Obligations).²² The imposition of carbon taxes due to carbon emissions has an impact on the environmental sector. This is intended to minimize greenhouse gas emissions and encourage a transition to a green economy.²³

In Indonesia, carbon tax is regulated through Law No. 7 of 2021 concerning Harmonization of Tax Regulations and Government Regulation No. 50 of 2022 concerning Procedures for the Implementation of Tax Rights and Obligations, whereby every taxpayer who generates carbon emissions is required to report their tax calculations and obligations through an Annual Tax Return or Periodic Tax Return, with administrative sanctions if this is not fulfilled.²⁴ The minimum carbon tax rate is set at Rp30 per kilogram of CO₂ equivalent, higher than the carbon market price, to target major emitting sectors such as power generation, transportation, and industry.²⁵

As stated in Article 69 paragraphs 4 and 7 of the Government Regulation on Procedures for Exercising Tax Rights and Fulfilling Tax Obligations, which stipulates that every taxpayer who conducts activities that cause carbon emissions is required to report their calculations and tax expenses through an Annual Tax Return (SPT) or Periodic Tax Return. If this obligation is not fulfilled, administrative sanctions will be imposed in accordance with

¹⁹ See Law No. 7 of 2021 concerning Harmonization of Tax Regulations, State Gazette of 2021, No. 246, Supplement to State Gazette No. 6736.

²⁰ Sulyani, A. S. (Vol. 13, No.18, September 2021). Pajak Karbon sebagai Instrumen Pembangunan Rendah Karbon di Indonesia. *Pusat Penelitian Badan Keahlian DPR RI*, p. 13.

²¹ See Law No. 7 of 2021 concerning Harmonization of Tax Regulations, State Gazette of 2021, No. 246, Supplement to State Gazette No. 6736.

²² See Government Regulation No. 50 of 2022 concerning Procedures for Exercising Tax Rights and Fulfilling Tax Obligations, State Gazette of 2022 No. 226, Supplement to State Gazette No. 6834.

²³ Warhidatun Maratus Solechah, S. (Volume 8, Nomor 1, Februari 2023). Pembangunan Ekonomi Berkelanjutan sebagai Kepentingan Nasional Indonesia dalam Presidensi G20. *Dialektika : Jurnal Ekonomi dan Ilmu Sosial*, p. 16.

²⁴ See Government Regulation No. 50 of 2022 concerning Procedures for Exercising Tax Rights and Fulfilling Tax Obligations, State Gazette of 2022 No. 226, Supplement to State Gazette No. 6834

²⁵ Climate Transparency Report 2021; Our World in Data.

applicable regulations.²⁶ The carbon tax rate in Indonesia is set at a minimum of Rp30.00 per kilogram of carbon dioxide equivalent (CO₂e), with the provision that the rate must be higher than the prevailing carbon market price.

According to data from the 2021 Climate Transparency Report, the largest carbon emitters are the electricity sector (35%), followed by the transportation and industrial sectors (27%).²⁷ According to data from Our World in Data, the carbon emissions are caused by high fossil fuel consumption, which accounts for 86.95% of total emissions.²⁸ The success of carbon tax implementation greatly depends on the readiness of the industrial sector and society to adapt to existing policy changes. With such high figures, the implementation of a carbon tax will actually affect the growth of Gross Domestic Product or the income of all goods and services that produce carbon emissions, which could hamper the country's economic growth.²⁹

Although carbon taxes are designed to reduce emissions, their implementation has significant economic and social consequences. Increased production costs in carbon-intensive industries have the potential to suppress gross domestic product growth, increase product prices, and affect people's purchasing power, especially among the lower-middle class who depend on fossil fuels.³⁰ This shows the dilemma between environmental goals and public welfare, which is one of the principles of sustainable development. Otto von Bismarck's concept of the welfare state emphasizes that the government has a responsibility to provide services that improve the welfare of the people.³¹ Archandra Tahar, former Deputy Minister of Energy and Mineral Resources, stated that the implementation of carbon tax could increase the selling price of energy and basic commodities, thereby potentially threatening the socio-economic welfare of the community.³²

The negative impact on the manufacturing industry is that it experiences high financial burdens, which affect the number of products produced and

²⁶ See Article 69(4) and (7) of Government Regulation No. 50 of 2022 concerning Procedures for Exercising Tax Rights and Fulfilling Tax Obligations, State Gazette of 2022 No. 226, Supplement to State Gazette No. 6834.

²⁷ Transparency, C. (2021). *Laporan Climate Transparency: Membandingkan Aksi Iklim G20 Menuju Net Zero*. Jakarta: Climate Transparency.

²⁸ Anggi Prastyono, F. S. (Vol. 08, No. 01, 2024). Subsidi Kendaraan Bermotor Listrik Berbasis Baterai: Seberapa Besar Dampak Terhadap Masyarakat Indonesia? *Jurnal Edunomika*, p. 2.

²⁹ Yufi Mohammad Ulil Albad, H. T. (Vol. 8, Nomor 2, April 2024). Efektivitas Pajak Karbon: Studi Literatur. *Owner: Riset & Jurnal Akuntansi*, p. 3.

³⁰ Affandi, A., Fikriansyah, I., Putra, M. B. H., Widyaswari, R. A. P., & Peace, Y. (2025). Hubungan Antara Pajak Karbon, Penggunaan Energi Fosil, dan Pertumbuhan Ekonomi Terhadap Emisi Karbon di Negara Uni Eropa. *Integrative Perspectives of Social and Science Journal*, 2(2 Maret), 1478-1494.

³¹ Sukmana, O. (2016). Konsep dan Desain Negara Kesejahteraan (Welfare State). *Sospol*, 2(1), 103-122.

³² *Op. Cit*, *Hubungan antara Pajak Karbon*.

increase product prices due to carbon tax policies. When this happens, the lower-middle class will experience difficulties due to the implementation of this tax, because their basic needs depend on products with high emissions.³³ These negative impacts have actually damaged the welfare of the community, which is one of the principles of sustainable development.³⁴ In fact, the state is responsible for the welfare of the people, which is in line with Otto Von Bismarck's view of the welfare state, whereby the level of public services correlates with the level of public welfare, for which the government is responsible and obliged to provide.³⁵ The basic needs of the community depend on fossil fuels, so the implementation of a carbon tax will certainly have an impact on the community's economy. This is in line with the opinion of former Deputy Minister of Energy and Mineral Resources Archandra Tahar, who stated that when a carbon tax is implemented, there will be a risk of high selling prices for the community, which could threaten the community's welfare.³⁶

When compared to Australia, which implemented a carbon tax under the Clean Energy Act 2011, the negative impacts included increased energy costs, higher living costs, unemployment due to the absence of the coal industry, and increased budget deficits and public debt. Not only that, the carbon tax also burdened companies financially to the tune of \$600 million per year. Given the significant losses, which threaten public welfare, the Australian Senate repealed the carbon tax policy in 2014.³⁷ Therefore, it can be concluded that the implementation of carbon tax harms public welfare, which is not in line with the principles of sustainable economy. Thus, solution-oriented measures are needed to address carbon emissions while taking into account the principles of sustainable development.

b. Ideal Mechanisms for Reducing Carbon Emissions Based on the Principles of Sustainable Economics

The principle of sustainable economics prioritizes long-term sustainability by combining economic, social, and environmental interests. The goal is not only to minimize carbon emissions but also to achieve inclusive

³³ Ye Duan, N. L. (2017). Research on CO2 Emission Reduction Mechanism of China's Iron and Steel Industry under Various Emission Reduction Policies . *Energies* , p 19.

³⁴ Yufi Mohammad Ulil Albad, H. T. (Vol. 8, Nomor 2, April 2024). Efektivitas Pajak Karbon: Studi Literatur. *Owner: Riset & Jurnal Akuntansi*, p. 5.

³⁵ Nurul Amaliah Afrida, L. H. (Vol 4 No. 1 Januari 2023). Urgensi Pemenuhan Hak Warga Negara Menurut Perspektif Welfare State di Indonesia. *Journal Administrative and Sosial Science*, p. 13.

³⁶ DDTCNEWS, R. (2021, 15 Agustus Minggu). *Penjelasan Arcandra Tahar Soal Plus Minus Penerapan Pajak Karbon*. Diakses pada tanggal 9 Desember 2024 pukul 04.13 WIB. Lihat dalam <https://news.ddtc.co.id/berita/nasional/32009/penjelasan-arcandra-tahar-soal-plus-minus-penerapan-pajak-karbon>

³⁷ Kumarasiri, J. (Vol. 28 No. 3, 2020). The Australian carbon tax: corporate perceptions, responses and motivations. *Emerald, Meditari Accountancy Research*, p. 518.

and sustainable economic growth. Mechanisms that can be implemented include tax incentives. This is based on Adam Smith's ideas in *The Wealth of Nations*, adapted to The Four Maxims theory, which emphasizes that in principle of efficiency or economic principles, the burden of levying taxes should be minimized and there should be no taxation in excess of tax revenue.³⁸

The implementation of carbon taxation in Indonesia has not yet resulted in reciprocity between the government and the people who pay carbon taxes. This is evidenced by public resistance, as reported by Arsjad Rasjid, Chairman of the Indonesian Chamber of Commerce and Industry, who stated that at least 18 business associations, representing hundreds of entrepreneurs, strongly oppose the implementation of carbon taxes due to the high additional costs incurred by businesses.³⁹ In fact, the key to success in implementing carbon taxation, as seen in Sweden, is to implement carbon emissions based on the principles of sustainable economics. The application of carbon taxes to companies and the public does not only impose carbon taxes, but also provides incentives in the form of reductions in other taxes.

The Swedish government is trying to lower income tax rates for individuals to 50% from 80% and for companies to 30% from 57%. Also, Swedish government agencies have abolished several types of levies, namely the 2007 wealth tax, the 2005 business tax, and the 2004 inheritance tax. This is intended to avoid burdening the public and to ensure that the implementation of carbon taxes is in line with the principles of sustainable economics. Therefore, a new mechanism is needed in the form of tax reduction incentives or tax exemptions to ease the burden on the public and companies.

The next mechanism in minimizing carbon emissions is through environmentally friendly renewable energy and the use of geothermal energy. According to data from the Directorate of Geothermal Energy, Indonesia only utilizes 8.9% of its geothermal energy, even though Indonesia has 40% of the world's geothermal energy. Geothermal energy can be maximized through utilization in production forest areas and water areas. This is in line with the opinion of Bambang Hendroyono, Secretary General of the Ministry of Environment and Forestry, who emphasized that supporting Nationally Determined Contributions in reducing carbon emissions requires the utilization of production forests through organized efforts that are expected to help reduce carbon emissions.⁴⁰

³⁸ Cahyono, B. (2021). Asas Pemungutan Pajak Dalam Pajak Penghasilan Transaksi Saham. *Jurnal Sekolah Tinggi Perpajakan Indonesia*, p. 77.

³⁹ Elsa, H. U. (Vol. 6, No. 2, 18 November Tahun 2022). Menimbang Kesiapan Penerapan Carbon Pricing di Indonesia dengan Studi pada Kanada, Britania Raya, dan Australia. *Jurnal Pajak Indonesia*, p. 413.

⁴⁰ Anugrah, N. (2023, 1 November). *Kesatuan Pengelolaan Hutan, Kunci Strategis Kurangi Emisi Sektor Kehutanan*. Diakses pada tanggal 9 november 2024. Pukul 05.14 WIB.

In addition, the transition to renewable energy using sources such as solar, wind, and biomass can minimize dependence on fossil fuels, which are the main cause of carbon emissions. Biomass itself is an energy source derived from organic matter that is converted into various forms of energy such as heat, biogas, electricity, bioethanol, and biodiesel. Indonesia has 400 gigawatts (GW) of biomass, but only 11 percent of it is utilized. Therefore, reducing emissions can be achieved through the maximum utilization of biomass, accompanied by cooperation between the government, the private sector, academics, and the community.⁴¹

Finally, there is a mechanism that can be implemented through carbon trading, which is an alternative to reducing emissions without carbon taxes. With the carbon trading system, companies can purchase carbon credits from projects that have successfully minimized emissions. This not only provides incentives for companies to invest in clean technology, but also creates a new market for carbon credits in Indonesia. Whereas carbon trading in Article 23 of Law No. 4 of 2023 concerning the Development and Strengthening of the Financial Sector emphasizes that carbon trading as a market-based mechanism is an effort to minimize greenhouse gas emissions through carbon trading activities.⁴²

Carbon trading is conducted in two ways as stipulated in Presidential Regulation No. 98 of 2021 concerning the Implementation of Carbon Economic Value for the Achievement of Contribution Targets, which was issued at the national level, as well as the control of greenhouse gas emissions regarding the sustainability of national development, which emphasizes that efforts to minimize greenhouse gas emissions through carbon trading, namely the Greenhouse Gas Emissions Trading & Offset system.⁴³ The mechanism referred to is as follows:⁴⁴

1. Emissions trading is a cap and trade mechanism whereby the government sets a maximum limit (cap) on total emissions that may be released. Businesses that exceed this limit can purchase carbon units from other businesses that have excess emission quotas.
2. Greenhouse gas emission offsets, or carbon credits, are certificates that recognize the minimization of emissions carried out by a company or

Lihat dalam <https://ppid.menlhk.go.id/berita/siaran-pers/7480/kesatuan-pengelolaan-hutan-kunci-strategis-kurangi-emisi-sektor-kehutanan>

⁴¹ Yudha, W. A. (2023). *Strategi Pengembangan Energi Baru Terbarukan dalam rangka Ketahanan Energi*. Jakarta: Lembaga Ketahanan Nasional Republik Indonesia. p. 48

⁴² See in Pasal 23 UU Nomor 4 Tahun 2023 tentang Pengembangan dan Penguatan Sektor Keuangan, lembar negara tahun 2023 no 4, tambahan lembar negara no. 6845.

⁴³ See in Pasal 49 ayat 2 Peraturan Presiden Nomor 98 tahun 2021 tentang Penyelenggaraan Nilai Ekonomi Karbon untuk Pencapaian Target Kontribusi yang ditetapkan secara nasional dan pengendalian emisi gas rumah kaca dalam pembangunan nasional.

⁴⁴ Santoso, R. (2024, 29 Januari s.d 4 Februari). Upaya Pengurangan Emisi dan Insentif Karbon. *Isu Sepekan Bidang Ekkuinbang, Komisi IV DPR*, p. 1.

specific activity after going through a process of measurement, reporting, and verification. The results are recorded in the National Registry System for Climate Change Control. These credits can then be traded through various mechanisms, such as auctions, marketplaces, or negotiations, where companies can buy and sell through the Carbon Exchange or the carbon market through IDX Carbon.

The carbon trading mechanism is inseparable from buying and selling practices. According to a report from Bloomberg's Global Carbon Market Outlook in 2024, prices in various carbon markets for 2050 will increase to USD 238/ton. This is because the net zero emission target is getting closer, so carbon trading is increasing. The rapid development of the carbon market is inseparable from the risk of carbon crimes. However, carbon trading has a significant impact on reducing carbon emissions by 50%. According to Adhityani Putri, Executive Director of the Indonesia CERAH Foundation, carbon trading can inspire companies to reduce carbon emissions so that they can be traded with a high frequency of carbon credits.⁴⁵

IV. CONCLUSION

Based on the analysis conducted, it can be concluded that the implementation of carbon tax in Indonesia, although aimed at reducing greenhouse gas emissions and encouraging the transition to a green economy, has a significant impact on the welfare of the community, especially the lower-middle class, through increased production costs and prices of goods sourced from fossil fuels. Therefore, the ideal carbon tax mechanism needs to be integrated with the principles of sustainable economy, including the provision of fiscal incentives, the development of renewable energy such as geothermal, biomass, and solar energy, as well as the implementation of transparent and effective carbon trading, as has been done in Sweden, so that the goal of reducing emissions can be achieved without sacrificing socio-economic stability and community welfare. With these various issues in mind, the author proposes several recommendations that can be implemented with reference to the Swedish model, which applies incentives in the form of tax reductions and other tax exemptions. This aims to reduce high operational costs while continuing to prioritize public welfare. Thus, this mechanism can be implemented in line with the principles of sustainable economics.

Based on the issues discussed above, the author proposes recommendations that can be implemented to help reduce carbon emissions based on the principles of sustainable economics. These include the implementation of a carbon tax with incentives for the community and

⁴⁵ Wulandari, F. (2023, 12 September). *Bisa Tekan Emisi, Begini Penjelasan Mekanisme Perdagangan Karbon*. Diakses pada tanggal 9 november 2024. Pukul 05.20 WIB. Lihat dalam <https://www.voaindonesia.com/a/bisa-tekan-emisi-begini-penjelasan-mekanisme-perdagangan-karbon/7149933.html>

companies in the form of tax reductions or exemptions to reduce the very high costs, utilizing geothermal energy and production forests while still complying with applicable environmental laws, and finally conducting carbon trading in accordance with laws and regulations. It is hoped that all of these measures can help minimize carbon emissions so that the Nationally Determined Contribution targets can be achieved.

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