Eduvest – Journal of Universal Studies
Volume 6 Number 6, June, 2026
p- ISSN 2775-3735- e-ISSN 2775-3727

Green Tax in Various Countries: A Review of Implementation and its Relevance for Indonesia

Ana Ni'matul Laila*, Heru Tjaraka
Universitas Airlangga, Indonesia
Email: ana.nimatul.laila-2024@feb.unair.ac.id*

Keywords:
Carbon Tax; Fiscal Policy; Green Tax.

Abstract
Climate change and environmental degradation have become critical global issues, driving the emergence of green tax policies as a key fiscal instrument. This study reviewed the implementation of environmental taxation, especially carbon tax, in several countries including Sweden, Canada (British Columbia), Spain, and Malaysia. Through a qualitative literature review approach, it examined the effectiveness, policy design, and socio-political acceptance of green tax initiatives in different contexts. These findings highlight that successful implementation depends not only on tax structures but also on public legitimacy, revenue recycling mechanisms, and integration with broader economic and environmental strategies. Drawing lessons from this international experience, this study evaluates the potential and challenges of implementing green tax policies in Indonesia. The report concludes that with careful policy design, institutional readiness, and public engagement, green taxes can serve as a strategic tool to support sustainable development and fiscal reform in Indonesia. The results of this study have two main implications. First, in terms of policy, this study provides concrete recommendations for the Indonesian government in designing an adaptive carbon tax scheme, especially regarding the importance of pro-people revenue recycling mechanisms and the transparency of the use of tax funds to build public legitimacy. Second, practically, this research implies the need to strengthen institutional capacity and cross-sector coordination before the carbon tax is fully implemented, as well as the need for effective public communication strategies to reduce socio-political resistance

INTRODUCTION

Climate change and environmental degradation have become serious global challenges to the economy and human life. Economic activities that produce carbon emissions and environmental pollution are now the main focus of international fiscal and regulatory policies. In this context, green tax or environmental tax emerged as one of the important instruments that aims to internalize the external costs (externalities) of economic activities that damage the environment into market prices (Oates, 1995). In this research, the green tax is focused on carbon tax as one of the most widely adopted and relevant forms of green tax in climate change mitigation efforts. This kind of tax is not only aimed at limiting the environmental impact, but it is also expected to change the behavior of economic actors and signal appropriate prices to limited environmental resources.

The green tax policy also has a double dividend *function*, which not only reduces pollution, but also increases the efficiency of the tax system by shifting the tax burden from

productive activities (such as labor or investment) to activities that damage the environment (Nasution, 2025; Ocktarani & Kasim, 2024; Prasidya et al., 2025). However, while this is very promising in theory, the literature suggests that such dual benefits can only be achieved if policies are carefully designed, especially in relation to existing tax structures and *revenue recycling* mechanisms.

Empirically, the carbon tax is the most widely implemented form of green tax by many countries with the main goal of reducing greenhouse gas emissions. As global climate targets increase, as set out in the Paris Agreement and the carbon neutrality targets of various countries, attention to carbon pricing instruments, including carbon taxes, is increasing (Lysunets, 2023; Parry et al., 2022). As of 2022, there are 46 jurisdictions that have implemented carbon pricing schemes, with 36 of them implementing carbon taxes directly, covering around 5.7% of total global greenhouse gas emissions (Köppl & Schratzenstaller, 2023). Empirical studies show that carbon taxes can significantly reduce the rate of carbon emissions without sacrificing economic growth and competitiveness, as long as policies are properly designed and take into account distributional aspects as well as public revenue.

Indonesia itself has shown a commitment to adopt a carbon tax policy as a form of *green tax* in the national climate mitigation strategy. This is marked by the issuance of Article 13 in Law Number 7 of 2021 concerning the Harmonization of Tax Regulations (HPP Law), which explicitly regulates taxes on carbon emissions. The initial plan to implement the carbon tax began on April 1, 2022 with a *cap and tax* scheme for the coal-fired Steam Power Plant (PLTU) sector. However, the implementation was postponed due to considerations of post-pandemic economic recovery and the readiness of technical regulations. As a follow-up step, the government launched the Carbon Exchange (IDXCarbon) in September 2023 as a carbon market support infrastructure, which trades emission limit instruments and emission reduction credits. However, the implementation of the carbon tax as a whole still faces various obstacles, including institutional challenges, intersectoral coordination, and risks to industrial competitiveness. In addition, this policy raises concerns about the negative impact on people's well-being, especially low-income groups, who are more vulnerable to rising energy prices and basic necessities (Duan et al., 2017, 2021).

This condition indicates the importance of mature and adaptive policy design, as well as the need for strong socio-political support to ensure the effectiveness of *green tax* policies more broadly in Indonesia (Supriatna & Lenz, 2022). As a form of response to this phenomenon, this study aims to examine the implementation of *green taxes* in various countries, evaluate its successes and challenges, and identify lessons that can be applied in the context of Indonesia's fiscal and environmental policies (Ichsan et al., 2025; Nurfatriani et al., 2015). The benefits of this research consist of two aspects. Theoretically, this study enriches the literature on green fiscal policy by presenting a critical synthesis of the empirical experiences of various countries, so that it can be a reference for the development of green tax analysis models in developing countries. In practical terms, this study is expected to provide evidence-based policy recommendations for the Indonesian government, especially the Ministry of Finance and the Ministry of Environment and Forestry, in designing an adaptive, equitable, and sustainable carbon tax scheme. In addition, the results of this research are also useful for stakeholders such as industry players, academics, and civil society organizations in

understanding the dynamics of green tax implementation and formulating more effective policy participation and advocacy strategies.

RESEARCH METHODS

This study used a qualitative-descriptive approach with the literature *review method* as the main basis for data collection and analysis. Data were obtained from a variety of secondary sources, including scientific journals, international policy reports, publications of multilateral organizations such as the OECD and IMF, as well as national and international policy documents related to green taxes and carbon taxes. This approach allows the authors to compare the implementation of green tax policies in different countries, as well as identify the general patterns, challenges, and success factors of each case. This study uses a case study of carbon tax because carbon tax is the most widely implemented and most relevant form of green tax for Indonesia.

The analysis process is carried out in a thematic way, namely grouping data based on important themes such as policy design, effectiveness of reducing emissions, political legitimacy, and distributional aspects. Case studies of countries such as Sweden, Canada (British Columbia), Spain, and Malaysia were purposively chosen to represent diversity in economic development levels, energy structures, and fiscal policy approaches. The empirical studies used contain elements of econometric models and general equilibrium simulations, thus allowing triangulation between qualitative and quantitative results.

In addition, the relevance analysis for Indonesia was prepared by a comparative method, namely by matching economic, social, and institutional conditions in Indonesia with the context of case study countries. The analytical framework used also considers environmental economic principles such as externalities, *the polluter pays principle*, and the concept *of double dividend*. With this method, the research is expected to be able to provide a comprehensive and evidence-based picture to formulate appropriate green tax policy recommendations in Indonesia.

RESULTS AND DISCUSSION

IMPLEMENTATION OF GREEN TAX IN VARIOUS COUNTRIES

Sweden

Sweden was one of the first countries to adopt a carbon tax systematically. In 1991, the country introduced a carbon tax as part of broader green fiscal reforms, aimed at reducing carbon emissions while shifting the tax burden from labor to pollution. However, an empirical evaluation by Shmelev and Speck (2018) shows that although Sweden has been implementing a carbon tax for more than two decades, the effect of carbon taxes on CO_2 emissions is not always statistically significant when evaluated separately, except on gasoline consumption. In contrast, energy taxes on coal and LPG show a more tangible impact on reducing CO_2 emissions (Shmelev & Speck, 2018).

The decline in carbon emissions in Sweden is not only due to taxes, but also to structural factors in the economy and the energy transition. The same study shows that technological innovation plays an important role, particularly in the development of nuclear and hydro energy, which replaces fossil fuel-based power plants. Meanwhile, the use of non-hydro renewables such as wind and solar has not shown a significant effect on reducing emissions,

likely due to their still relatively small share of the national energy mix. In addition, higher global oil prices also contribute to lower emissions as they encourage energy efficiency and reduce fossil fuel consumption (Shmelev & Speck, 2018).

In addition to technical policy and energy markets, socio-political dynamics also play an important role. Swedish society has a relatively high environmental awareness and has historically been accustomed to large tax rates. This context provides space for the government to implement environmentally-based fiscal policies without facing major resistance. This suggests that the effectiveness of carbon taxes relies heavily on a combination of policy design, alternative energy infrastructure readiness, and social legitimacy over progressive fiscal policies. Thus, Sweden's experience is an important example of the need for a multi-dimensional approach in designing and evaluating green taxes.

Canada (British Columbia)

British Columbia (BC), Canada, is one of the most studied examples of carbon tax implementations due to its unique design and relatively successful results. In 2008, the B.C. provincial government implemented a carbon tax with a revenue-neutral approach, which means all revenue from this tax is returned to the community through personal and corporate income tax deductions. This policy is seen as a success in the context of market-based climate policies because it is able to reduce fossil fuel consumption without hindering provincial economic growth (Harrison, 2012).

One of the key factors for the success of this policy is the political and public communication approach used by the B.C. government. Harrison (2012) notes that this success is influenced by two important conditions: first, the policy is launched by the ruling political party, which allows implementation without being interrupted by electoral calculations in the short term. Second, the global recession that hit shortly after the policy was launched actually shifted public attention from environmental issues to economic issues, so that the pressure on the government to revoke this policy is relatively low. However, there are indications that this tax is lowering the popularity of its supporting parties, showing that even policies based on "good policy" can face political obstacles when not accompanied by strong electoral support.

In contrast to the success in B.C., the Liberal Party's attempt to implement a carbon tax at the federal level has failed miserably. The party proposed a scheme called "Green Shift" in the same year, which was also revenue-neutral, but failed to gain public support. In the 2008 federal election, the Liberal Party suffered its worst defeat in its history, and the leader resigned. The comparison between B.C.'s successes and failures at the federal level underscores the importance of political legitimacy and socio-economic moments in determining the fate of carbon tax policy (Baranzini & Carattini, 2017; Dilasari et al., 2022). This shows that in addition to strong policy design, proper timing and communication strategies are also crucial factors in ensuring the success of green taxes (Harrison, 2012).

Spanyol

Spain provides an important case study in the analysis of green tax reform through a general economic model-based approach and microeconometrics. In a study by Labandeira et al (2004), a simulation was carried out of carbon tax reform accompanied by a reduction in social security contributions by employers. This model shows that taxes on CO_2 emissions

combined with reduced labour tax burdens can provide double benefits: reduced carbon emissions and increased economic efficiency.

The model used in this study integrates a *computable general equilibrium* (CGE) model with a microeconometric household energy demand model. This allows for a thorough analysis not only of the macroeconomic impact of the reforms, but also of the distribution of their impact on different income groups. The results of the simulation showed that the distributional effect of the carbon tax reform was relatively small and not statistically significant, reinforcing the argument that this tax reform was socially acceptable.

In addition, the study also confirms that policy designs accompanied by return schemes such as labor tax reductions have great potential to reduce public resistance to green taxes. Furthermore, the findings show that the success of green tax reform does not only depend on the tax rate, but also on the strategy of reusing tax revenue to strengthen economic welfare and productivity. In the context of Spain, which at the time was facing great pressure to meet its emissions reduction targets, the results of this study provide a strong empirical basis for the formulation of an effective and inclusive climate policy.

Malaysia

Malaysia offers a different perspective in the discourse on the effectiveness of carbon taxes, particularly in the context of developing countries. In a study by Loganathan et al (2014), it was found that although Malaysia has adopted an environmentally-based fiscal policy in the form of a carbon tax, it has not shown significant effectiveness in lowering CO_2 emissions. Econometric analysis based on time series data between 1974 and 2010 shows that the carbon tax policies implemented are not strong enough to disrupt the positive relationship between economic growth and carbon emissions, as predicted by the Environmental Kuznets Curve (EKC) hypothesis.

Furthermore, the results of Granger's causality test in the study show a two-way relationship between carbon taxes and economic growth. This means that not only does economic growth affect the volume of emissions and tax revenues, but the carbon tax itself also has implications for national economic performance. However, because Malaysia's carbon tax policy design has not been directly linked to actual emissions levels (e.g. through carbon intensity per unit of GDP), its effectiveness in creating incentives for behaviour change is still weak. This indicates that there are shortcomings in the policy structure, including in the formulation of tariff bases and monitoring mechanisms (Loganathan et al., 2014).

The study underscores the importance of evidence-based policy design and the integration of fiscal policy with environmental objectives. As suggested by the researchers, the government should re-evaluate the tariff-setting mechanism and consider the use of alternative policy tools that are more proactive and incentive, such as subsidies for green innovation or green infrastructure investments. In the context of developing countries such as Malaysia, the main challenge is not only the existence of a carbon tax itself, but the effectiveness of design and implementation capable of driving the transition to a low-carbon economy in an inclusive and sustainable manner (Loganathan et al., 2014).

The implications of this study show that Indonesia's fiscal policy needs to be transformed by systematically integrating environmental aspects into the national tax system. The implementation of the green tax not only functions as a tool to internalize environmental

externalities, but also has the potential to become a strategic new source of income to finance the green development agenda and adaptation to climate change. However, the success of the implementation of the green tax is highly dependent on the public legitimacy of the policy. Therefore, transparency in the use of tax funds and the existence of a fair compensation scheme for vulnerable groups must be a top priority so that this policy can be accepted and implemented in a sustainable manner.

Further research is suggested to develop a quantitative approach and primary data analysis to complement the literature review that has been conducted, especially in measuring the economic and distributional impact of green taxes more empirically in the Indonesian context. In addition, comparative studies between regions in Indonesia are also important to evaluate sectoral and regional readiness for the implementation of environmental taxes, given the differences in economic structure and fiscal capacity between regions. In addition, longitudinal research on public perception and the effectiveness of policy communication will be very useful to understand the socio-political factors that influence the success of green taxation, especially in the context of developing countries with varying levels of environmental awareness.

CONCLUSION

Green taxes, especially carbon taxes, have proven to be an effective policy instrument to address environmental impacts while improving fiscal efficiency if carefully and contextually designed. Case studies from countries such as Sweden, British Columbia, Spain, and Malaysia show that the success of green taxes depends not only on tariff structures, but also on social legitimacy, policy communication strategies, revenue recycling mechanisms, and the readiness of alternative energy infrastructure. For Indonesia, green taxes have great potential as a fiscal tool to support sustainable development and transition to a low-carbon economy, as long as these policies are evidence-based and tailored to national economic, social, and institutional characteristics. In line with this, Albab and Tjaraka emphasized that the success of the carbon tax policy is highly determined by three main interrelated aspects, namely macroeconomic stability, resilience and adaptation of the industrial sector, and guarantees for the social welfare of the community at large.

REFERENCES

Albab, Y. M. U., & Tjaraka, H. (2024). Efektivitas pajak karbon: Studi literatur. *Owner, 8*(2). https://doi.org/10.33395/owner.v8i2.1983

Baranzini, A., & Carattini, S. (2017). Effectiveness, earmarking and labeling: Testing the acceptability of carbon taxes with survey data. *Environmental Economics and Policy Studies, 19*(1), 197–227. https://doi.org/10.1007/s10018-016-0144-7

Dilasari, A. P., Ani, H. N., & Rizka, R. J. H. (2022). Analisis best practice kebijakan carbon tax dalam mengatasi eksternalitas negatif emisi karbon di Indonesia. *Owner, 7*(1), 184–194. https://doi.org/10.33395/owner.v7i1.1182

Duan, Y., Han, Z., Zhang, H., & Wang, H. (2021). Research on the applicability and impact of CO_2 emission reduction policies on China's steel industry. *International Journal of Climate Change Strategies and Management, 13*(3), 352–374. https://doi.org/10.1108/IJCCSM-02-2021-0020

Duan, Y., Li, N., Mu, H., & Gui, S. (2017). Research on CO_2 emission reduction mechanism of China's iron and steel industry under various emission reduction policies. *Energies, 10*(12), 2026. https://doi.org/10.3390/en10122026

Fremstad, A., & Paul, M. (2019). The impact of a carbon tax on inequality. *Ecological Economics, 163*, 88–97. https://doi.org/10.1016/j.ecolecon.2019.04.016

Harrison, K. (2012). A tale of two taxes: The fate of environmental tax reform in Canada. *Review of Policy Research, 29*(3), 383–407. https://doi.org/10.1111/j.1541-1338.2012.00565.x

Ichsan, A. C., Markum, I. M. L., Aji, K. W., Aridantari, L. D., Azizah, L., & Sa'adiah, H. (2025). Policy analysis to support the implementation of fiscal incentives based on environmental conservation in West Nusa Tenggara Province. *International Journal of Environmental Impacts, 8*(5), 836–845.

Köppl, A., & Schratzenstaller, M. (2023). Carbon taxation: A review of the empirical literature. *Journal of Economic Surveys, 37*(4), 1353–1388. https://doi.org/10.1111/joes.12531

Loganathan, N., Shahbaz, M., & Taha, R. (2014). The link between green taxation and economic growth on CO_2 emissions: Fresh evidence from Malaysia. In *Renewable and Sustainable Energy Reviews, 38*, 1083–1091. https://doi.org/10.1016/j.rser.2014.07.057

Lysunets, M. V. (2023). Carbon pricing as a tool for cross-border carbon regulation and "green" transformation of the global economy. *The World of New Economy, 17*(2), 27–36.

Metcalf, G. E. (2021). *Paying for pollution: Why a carbon tax is good for America*. Oxford University Press.

Nasution, V. U. H. (2025). Combating environmental pollution crimes through environmental tax instruments in Indonesian development law. *Priviet Social Sciences Journal, 5*(11), 364–371.

Nurfatriani, F., Darusman, D., Nurrochmat, D. R., Yustika, A. E., & Muttaqin, M. Z. (2015). Redesigning Indonesian forest fiscal policy to support forest conservation. *Forest Policy and Economics, 61*, 39–50.

Ocktarani, O., & Kasim, E. (2024). Environmental tax reform: Eco-friendly policies in Indonesia amid the climate crisis. *Jurnal Vokasi Indonesia, 12*(2), 106.

Parry, I., Zhunussova, K., & Black, M. S. (2022). *Carbon taxes or emissions trading systems?: Instrument choice and design*. International Monetary Fund.

Prasidya, T., Suhaedi, W., Fikri, M. A., & Rakhmawati, I. (2025). Balancing green and growth: Exploring the implementation of environmental tax in Asian context – A case study of Vietnam, China, and Malaysia. *Jurnal Ilmiah Tata Sejuta STIA Mataram, 11*(1), 38–58.

Shmelev, S. E., & Speck, S. U. (2018). Green fiscal reform in Sweden: Econometric assessment of the carbon and energy taxation scheme. In *Renewable and Sustainable Energy Reviews, 90*, 969–981. https://doi.org/10.1016/j.rser.2018.03.032

Supriatna, J., & Lenz, R. (2022). *Sustainable environmental management: Lessons from Indonesia*. Yayasan Pustaka Obor Indonesia.

Wang, Y., & Yu, L. (2021). Can the current environmental tax rate promote green technology innovation? Evidence from China's resource-based industries. *Journal of Cleaner Production, 278*, 123443. https://doi.org/10.1016/j.jclepro.2020.123443