



Combating Climate Changes Through Fiscal Policies in Developed World: Key Insights for Indonesia from Scandinavian Green Tax Scheme

Ainaya Fatimah Nurulita¹, Tusta Citta Ihtisan Tri Prasadya²

^{1,2}Universitas Mataram, Indonesia

Correspondent: fatimahainaya@gmail.com¹

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ABSTRACT: Climate change poses an urgent global challenge, necessitating the adoption of innovative fiscal policies to mitigate its effects. Green taxation, rooted in Pigou's 20th-century economic theory, has gained prominence as a mechanism to incentivize sustainable practices and deter environmental harm. This study investigates the implementation of green tax policies in Denmark, Norway, and Sweden, analysing their effectiveness in reducing carbon emissions and promoting renewable energy utilization. Employing a comparative case study approach, the research identifies key factors underpinning the success of these Scandinavian models, including phased implementation, public acceptance, and the integration of economic and environmental objectives. By drawing lessons from these experiences, the study provides policy recommendations for Indonesia to develop and enhance its green taxation framework and process of implementation which include the incorporation of these strategies: phased tax implementation, transparent stakeholder engagement, strategic revenue use, and industry-specific measures.

Keywords: Climate Change, Green Taxation, Sustainable Development, Social Development.



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INTRODUCTION

Environmental degradation has been a major topic of discussion for policymakers on a global scale since the late 1960s. Decades of rapid industrialization have significantly increased greenhouse gas emissions, leading to rising global temperatures. This phenomenon has caused climate change, which affects the entire planet. Its impacts are wide-ranging, including melting ice caps, rising sea levels, unpredictable rainfall patterns, wildfires, and prolonged droughts (Hussain & Dogan, 2021; Su et al., 2023). As global warming becomes more prevalent, efforts to combat its causes and mitigate its effects are gaining momentum worldwide through policies initiated by countries and international

organizations. One such approach is the adoption of green taxes, designed to encourage sustainable practices, lower greenhouse emissions, and foster greater environmental accountability.

The term green tax which is also known as the environmental tax was coined by Pigou (1920) in the early 20th century. The idea of this tax scheme was introduced to address the environmental costs of private activities that otherwise be borne by society. By internalizing such costs, a green tax could reflect the true environmental costs of the activity and influence the decision-making in the private sectors (Milne, 2007). More than five decades later, the Organization of Economic Co-operation and Development (OECD) – built upon Pigou’s idea – developed a green theoretical basis that is referred to as the *polluters pay principle*. The principle was designed to ensure that polluting behavior are altered – or if they are not – polluters are required to compensate society for the damages they cause and can be implemented through economic instruments such as taxes (Mottershead et al., 2021). However, despite the early theoretical discussions, the practical implementation of green taxation systems did not emerge until the late 1980s, with Scandinavian countries among the first to adopt these measures. This delay highlights the challenges in translating theoretical concepts into actionable policies, particularly those that require broad societal and political support.

Nevertheless, Scandinavian nations like Denmark, Sweden, and Norway were successfully setting examples for how such policies could be effectively applied to address environmental concerns by pioneering the introduction of carbon taxes and other green tax initiatives. Their early adoption underscored the feasibility and potential impact of green taxes, paving the way for broader international implementation. In these three countries, green taxation emerged as a prominent topic in environmental policy discussion in 1988 (Daugbjerg & Pedersen, 2004). Before the releasing carbon tax scheme in the early 1990s, Denmark, Sweden, and Norway had implemented pesticide tax. The purpose of the tax was generally to address the growing concerns over agri-environmental damages caused by farm chemical products. In Denmark, for instance, the revenue from the tax was used to fund subsidies for organic farming, monitor pesticide pollution, and support policies aimed at reducing nitrate pollution. In Sweden and Norway, the green tax revenue from pesticides was allocated to environmental improvement on farms, including the enlargement of storage facilities and a land conservation scheme (Daugbjerg & Pedersen, 2004).

In the early 1990s, Scandinavian nations took bold and transformative steps in the application of green taxes by introducing carbon taxes. These measures marked a significant turning point in environmental policy, as they directly targeted carbon emissions, one of the primary drivers of climate change. This initiative was implemented shortly after the 1987 report *Our Common Future* by the Brundtland Commission, which advocated for the use of green taxes as a strategy to address environmental challenges (Andersen, 1994). Sweden and Norway implemented a carbon tax in 1991 with Denmark adopting a similar measure in 1992. After a study examined that the implementation of such tax had successfully reduced carbon dioxide emissions (Speck et al., 2006), several countries started to follow suit. Germany, for instance, initiated a phased introduction of a tax on energy products and electricity in 1999. Similarly, two years later, in 2001, the United Kingdom launched a climate change levy on

electricity and fossil fuels consumed outside the household sector (Milne, 2007). Support for green taxation has grown significantly since then, particularly among developed nations. The scope of green taxation has also broadened over time to encompass various forms, including carbon, sulfur, emissions, and pollution taxes (Nobanee & Ullah, 2023).

Inspired by the successful implementation of green tax policies in developed nations, many emerging markets began adopting similar measures in the early 2010s as part of their broader environmental strategies, not to mention Indonesia. As one of the largest economies in Southeast Asia, the government of Indonesia recognized the potential benefits of green taxation in addressing its environmental challenges. However, similar to other emerging markets, the implementation of such policies has been regarded as slow, particularly due to political resistance. A study by Leonard et al., (2024) indicated that discussions on green taxes began in Indonesia as early as 2006, and were later incorporated into the *Draft Law on Regional Taxes and Levies* in 2014 (Eva Mustika Pratiwi & Setyawan, 2014). Nevertheless, a solid foundation of green tax only emerged in 2021 through the promulgation of the *Harmonization of Tax Regulation Law* and the finalization of the *Draft Presidential Degree on Economic Value of Carbon*. These two enactments regulate the carbon tax and carbon exchange technical mechanism which will be implemented on limited scope by July 2022. From this initial stage, a second phase was planned to be carried out by 2025, involving the full implementation of carbon trading through carbon exchanges, along with the expansion of the carbon tax sector based on the readiness of individual industries (Suryani, 2022).

Departed from this background, this study is aimed to address the following questions: how can insights from Scandinavian green tax policies be adapted to develop an effective fiscal strategy for combating climate change in Indonesia? Its objective is to examine how Indonesia can strengthen its green taxation framework by drawing comparative insights from the pioneering experiences of Denmark, Sweden, and Norway. As leaders in implementing green taxation policies, these three Scandinavian countries offer a wealth of experience and best practices that Indonesia can adapt to its unique socio-economic and environmental context. This study seeks to identify key lessons, including effective policy design, gradual implementation strategies, mechanisms for balancing economic growth with environmental sustainability, and methods for fostering public and industrial acceptance. Furthermore, it aspires to highlight how green taxation policies can contribute to achieving national sustainability goals and aligning with global climate change initiatives, ultimately promoting a greener and more resilient economy. The novelty of this research lies in its comparative approach, drawing actionable insights from Scandinavian green tax schemes to address climate change in Indonesia. By contextualizing successful fiscal policies from developed nations within Indonesia's unique socio-economic and environmental framework, the study offers a fresh perspective on adapting proven strategies to developing economies. It bridges the gap between global best practices and local implementation, providing practical, policy-oriented recommendations for a sustainable future.

Green Tax: An Overview

With growing concerns over environmental degradation and the escalating impacts of climate change, green taxation has become an increasingly prominent topic in global discussions on mitigating the effects of global warming. These policies – designed to encourage environmentally sustainable practices by placing a financial burden on activities that harm the environment – are not only gaining traction in their implementation but are also emerging as a significant area of academic and policy research. Over the past few decades, extensive studies have examined the design, effectiveness, and socio-economic impacts of green taxation across different countries and sectors. Nobanee & Ulah (2023) mentioned that the concept of green taxation, particularly that of carbon tax, has garnered significant attention and become a popular research focus amongst international organization and economist due to its cost-reduction effectiveness. Grounded on Pigou's theoretical framework, the concept has expanded and researchers such as Norouzi have reached a consensus on the definition and nuances of green tax, which have evolved from singular-specialized tax into a diverse range of tax types and strategies aimed at resource utilization and environmental protection (Norouzi et al., 2022; Saad & Ariffin, 2019; Shi et al., 2023; Yang et al., 2024).

OECD, for instance, defined green tax as a tax imposed for environmental purposes, such as those design to incentivize the reduction of specific emission to optimal level or taxes levied on environmentally harmful products (Cottrell et al., 2023). While the OECD focuses more on the object of the tax imposed, Deng & Huang (2020) Defined green tax based on its scope. In their study, green tax is divided into two categories: (1) the narrow perspective which solely concentrate on pollutant emission; and (2) the broader perspective which considers the interconnected advancement of the economy, ecology, and society. In the most recent research, Nobanee & Ulah(2023) correlates the green tax definition with its capacity to support the achievement of sustainable development goals both in the advanced and emerging nations. The implementation of green taxation is considered vital in attaining sustainable development by promoting the adoption of cleaner, more efficient technology, reducing reliance on non-renewable resources, and discouraging environmentally harmful practices. Further, Nobanee & Ulah (2023) also highlight the various form of green taxation which includes carbon tax, pollution tax, and tax on waste disposal. Concerning this, OECD has specifically categorizes green tax into four types: (1) environmental pollution tax that is levied on the emission of pollutant such as sulfur, nitrogen, garbage, and shopping bag consumption; (2) energy tax that is levied on the extraction, use, and emission of energy sources; (3) vehicle and transportation tax that is levied on the purchase, sale, use, and road use of motor vehicles and ships; and (4) resource tax that is levied on the extraction and use of natural resources, including mineral, natural gravel, tap water, and hunting license. In summary, green taxes encompass several key aspects, including the following:

Table 1. Summary of Key Aspect on Green Tax Definition

No	Key Aspect	Sources
1	Design to incentivize, aimed at emission reduction.	(Cottrell & Falcão, 2018)
2	Having two scopes of implementation: (1) focus solely on pollutants; and (2) considering the intricacies of such taxes within the dimension of economy, ecology, and social.	(Deng & Huang, 2020)
3	Imposed particularly to achieve sustainable development goals.	(Nobanee & Ullah, 2023)

Having been implemented in various countries for more than three decades, green tax is bringing enormous benefits environmentally and economically. A study by Yunzhao (2022), for instance, showed that the implementation of eco-innovation and green taxation in E7 countries had successfully reduced the emissions of carbon from 1995 through 2018. Similarly, Liu et al. (2023) also highlighted that green tax policies play a crucial role in promoting environmentally friendly behaviours while discouraging activities that contribute to pollution and resources depletions. Green taxation policies offer financial support for renewable energy development, technological innovation, implementation, and the research and promotion of sustainable energy practices. The strategic and efficient use of environmental tax instruments acts as a strong incentive to transition to renewable energy sources, paving the way for an energy future that is both economically viable and environmentally sustainable (Song & Hua, 2024).

However, it is important to acknowledge that the discourse surrounding green taxes is often intertwined with debates about their economic implications. While green taxes aim to promote environmental sustainability, critics argue that they could impose financial burdens on businesses and consumers, potentially slowing economic growth. This is in line with the result of the study conducted by Lin & Li (2011) which noted that green tax is likely increase the prices of related products, raise operational costs for businesses, reduce the competitiveness of energy-intensive industries, and potentially have adverse effects on economic growth. Yip (2018) also mentioned that environmental tax may negatively impact the employment rate. Instead of opening more jobs, Yip (2018) argued that such tax had been shown to disproportionately affect individuals with lower levels of education, often leading to job displacement. This leaves many to take up temporary or informal employment, while others may become discouraged from participating in the workforce altogether. This duality highlights the need for carefully balanced policies that achieve environmental objectives without compromising economic stability.

Green Tax in Developing Countries Context

While climate change impacts the planet as a whole, its effects are unevenly distributed, with certain regions and communities experiencing more severe consequences than others. All economic predictions indicate that climate change will hit the developing countries hardest due to their limited resources, higher dependence on climate-sensitive sectors like agriculture, and weaker adaptive capacities. In response to this mounting crisis, governments in many developing countries have become increasingly aware of the need for environmental policies. Although the pace has been slow, there has been a growing recognition of the importance of green taxes as part of broader climate action strategies. Cottrell & Falcão (2018) argued that environmental taxes can help tackle some of the environmental challenges faced by developing countries, while promoting more sustainable production and consumption patterns. Additionally, they provide the financial resources needed to improve environmental and social outcomes. Similarly, the study conducted by Heine & Black (2018) also indicated that the impacts of green tax implementation are likely to be more positive in developing countries than is often perceived.

Within the context of developing countries, green tax is expected to deliver a *double dividend* – simultaneously reducing pollution and boosting economic growth. Heine & Black (2018) argued that the implementation can also enhance welfare in developing countries on two key fronts. *First*, green tax can directly improve well-being by reducing pollution and, consequently, minimizing welfare losses caused by environmental externalities. Moreover, because many pollutants are emitted simultaneously during certain processes, green tax's benefits often extend beyond the targeted pollutant. For example, burning coal releases both CO₂, which drives global warming, and PM2.5, a particulate matter harmful to health. By addressing such emissions, green tax can deliver multifaceted improvements to public welfare. *Second*, green tax can indirectly improve welfare by stimulating economic activity. This can be achieved either by lowering the excess burden of the tax system through revenue-neutral recycling or by expanding domestic resources for public investment.

Nevertheless, although the implementation of green taxes offers greater benefits in developing countries, it is important to emphasize that the complexity of their application poses significant challenges. These challenges often stem from factors such as limited institutional capacity, lack of comprehensive data for effective tax design, and political resistance from stakeholders who may be adversely affected in the short term. Kuralbayeva (2019), for instance, mentioned that when considering the implementation of such taxes, governments often evaluate whether they can serve dual purposes: not only achieving environmental objectives but also contributing to broader social and economic goals, such as reducing unemployment rates. In relation to green taxes, these policies can reduce private incomes, including those of individuals receiving state benefits, which in turn makes environmental tax reforms politically contentious and challenging to execute. Additionally, ensuring public acceptance of green taxes can be difficult in contexts where awareness about environmental issues is low or where citizens are already burdened by other taxes.

METHOD

This study employed qualitative method by adopting comparative case study approach (Bartlett & Vavrus, 2017), analysing the green tax schemes of three Scandinavian countries—Denmark, Norway, and Sweden. The aim is to identify effective green tax policies used to combat climate change and explore how these can be applied to Indonesia's context. The study will draw insights from the successes and challenges faced by these countries in implementing green taxes and aim to provide policy recommendations for Indonesia. Denmark, Norway, and Sweden were chosen for this study because of their advanced and well-documented green tax schemes. Each country has not only established green taxes but has also been successful in using these fiscal tools to reduce greenhouse gas emissions, promote renewable energy, and encourage sustainable consumption.

Data were collected through literature review. The collected data from three countries were then categorized into six comparative evaluations: (1) design, delving into the arrangement of green tax application; (2) implementation, aimed to find out the process of implementation; (3) outcome, to get insight regarding the result of such green tax designed implemented; (4) public acceptance, to measure how the policy was being perceived by each country's constituent; (5) success factor, to examine the elements contributed towards the success of the green tax policy; and (6) challenge, to explore the obstacle that might rise from the execution of such policy. By studying these countries through these six comparative evaluations, it is expected to have a better understand of the intricacies of implementing green taxes in a developed economy. These case studies will provide a foundation for identifying policy strategies that could be relevant to Indonesia. The research relied on secondary data from literature, government reports, and international publications to examine the design, goals, and impacts of green taxes in these countries. This will include government reports, research papers, and publications from international organizations that discuss the implementation of green taxes in Denmark, Norway, and Sweden.

RESULT AND DISCUSSION

The green tax has emerged as a pivotal strategy for nations striving to balance economic growth with environmental sustainability. By restructuring tax systems to penalize pollution and incentivize green practices, green tax aims to reduce environmental harm while promoting economic efficiency (Stameski et al., 2024). The Scandinavian countries—Denmark, Norway, and Sweden—stand at the forefront of implementing such policy, offering valuable insights into the practicalities and impacts of green tax. The following case studies delve into the specifics of each country's journey with green tax, analyzing the factors that contributed to their successes and the obstacles they encountered.

A Sneak Peak of Green Taxation in Scandinavian: The Case of Sweden, Norway, and Denmark

In the early 1990s, Sweden, Norway, and Denmark embarked on pioneering journeys to implement green taxation, tailoring their approaches to their unique economic landscapes and environmental objectives. These initiatives aimed to reduce greenhouse gas emissions, promote sustainable energy practices, and stimulate economic growth through environmental innovation. Sweden introduced its carbon tax in 1991, becoming one of the first countries globally to implement such a measure. The tax targeted carbon dioxide emissions from fossil fuels, with the initial rate set at 120 US dollars per ton of carbon. This rate was considered among the highest at the time, reflecting Sweden's commitment to environmental sustainability (Jonsson et al., 2020). Sweden's carbon tax design was influenced by two primary objectives: addressing climate change and reforming the tax system. The tax aimed to stabilize Swedish carbon emissions, aligning with the *1988 stabilization target*, and to replace other taxes, such as income and payroll taxes, with environmental levies (Hildingsson & Knaggård, 2022). According to Jonsson et al. (2020) *Green-tax switch*. This approach involved increasing environmental taxes, such as the carbon tax, while reducing other taxes.

Upon implementation, the tax was modest initially, levied at SEK 250 per 1,000 kg of CO₂—approximately \$40 at the time (Jonsson et al., 2020). This strategic move aimed to incentivize businesses and households to reduce their carbon footprints. Over the years, the tax rate has increased incrementally, reaching SEK 930 in 2007, reflecting Sweden's unwavering commitment to combating climate change. The carbon tax covered fossil fuels used in heating, electricity generation, and transportation, encompassing about 40% of Sweden's carbon emissions. However, certain industries, such as commercial horticulture, mining, manufacturing, and pulp and paper, were either taxed at a reduced rate or exempted entirely. This selective application led to discussions about the tax's effectiveness and fairness (Jonsson et al., 2020). Despite these challenges, the outcomes of Sweden's carbon tax have been noteworthy. Between 1990 and 2018, the nation achieved a 27% reduction in greenhouse gas emissions, with significant decreases in heating homes and industrial facilities. The tax also played a pivotal role in promoting renewable energy sources, such as biomass, and encouraging energy-efficient technologies. Economically, Sweden experienced steady GDP growth, with GDP per capita increasing in real terms by more than 50% between 1990 and 2019 (Hildingsson & Knaggård, 2022). Furthermore, the public acceptance of the carbon tax remained relatively high, attributed to the transparent allocation of tax revenues to environmental initiatives and the reduction of other taxes. A study by Jagers et al. (2019) found that addressing fairness considerations, such as personal and collective distributional effects, can enhance public acceptance of stricter carbon taxes. Sterner (Sterner, 2020), for instance, mentioned that compared to other countries, Sweden has a remarkably even income distribution historically. For such a controversial policy, the Swedish government would proactively initiate various social programs to compensate its constituents. One example of supportive programs to remunerate the increase of carbon tax is public transportation and "community heating" systems – centralized district heating that offers affordable heating to most of the population (Sterner, 2020).

In the early 1990s, Norway embarked on a pioneering journey to address climate change by implementing a carbon tax targeting the petroleum sector. This strategic move aimed to internalize the environmental costs associated with fossil fuel extraction, reflecting Norway's commitment to sustainable development (Dugstad et al., 2024). The carbon tax design was structured to reflect the carbon content of fuels, promoting cleaner energy use. The tax system was carefully crafted to balance environmental objectives with economic considerations, ensuring the petroleum industry could adapt without compromising its competitiveness. The Norwegian government introduced the carbon tax in the early 1990s, applying it to various sectors with some exemptions to protect economic competitiveness. This approach allowed for a gradual transition, giving industries time to adjust to the new tax regime. The outcome of this policy was significant. Norway's carbon tax contributed to decoupling economic growth from carbon emissions, with reductions in emission intensity observed alongside continued economic development (Dugstad et al., 2023). This success demonstrated that environmental policies could align with economic prosperity. Public acceptance of the carbon tax was facilitated by a strong environmental consciousness and the government's efforts to communicate the necessity of the tax for sustainable development. Transparency in the allocation of tax revenues and the reduction of other taxes further enhanced public support (Dugstad et al., 2024).

Meanwhile, Denmark introduced its carbon tax in 1992, targeting carbon dioxide emissions from fossil fuels. The initial tax rate was set at 25 US dollars per ton of carbon, with plans for gradual increases over time (Daugbjerg & Pedersen, 2004). The revenue generated from the carbon tax was allocated to various environmental initiatives, including subsidies for renewable energy projects and energy-efficient technologies. Denmark pioneered green taxation, introducing carbon taxes in the early 1990s in response to a regional economic crisis (Daugbjerg & Pedersen, 2004). In 2024, Denmark announced plans to implement a CO₂ equivalent (CO₂e) emission tax on livestock emissions, starting at 300 Danish kroner per ton of CO₂e in 2030, escalating to 750 kroner per ton by 2035 (Moody, 2024). This initiative aims to reduce emissions from the agricultural sector, which is a significant contributor to Denmark's greenhouse gas emissions. The introduction of the CO₂e emission tax on livestock has faced mixed reactions. While environmental groups support the measure as a necessary step toward reducing agricultural emissions, farmers have expressed concerns about increased production costs and potential impacts on food prices. The government has proposed income tax deductions to mitigate the financial impact on farmers, aiming to balance environmental goals with economic considerations (Moody, 2024). Earmarking green tax revenue also became another strategy taken by the Danish government. For instance, the revenue generated from the carbon tax is invested entirely in environmental projects, such as subsidizing the establishment of CSS Plants. In contrast, revenue generated from the green tax that targets farms must be returned to the industry as a whole (Møller & Oksbjerg, 2024).

Sweden, Norway, and Denmark have embarked on ambitious journeys to implement green taxation, each aiming to reduce carbon emissions and promote sustainable practices. Despite their unique approaches, these nations have faced similar challenges, particularly from the oil, gas, and agriculture industries. These sectors have raised concerns about the increasing operational costs associated with

green taxes and the potential loss of competitiveness in a global market. As a result, calls for exemptions, rebates, and a more gradual introduction of tax policies have been common. In response to these challenges, the governments of Sweden, Norway, and Denmark have employed various strategies. One key measure has been the gradual increase of tax rates, giving industries and consumers time to adjust. This approach aims to ease the transition while encouraging a shift toward more sustainable practices. Transparent communication has also played a vital role, with governments clearly outlining these reforms' environmental and economic benefits. To further ensure public support, the revenue generated from the taxes has been allocated to environmental initiatives and subsidies for green technologies, ensuring that the funds contribute directly to promoting sustainability.

Despite these well-crafted strategies, the path toward successful implementation of green taxes has not been without obstacles. In Sweden, for example, the northern regions are experiencing significant financial strain due to investments in green industries. The recent bankruptcy of Northvolt, a major battery manufacturer, has underscored the potential economic risks for local authorities, particularly in areas such as Skellefteå. The need for substantial infrastructure investments to support emerging green industries has added pressure to local governments already burdened with high social and healthcare costs. The Swedish Association of Local Authorities (SKR) has called for greater financial support from the central government, but a clear response has not yet been forthcoming. Although Sweden's northern regions are rich in natural resources and access to cheap, carbon-free electricity, the region has faced delays and slowed growth in green projects. Opposition to wind power and the high costs associated with nuclear energy have further hindered progress. Despite some optimism from regional companies, local governments remain concerned about covering the substantial initial costs required to support these green transitions (Abnett, 2024).

Similarly, Denmark has encountered challenges, particularly about the European Union's evolving climate policies. In recent years, there has been increasing pressure from some EU member states to weaken or delay climate change policies, which were already softened due to political resistance. In particular, recent European elections have shifted national priorities, focusing less on environmental concerns and more on rejuvenating struggling industries. As a result, the EU Parliament has decided to delay an anti-deforestation law. It has adjusted green farming policies in response to objections from member states and trade partners. In Denmark, Climate Minister Lars Løkke Rasmussen has strongly cautioned against further amendments to existing laws, stressing the importance of maintaining consistent regulations for investor confidence. Any drastic changes, he argues, could undermine the credibility of Denmark's green initiatives and penalize those who have already made significant investments in sustainability.

These experiences in Sweden, Norway, and Denmark underscore the complexities and challenges of implementing green taxation policies. While each nation has taken strides toward a more sustainable future, the path has been riddled with obstacles. Industry pushback, economic pressures, and political resistance have all played a role in shaping the outcome of these initiatives. Nevertheless, the strategies

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employed—such as gradual tax increases, transparent communication, and reinvestment of tax revenues into green technologies—have contributed to a successful transition in many areas. The ongoing dialogue between governments, industries, and the public will ensure that these environmental reforms remain effective and sustainable in the long term.

In summary, the experiences of Denmark, Norway, and Sweden in implementing green taxes offer valuable insights into the design and execution of effective environmental tax reforms. Key factors contributing to their successes include strong political will, transparent communication, stakeholder engagement, and the strategic use of tax revenues. Challenges primarily revolved around balancing economic and environmental objectives, maintaining competitiveness, and ensuring equitable impacts. The following table provides a comparative overview of the green tax implementations in these three countries:

Table 2. Summary Comparison of Green Taxation in Denmark, Norway, and Sweden

Aspect	Denmark	Norway	Sweden
Design	Focus on energy consumption, emissions, and waste management.	Carbon taxes targeting the petroleum sector.	Carbon tax on fossil fuel consumption across various sectors.
Implementation	Phased approach with revenue recycling to reduce labor taxes.	Introduced in the early 1990s with sectoral exemptions.	Implemented in 1991 with differentiated rates for industries.
Outcome	Reduced carbon emissions and energy consumption; growth in renewables.	Decoupling of economic growth from carbon emissions.	Significant emission reductions alongside economic growth.
Public Acceptance	Achieved through transparent communication and stakeholder engagement.	Facilitated by strong environmental consciousness.	High acceptance due to environmental awareness and trust in government.
Success Factors	Political commitment, stakeholder engagement, and clear revenue linkage.	Proactive policies, public awareness, integration into fiscal policies.	Comprehensive design, gradual implementation, and public engagement.
Challenges	Competitiveness concerns ensuring equitable societal impacts.	Balancing environmental goals	Addressing impacts on energy-intensive

with petroleum industries, ensuring industry interests. social equity.

Key Insights and Policy Implication for Indonesia

Indonesia, like Sweden, Norway, and Denmark, is navigating the complexities of implementing green taxation to foster a sustainable economy. Drawing lessons from these Scandinavian countries can provide valuable insights for Indonesia's policy development. On April 1, 2022, Indonesia took a significant step toward a greener economy by introducing a carbon tax. This marked a key moment in the country's environmental policy, signaling its commitment to reducing carbon emissions and transitioning towards more sustainable practices. However, as with any ambitious policy shift, Indonesia faces various challenges in implementing the tax, particularly resistance from industries and concerns about economic competitiveness. These hurdles are not unique to Indonesia, as countries worldwide, including those in the Scandinavian region, have faced similar obstacles when implementing green taxation. By drawing on the lessons from these nations, Indonesia has the opportunity to navigate these challenges more effectively.

One of the key strategies that has proven successful in countries like Sweden, Norway, and Denmark is the gradual implementation of carbon taxes. Tax rates were introduced incrementally in these countries, allowing businesses and industries time to adjust and minimize economic disruptions. By adopting a similar phased approach, Indonesia can allow industries to adapt to the tax without overwhelming them in the short term. This gradual increase provides businesses with time to adjust and helps ease the public's transition toward a more sustainable economy. In addition to a phased implementation, transparent communication with stakeholders is another crucial factor for success. Governments made concerted efforts in Sweden, Norway, and Denmark to explain the rationale behind green taxes and how the revenues would be reinvested in renewable energy projects and environmental initiatives. This kind of transparent engagement has been key to building public trust and garnering support for such policies. Indonesia can follow suit by engaging with industries, consumers, and environmental groups, ensuring they understand both the necessity of carbon tax and its long-term benefits. By fostering an open dialogue, the government can address concerns and garner the public support needed for the tax to be successful.

Another important lesson from Scandinavian countries is the strategic use of carbon tax revenues. In those nations, the revenues generated from the tax were reinvested into renewable energy projects, green technologies, and environmental initiatives, demonstrating a clear commitment to sustainability while offsetting some of the economic costs of the tax. For Indonesia, allocating carbon tax revenues similarly could serve two purposes: it would help drive the transition to renewable energy and sustainability and mitigate potential economic burdens on businesses and consumers. This approach can create a win-win scenario, where the tax is not viewed simply as a financial burden but as an investment in the country's green future. Finally, addressing industry-specific concerns is crucial. In

industries where international competition is particularly fierce, such as manufacturing and energy, targeted exemptions or rebates may be necessary to ensure that the carbon tax does not place local industries at a disadvantage. This has been a challenge in many countries, and balancing environmental goals with economic competitiveness will be key for Indonesia. By tailoring measures to protect sectors vulnerable to international competition, Indonesia can balance environmental objectives and economic concerns, ensuring that the policy is fair and effective.

By incorporating these strategies—phased tax implementation, transparent stakeholder engagement, strategic revenue use, and industry-specific measures—Indonesia can create a more sustainable economy while addressing the concerns of industries, consumers, and the public. Drawing from the successes and challenges faced by countries like Sweden, Norway, and Denmark, Indonesia can make its green taxation policy a vital tool in fostering a greener, more resilient future. However, the difference between Indonesia's and Scandinavian constituents is also worth noting. For instance, most of the citizens in Norway are quite aware of climate change and the need to take action against it, as mentioned in Grimsrud et al.'s research (Grimsrud et al., 2020). The welfare of the citizen in Scandinavian countries is also considerably higher than that of Indonesia, so they can expand their attention away from social development. Whereas, Indonesia is still struggling with welfare and poverty issues. Hence, similar to other developing countries, Indonesia's government must ensure that such policies will also contribute to social development, such as employment and social equity (Kuralbayeva, 2019). Considering such hindrances, strategies from developed countries must be well adapted to the needs of domestic constituents. Moreover, a larger population would make the implementation process more complex and time-consuming.

CONCLUSION

Scandinavian nations have demonstrated the transformative potential of green taxes in addressing environmental challenges, offering valuable insights for Indonesia as it seeks to enhance its green taxation framework. Key lessons from Denmark, Norway, and Sweden include the importance of phased implementation, robust public communication strategies, and utilizing tax revenues to support renewable energy and environmental projects. While Indonesia has taken initial steps toward adopting green taxation, significant challenges remain, including political resistance and public skepticism. Steps of facing such obstacles can be begun by tailoring clear, concise, and open communication with the public in general and affected stakeholders in particular. The government of Indonesia can optimize its online presence to reach broader audiences and design more open dialogues with affected stakeholders. At the same time, close engagement with academics, practitioners, and professionals to evaluate the policy regularly is also needed. These engagements would also be required to measure the industry's readiness and create a phased green tax implementation roadmap. Last but not least, the Indonesian government needs to be more transparent about the usage plan of revenue generated from the green tax. Earmarking and equal distribution would be crucial to win public acceptance. By addressing these barriers and drawing on international best practices, Indonesia can position itself as

a leader in sustainable development within Southeast Asia. Ultimately, a well-designed green tax system will mitigate environmental harm and promote economic resilience, aligning national policies with global sustainability goals. Finally, this research is expected to contribute to global climate change discourse by adapting successful Scandinavian green tax policies to Indonesia's context. It emphasizes actionable strategies like phased implementation, public engagement, and transparent revenue allocation, showing how developing nations can align with global sustainability goals while addressing local challenges.

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