



# Carbon Tax Effectiveness in Indonesia: Challenges and International Comparisons

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## Abstract

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Carbon tax has been introduced in Indonesia as part of climate change mitigation strategies through Law No. 7/2021 on Harmonization of Tax Regulations (UU HPP), with the aim of supporting the achievement of Net Zero Emission by 2060. This study aims to analyze the effectiveness of carbon tax implementation using a library research approach, covering global perspectives, national context, and international comparisons. The findings indicate that Indonesia's carbon tax rate (IDR 30/kg CO<sub>2</sub>e or approximately USD 2.1/ton) remains too low compared to international standards, and thus has limited capacity to incentivize industries to transition toward low-emission technologies. Moreover, the country's heavy reliance on fossil fuels and limited renewable energy infrastructure pose significant barriers. Nevertheless, carbon tax has substantial potential if properly designed, particularly by allocating revenues to clean energy development and social compensation mechanisms. With strong cross-sectoral policy support, carbon tax can serve as an effective fiscal instrument to reduce emissions and strengthen sustainable development in Indonesia.

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## 1. Introduction

Climate change is one of the biggest global challenges facing humanity in the 21st century. A recent report from the Intergovernmental Panel on Climate Change (IPCC) shows that the earth's temperature has increased by 1.1°C compared to the pre-industrial era, with real impacts in the form of sea level rise, melting ice at the poles, and an increasing frequency of hydrometeorological disasters such as floods, droughts, and tropical storms.<sup>1</sup> Human activities, particularly the use of fossil energy, industrialization, and deforestation, are major contributors to the increase in greenhouse gas concentrations in the atmosphere. The ten largest contributors to world emissions include Indonesia, which according to Climate Watch data, produces more than 965 million tons of CO<sub>2</sub>e emissions per year.<sup>2</sup> This puts Indonesia in a strategic position as well as vulnerable in dealing with the impacts of climate change.

Indonesia as an archipelagic country faces significant risks from climate change, especially related to sea level rise that threatens coastal areas, forest fires in Kalimantan and Sumatra, and the risk of food crises due to changes in rainfall patterns.<sup>3</sup> In response, the Indonesian government has set an ambitious target to achieve Net Zero Emissions by 2060 or sooner. This commitment is also reflected in the Nationally Determined Contribution (NDC) document submitted to the

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<sup>1</sup> J. Aleluia P. Tharakan, A. P. Chikkatur, G. Shrimali, and X. Chen. "Accelerating a Clean Energy Transition in Southeast Asia: Role of Governments and Public Policy." *Renewable and Sustainable Energy Reviews* 159 (2022): 112226.

<sup>2</sup> I. Gusti Putu Eka Rustiana Dewi and Ni Made Sintya Surya Dewi. "Analysis the effectiveness of implementation carbon tax in Indonesia." *Jurnal Economina* 1, no. 4 (2022): 880-889.

<sup>3</sup> Kirsty Anantharajah and Abidah B. Setyowati. "Beyond promises: Realities of climate finance justice and energy transitions in Asia and the Pacific." *Energy Research & Social Science* 89 (2022): 102550.

UNFCCC, which targets a 29% reduction in emissions with its own efforts, or up to 41% with international support by 2030.

To realize this commitment, the Indonesian government introduced a carbon tax policy through the Law on Harmonization of Tax Regulations (HPP Law No. 7 of 2021). The carbon tax is designed as a fiscal instrument that not only serves to reduce emissions, but also encourages innovation and the transition to clean energy. The initial stage of implementation of this policy began with the coal-fired Steam Power Plant (*Pembangkit Listrik Tenaga Uap/PLTU*) sector, before expanding to other carbon-intensive sectors. In addition, the government has also prepared a carbon tax roadmap that is integrated with national NDC targets.<sup>4</sup>

However, the implementation of a carbon tax in Indonesia faces a number of challenges. The initial carbon tax rate is set at IDR 30 per kilogram of CO<sub>2</sub>e or around USD 2.1 per ton of CO<sub>2</sub>e, far below the recommendations of the World Bank and the IMF which suggest a range of USD 30–100 per ton of CO<sub>2</sub>e in order to encourage significant changes in industrial behavior.<sup>5</sup> Tariffs that are too low potentially do not provide enough economic incentives for companies to switch to low-emission technologies. Furthermore, the risk of the tax burden being shifted to consumers raises concerns that this policy could actually exacerbate economic pressures, especially post-COVID-19 pandemic.<sup>6</sup>

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<sup>4</sup> Rakhmin Dyarto and Dhani Setyawan. "Understanding the political challenges of introducing a carbon tax in Indonesia." *International Journal of Environmental Science and Technology* 18, no. 6 (2021): 1479-1488.

<sup>5</sup> Hoy-Yen Chan and Kamaruzzaman Sopian. "Transitioning to a high renewable net-zero power generation system in Malaysia." *Philosophical Transactions of the Royal Society A* 380, no. 2221 (2022): 20210132.

<sup>6</sup> Phuong M. Khuong, Russell McKenna, and Wolf Fichtner. "Analyzing drivers of renewable energy development in Southeast Asia countries with correlation and decomposition methods." *Journal of cleaner production* 213 (2019): 710-722.

In addition to the tariff factor, another challenge faced by Indonesia is the limitation of renewable energy infrastructure. Although the government targets a renewable energy mix of 23% by 2030, the current realization is still dominated by more than 80% of fossil energy. This raises doubts about whether carbon taxes can effectively drive the energy transition without strong support for renewable energy development.<sup>7</sup> Against this background, this study aims to describe the effectiveness of carbon tax implementation in Indonesia, by reviewing the readiness of the industry, the impact on the economy, and the opportunity for transition to low-carbon development. This study is expected to make an academic and practical contribution in formulating fiscal policies that are balanced between environmental goals and sustainable economic development.

## 2. Literature Review

The carbon tax has become one of the most widely used policy instruments to internalize the negative externalities of greenhouse gas emissions. Conceptually, this tax is designed to put a price on carbon so as to encourage changes in production and consumption behavior towards cleaner energy. In the global literature, carbon taxes are often compared to other instruments such as cap-and-trade, but the tax's advantages lie in its price certainty and ability to generate fiscal revenues that can be directed to support the energy transition.<sup>8</sup>

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<sup>7</sup> Geoffrey Heal. "Economic aspects of the energy transition." *Environmental and Resource Economics* 83, no. 1 (2022): 5-21.

<sup>8</sup> Wayan G. Santika, Tania Urmee, Yeliz Simsek, Parisa A. Bahri, and M. Anisuzzaman. "An assessment of energy policy impacts on achieving Sustainable Development Goal 7 in Indonesia." *Energy for Sustainable Development* 59 (2020): 33-48.

In the context of Southeast Asia, carbon taxes are becoming increasingly relevant given that the region is still heavily dependent on fossil energy, especially coal, to meet its electricity needs. The study of Aleluia et al.<sup>9</sup> shows that the role of government and public policy is crucial in accelerating the clean energy transition, especially with the support of consistent regulations and fiscal incentives. On the other hand, the low carbon price in Indonesia raises doubts about whether this instrument is effective enough to encourage investment in renewable energy. Comparisons with Singapore, which have set a carbon tax of SGD 5 per tonne of CO<sub>2</sub> since 2019 and will gradually increase to SGD 80 by 2030, shows that the success of implementation is heavily influenced by political courage in setting adequate tariffs.

Furthermore, recent literature highlights the link between carbon taxes and sustainable development. Chen et al.<sup>10</sup> found that the implementation of a carbon tax combined with investment in sustainable energy technologies can accelerate the transition to a low-carbon economy in the ASEAN region. However, they also emphasized that the success of these policies relies heavily on infrastructure readiness, technological affordability, and redistribution mechanisms to minimize regressive impacts on low-income households.

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<sup>9</sup> J. Aleluia P. Tharakan, A. P. Chikkatur, G. Shrimali, and X. Chen. "Accelerating a Clean Energy Transition in Southeast Asia: Role of Governments and Public Policy." *Renewable and Sustainable Energy Reviews* 159 (2022): 112226.

<sup>10</sup> Peipei Chen, Yi Wu, Jing Meng, Pan He, Deyu Li, D'Maris Coffman, Xi Liang, and Dabo Guan. "The heterogeneous role of energy policies in the energy transition of Asia-Pacific emerging economies." *Nature Energy* 7, no. 7 (2022): 588-596.

### 3. Method

The research method used in this study is library research, which focuses on the analysis of various academic literature, policy reports, and scientific publications relevant to the implementation of carbon taxes in Indonesia and the Southeast Asian region. Literature studies was chosen because the topics studied are carbon taxes, energy transition, and sustainable development are dynamic policy issues and are widely discussed in academic literature and international policy documents. This approach allows researchers to gain a comprehensive understanding by examining theories, concepts, and results of pre-existing empirical research.

The research stage begins with the collection of secondary data from reliable sources, especially scientific articles published in the last five years to ensure the relevance and novelty of the information. Articles are obtained through academic databases such as Google Scholar and ResearchGate, and international research institutes. The selection of literature was carried out with certain criteria, namely: (1) articles discussing the issue of carbon tax, climate change, or energy transition in Indonesia and Southeast Asia; (2) the article is published in a reputable journal or credible research institution; and (3) the article uses relevant analytical methods, both qualitative and quantitative.

Once the data is collected, the next stage is the classification of the literature based on the major themes that are in line with the research objectives. The classification was carried out in several categories, namely: (1) the background of climate change and global carbon emissions; (2) carbon tax policy in Indonesia; (3) international comparisons of carbon tax rates and effectiveness; (4) the socio-

economic impact of the implementation of the carbon tax; and (5) opportunities and challenges in the transition to renewable energy. This classification process aims to develop a systematic and consistent framework of thinking.

The analysis method used is qualitative descriptive analysis. The analysis is carried out by interpreting the content of the literature obtained, then comparing findings from various sources to find similarities, differences, and gaps in the research. The analysis is also directed to identify key factors influencing the effectiveness of carbon tax policies in Indonesia, including tariff aspects, readiness of renewable energy infrastructure, and their impact on the economy and society. The results of this literature study are then organized into several main sections, namely: global background, Indonesian national context, policy framework, international comparison, issues and problems, and research objectives. Thus, this research method not only outlines existing policies, but also provides a deeper theoretical and empirical understanding of the opportunities and challenges in the implementation of carbon taxes.

## **4. Results**

### **4.1. Global Background of Climate Change and Carbon Taxes**

Climate change has become an urgent global issue with multidimensional impacts on ecosystems, economies, and human social well-being. According to the IPCC report, the increase in global temperature of 1.1°C since the pre-industrial era has accelerated ice melting, raised sea levels, and increased the frequency of

hydrometeorological disasters.<sup>11</sup> This phenomenon is exacerbated by human activities, especially the use of fossil energy, deforestation, and industrialization which cause greenhouse gas concentrations to increase. The study of Elliott and Setyowati<sup>12</sup> emphasizes that Indonesia as an archipelagic country faces great risks, ranging from the loss of coastal areas due to sea level rise to threats to national food security.

In the global context, the carbon tax has emerged as one of the most widely used economic instruments to address the problem of carbon emissions. This tax puts a price on carbon, thus encouraging changes in industrial and consumer behavior in a more environmentally friendly direction. Chan and Sopian<sup>13</sup> show that in the ASEAN region, the combination of carbon taxes and investments in sustainable energy technologies has been proven to accelerate the transition to a low-carbon economy. On the other hand, the implementation of carbon taxes in developed countries such as Sweden and the European Union has proven its effectiveness in reducing emissions while maintaining economic stability.<sup>14</sup>

However, significant challenges arise when developing countries, including Indonesia, try to adopt similar policies. Excessively low carbon tax rates often fail to provide a strong incentive for industry to switch to low-emission technologies.

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<sup>11</sup> Geoffrey Heal. "Economic aspects of the energy transition." *Environmental and Resource Economics* 83, no. 1 (2022): 5-21.

<sup>12</sup> Lorraine Elliott and Abidah B. Setyowati. "Toward a socially just transition to low carbon development: The case of Indonesia." *Asian Affairs* 51, no. 4 (2020): 875-894.

<sup>13</sup> Hoy-Yen Chan and Kamaruzzaman Sopian. "Transitioning to a high renewable net-zero power generation system in Malaysia." *Philosophical Transactions of the Royal Society A* 380, no. 2221 (2022): 20210132.

<sup>14</sup> Rakhmin Dyarto and Dhani Setyawan. "Understanding the political challenges of introducing a carbon tax in Indonesia." *International Journal of Environmental Science and Technology* 18, no. 6 (2021): 1479-1488.

Research by Li et al.<sup>15</sup> on the dynamics of the energy transition in Southeast Asia shows that the success of this instrument is highly dependent on policy design, especially related to the determination of adequate tariffs and the allocation of tax revenues to support renewable energy. If the tariff is too low, the carbon tax will only become an additional burden without producing a significant change in behavior.

In addition, the literature highlights the importance of international support in strengthening the implementation of carbon taxes in developing countries. Aleluia et al.<sup>16</sup> emphasize that the clean energy transition in Southeast Asia requires a combination of domestic policy instruments with global funding support, both in the form of grants and green investments. This is in line with Indonesia's position that it needs access to affordable low-carbon technology and energy transition funding to achieve the Net Zero Emission 2060 target. The results of the literature review show that the global background of climate change provides a strong urgency for Indonesia to implement a carbon tax. However, its effectiveness is highly dependent on the government's courage in setting tariffs in accordance with international standards, policy consistency, and integration with the sustainable development agenda.

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<sup>15</sup> Bo Li, Victor Nian, Xunpeng Shi, Hailong Li, and Augustin Boey. "Perspectives of energy transitions in East and Southeast Asia." *Wiley Interdisciplinary Reviews: Energy and Environment* 9, no. 1 (2020): e364.

<sup>16</sup> J. Aleluia P. Tharakan, A. P. Chikkatur, G. Shrimali, and X. Chen. "Accelerating a Clean Energy Transition in Southeast Asia: Role of Governments and Public Policy." *Renewable and Sustainable Energy Reviews* 159 (2022): 112226.

## 4.2. Indonesia's National Context in the Implementation of the Carbon Tax

Indonesia is one of the countries with the highest greenhouse gas emissions in the world. Based on Climate Watch data cited by Dewi and Dewi<sup>17</sup>, Indonesia contributes more than 965 million tons of CO<sub>2</sub>e per year, placing it in the top ten global emitters. Most of the emissions come from the energy sector, particularly coal-fired power plants, as well as the forestry sector due to deforestation. Indonesia's geographical position as an archipelagic country makes it highly vulnerable to the impacts of climate change, including coastal flooding, sea level rise, and forest fires that threaten ecosystems and people's livelihoods.

As a mitigation effort, the Indonesian government has set a commitment to Net Zero Emission in 2060. This commitment is outlined in the Nationally Determined Contribution (NDC) document which targets a reduction in emissions of 29% with domestic efforts, or up to 41% with international support by 2030.<sup>18</sup> One of the strategic policies to achieve this target is the introduction of a carbon tax through the Law on Harmonization of Tax Regulations (HPP Law No. 7 of 2021). This carbon tax was initially applied to the coal-fired Steam Power Plant (*Pembangkit Listrik Tenaga Uap/PLTU*) sector, then will gradually be expanded to other carbon-intensive sectors.

However, there are a number of obstacles in the implementation of carbon taxes in Indonesia. First, the tax rate set at Rp30 per kilogram of CO<sub>2</sub>e (around USD

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<sup>17</sup> I. Gusti Putu Eka Rustiana Dewi and Ni Made Sintya Surya Dewi. "Analysis the effectiveness of implementation carbon tax in Indonesia." *Jurnal Economina* 1, no. 4 (2022): 880-889.

<sup>18</sup> Mohammed Ali Berawi. "G20 Presidency of Indonesia: collective and inclusive agendas for world development." *International Journal of Technology* 13, no. 1 (2022): 1-4.

2.1 per ton of CO<sub>2</sub>e) is considered too low compared to the international recommendation of USD 30-100 per ton of CO<sub>2</sub>e. According to Lau et al.<sup>19</sup>, tariffs that are too low do not provide enough economic incentives for companies to switch to low-emission technologies. Second, Indonesia is still heavily dependent on fossil energy, where more than 80% of the country's energy supply comes from coal, oil, and gas. This makes it difficult to make a rapid transition to renewable energy, which is currently still relatively expensive and has limited infrastructure.

In addition, there are concerns that the burden of carbon taxes will be shifted to the end consumer. Khuong et al.<sup>20</sup> emphasized that without a compensation mechanism, carbon tax policies have the potential to be regressive, exacerbate inequality, and increase the burden on low-income households. Therefore, the implementation of a carbon tax in Indonesia requires careful policy design, including the allocation of tax revenues for clean energy subsidies, social compensation programs, and support for industries in technological innovation.

Thus, Indonesia's national context shows that despite a strong commitment to addressing climate change, the effectiveness of carbon taxes is still influenced by various factors: low tariffs, predominance of fossil energy, limitations of renewable technologies, and socio-economic risks. All of this underscores the importance of

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<sup>19</sup> Hon Chung Lau, Kai Zhang, Harsha Kumar Bokka, and Seeram Ramakrishna. "A review of the status of fossil and renewable energies in Southeast Asia and its implications on the decarbonization of ASEAN." *Energies* 15, no. 6 (2022): 2152.

<sup>20</sup> Phuong M. Khuong, Russell McKenna, and Wolf Fichtner. "Analyzing drivers of renewable energy development in Southeast Asia countries with correlation and decomposition methods." *Journal of cleaner production* 213 (2019): 710-722.

cross-sectoral policy support to make carbon taxes a truly effective instrument in reducing emissions.

### 4.3. International Comparison and Implications for Indonesia

International comparisons show that the success of the implementation of the carbon tax is largely determined by the amount of tariffs and the design of policies implemented in each country. Singapore, for example, became the first country in Southeast Asia to implement a carbon tax since 2019 with an initial rate of SGD 5 per ton of CO<sub>2</sub>e. This policy is planned to increase gradually to SGD 80 per ton by 2030, thus providing a clear price signal for the industrial sector to reduce emissions.<sup>21</sup> Singapore's boldness in setting rising tariffs shows that political commitment is a determining factor in the effectiveness of carbon tax policies.

In other ASEAN regions, the results of research by Chen et al.<sup>22</sup> indicate that a combination of carbon taxes, carbon financing, and renewable energy technology investments can accelerate the achievement of net zero emission targets. Some countries, although they do not yet have a national carbon tax, have begun to develop emissions trading mechanisms as a first step towards an environment-based fiscal instrument. Meanwhile, developed some countries have shown that high

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<sup>21</sup> Junjie Dong, Jia Zeng, Yanbin Yang, and Hua Wang. "A review of law and policy on decarbonization of shipping." *Frontiers in Marine Science* 9 (2022): 1076352.

<sup>22</sup> Peipei Chen, Yi Wu, Jing Meng, Pan He, Deyu Li, D'Maris Coffman, Xi Liang, and Dabo Guan. "The heterogeneous role of energy policies in the energy transition of Asia–Pacific emerging economies." *Nature Energy* 7, no. 7 (2022): 588-596.

carbon tax rates, combined with comprehensive energy transition policies, are able to significantly reduce emissions without causing major economic turmoil.<sup>23</sup>

Indonesia, with an initial carbon tax rate of around USD 2.1 per ton of CO<sub>2</sub>e, is still far behind international standards. Berawi<sup>24</sup> emphasized that this low tariff risks making the carbon tax just a formality without generating real incentives for changes in industrial behavior. On the other hand, if tariffs are significantly increased without the support of compensation policies, then the policy has the potential to generate resistance from the industrial sector and the community. This is in accordance with the findings of Taghizadeh-Hesary et al.<sup>25</sup> that in Southeast Asia, the success of carbon tax policies depends on equitable benefit distribution mechanisms and the readiness of clean energy infrastructure.

In addition to the tariff factor, the allocation of carbon tax revenues is also an important differentiator between countries. In Europe, carbon tax revenues are mostly used to fund clean energy innovations and provide subsidies to low-income households. This model has the potential to be adopted by Indonesia so that the carbon tax is not only a source of state revenue, but also a tool to strengthen a just energy transition.<sup>26</sup> By adopting international best practices, Indonesia can design a

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<sup>23</sup> Wayan G. Santika, Tania Urmee, Yeliz Simsek, Parisa A. Bahri, and M. Anisuzzaman. "An assessment of energy policy impacts on achieving Sustainable Development Goal 7 in Indonesia." *Energy for Sustainable Development* 59 (2020): 33-48.

<sup>24</sup> Mohammed Ali Berawi. "G20 Presidency of Indonesia: collective and inclusive agendas for world development." *International Journal of Technology* 13, no. 1 (2022): 1-4.

<sup>25</sup> Farhad Taghizadeh-Hesary, Ehsan Rasoulinezhad, Muhammad Shahbaz, and Xuan Vinh Vo. "How energy transition and power consumption are related in Asian economies with different income levels?." *Energy* 237 (2021): 121595.

<sup>26</sup> I. Gusti Putu Eka Rustiana Dewi and Ni Made Sintya Surya Dewi. "Analysis the effectiveness of implementation carbon tax in Indonesia." *Jurnal Economina* 1, no. 4 (2022): 880-889.

more effective carbon tax scheme and be able to address the challenges of transitioning to a low-carbon economy. International comparisons show that Indonesia needs to adjust the carbon tax rate to a more competitive level, allocate revenues to support renewable energy, and pay attention to social justice aspects. Without these measures, it is feared that the carbon tax will not be able to function as an effective instrument to significantly reduce emissions.

## 5. Discussion

The results of this study show that the implementation of carbon tax in Indonesia still faces various challenges, both in terms of policy, social, and economic. From a policy perspective, tax rates that are too low are one of the main obstacles. As outlined in the results, the rate of Rp30 per kilogram of CO<sub>2</sub>e (about USD 2.1 per ton of CO<sub>2</sub>e) is far below the international standard recommended by the World Bank and the IMF, which is between USD 30 to USD 100 per ton of CO<sub>2</sub>e. Low tariffs are not able to provide a strong incentive for industry to invest in low-emission technologies. This is in line with the findings of Lau et al.<sup>27</sup> who emphasize that an adequate carbon tax rate must be accompanied by investment in clean energy in order to accelerate the transition to a low-carbon economy.

In addition, the discussion also highlighted aspects of social and economic vulnerability that arise as a result of this policy. Carbon taxes have the potential to increase the cost of industrial production, which can ultimately be passed on to

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<sup>27</sup> Hon Chung Lau, Kai Zhang, Harsha Kumar Bokka, and Seeram Ramakrishna. "A review of the status of fossil and renewable energies in Southeast Asia and its implications on the decarbonization of ASEAN." *Energies* 15, no. 6 (2022): 2152.

consumers in the form of increased prices of goods and services. This risk can affect people's purchasing power, especially low-income households. Therefore, policy design must consider compensation or cross-subsidy mechanisms so that carbon taxes are not regressive. Li et al.<sup>28</sup> emphasized that without effective compensation instruments, carbon taxes can actually deepen social inequality in Southeast Asia. This emphasizes the need for Indonesia to integrate social justice aspects in its carbon tax policy.

In terms of opportunities, the implementation of a carbon tax can actually be a strategic fiscal instrument to support sustainable development. Carbon tax revenues, if allocated appropriately, can strengthen investment in renewable energy infrastructure, research and development of environmentally friendly technologies, and social protection programs. Consistent public policy support, coupled with the effective use of fiscal instruments, is able to accelerate the clean energy transition in Southeast Asia. This is relevant for Indonesia, which is currently still more than 80% dependent on fossil energy. By directing carbon tax revenues to fund energy transition programs, Indonesia can accelerate the achievement of the renewable energy mix target of 23% by 2030.

Further discussion emphasized the importance of learning from international practice. Countries such as Singapore, Sweden, and Japan have shown that carbon taxes can be effective when accompanied by competitive rates, clear compensation mechanisms, and transparent revenue allocations. Indonesia can adopt a similar

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<sup>28</sup> Bo Li, Victor Nian, Xunpeng Shi, Hailong Li, and Augustin Boey. "Perspectives of energy transitions in East and Southeast Asia." *Wiley Interdisciplinary Reviews: Energy and Environment* 9, no. 1 (2020): e364.

model by adjusting the national context, for example by gradually increasing carbon tax rates while strengthening the availability of renewable energy. With this strategy, industrial resistance can be suppressed, while the community remains protected from excessive economic impacts.

Thus, this discussion confirms that the carbon tax has great potential to become a key instrument in Indonesia's climate change mitigation strategy. However, its effectiveness depends heavily on political courage, policy consistency, and integration between environmental goals and equitable economic development. Therefore, the next step is to ensure that the implementation of a carbon tax in Indonesia is not only a symbol of international commitment, but also a tangible instrument in driving an inclusive and sustainable low-carbon energy transition.

## **6. Conclusion**

This study confirms that carbon taxes in Indonesia are an important instrument in climate change mitigation efforts, but its implementation still faces various challenges. From a global perspective, carbon taxes prove effective when tariffs are set at an adequate level and supported by energy transition policies. Indonesia itself has shown commitment through the Net Zero Emission 2060 target and the implementation of a carbon tax in the HPP Law No. 7 of 2021. However, tariffs that are too low and the dominance of fossil energy are the main obstacles that have the potential to weaken the effectiveness of this policy. In addition to the tariff factor, socio-economic challenges also need serious attention. Carbon taxes

have the potential to increase the burden on low-income households if they are not accompanied by adequate compensation mechanisms.

Therefore, policy design needs to integrate aspects of social justice so that the carbon tax not only serves as a source of state revenue, but also as an instrument to strengthen sustainable development. The implementation of a carbon tax in Indonesia will be effective if it is carried out with a gradual approach, accompanied by support for renewable energy, compensation for vulnerable groups, and political courage to raise tariffs progressively. With this strategy, the carbon tax can be a powerful fiscal instrument in reducing emissions, accelerating the energy transition, and realizing inclusive and sustainable low-carbon development.

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